

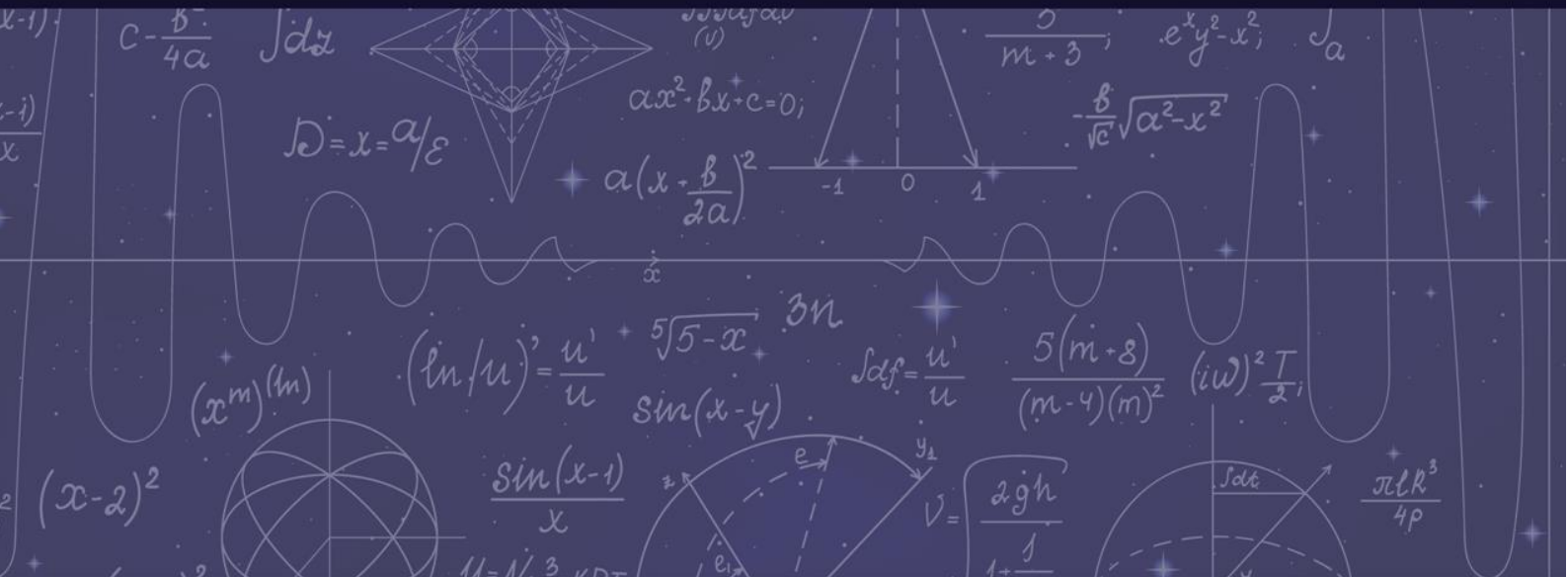
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## DETERMINATION OF MICRO AND MACRO ELEMENTS IN CAMEL-THORN PLANT USING OPTICAL EMISSION SPECTROMETRY AND X-RAY FLUORESCENT ANALYSIS

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**Abstract.** Micro and macroelements contained in camel thorn are important for the growth, development and reproduction of livestock. Accordingly, the bag was selected as an object of examination, and optical emission spectrometry (ISP-OES) and X-ray fluorescence (XRF) analysis was conducted in order to determine the amount of micro- and macroelements in its content. As a result of the analysis, relevant conclusions were drawn.

**Keywords:** pocket, feed, research methods, optical emission spectrometry (ISP-OES), X-ray fluorescence (XRF).

### Literature analysis and research methods:

The flora of Uzbekistan is characterized by its diversity, spread from desert zones to mountain peaks. Wild plants growing in the country are an important source of food for animals. One of the most widespread wild plants in the territory of Uzbekistan is cranberries [1].

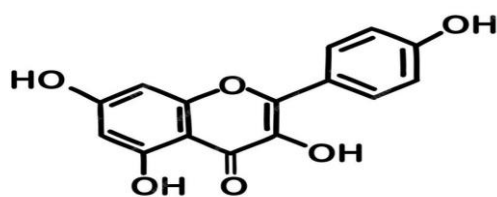
A camel thorn belonging to the leguminous family, reaching 60-80 cm in height. The flowers are small, red or pink. It blooms in May - September, seeds in August - October. The pods are individual, and their appearance is jointed like a scorpion's tail. The seed is covered with a peel. In irrigated lands, it grows as a weed along roadsides, ditches, canals, abandoned lands, and cultivated fields [2].

In Uzbekistan, there are 4 types of camel thorn (Alhagi canescens - gray alder, Alhagi kirghisorum Schrenk - Kyrgyz alder, Alhagi pseudalhagi - false alder, Alhagi persarum Boiss - Persian alder [3].

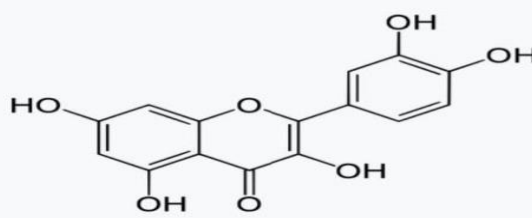
According to information, Alhagi canescens and Alhagi sparsifolia species of camel thorn are found in some regions of Uzbekistan, including Fergana, Syrdarya, Bukhara, Jizzakh, Kashkadarya and Surkhandarya [4].

Camel thorns are mainly fodder for camels and sheep. Camel thorns contain 6.99 mg/g of flavonoids, 8.36 mg/g of alkaloids, 3.69 mg/g of saponins, and 2.05 mg/g of phenols [5].

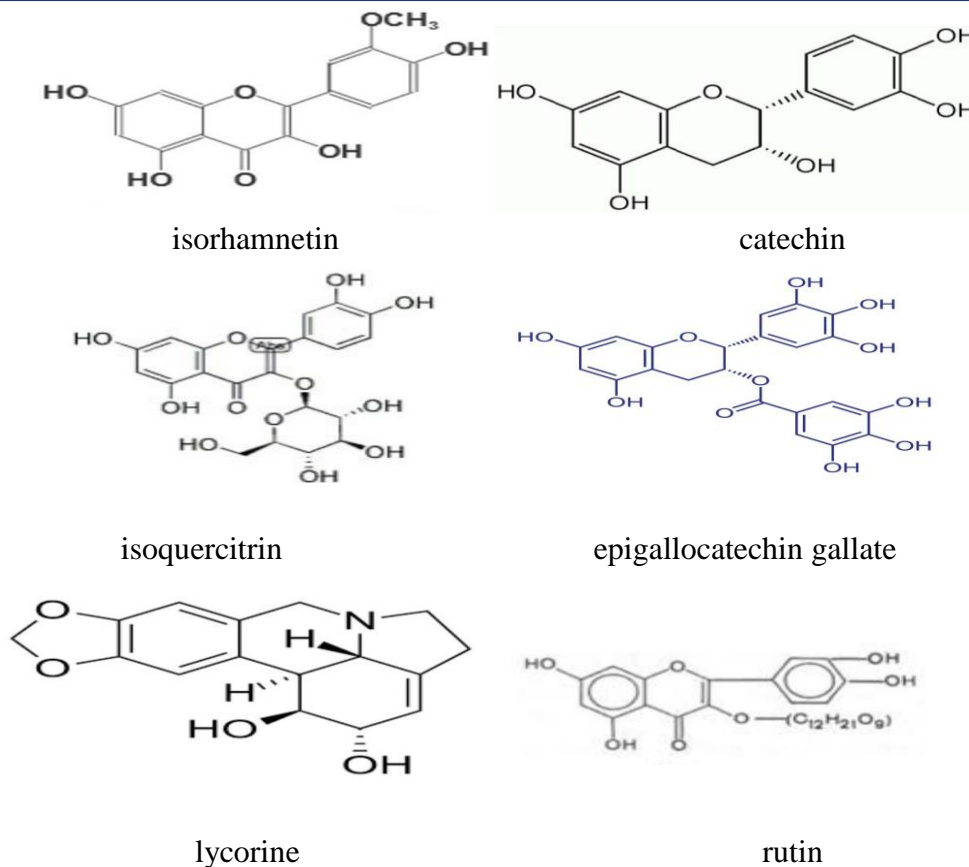
When studying the above-ground part (stem, leaf, thorn and flowers) of yarrow, it was found that there are biological flavonoids such as kaempferol, quercetin, isorhamnetin, chrysoeriol, catechin, epigallocatechin gallate, isoquercitrin, lycorine and rutin: [6].



kaempferol



quercetin

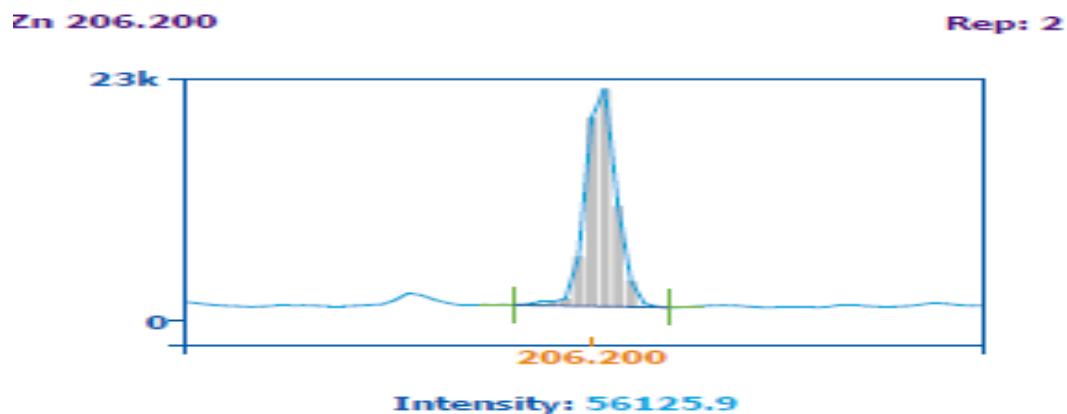


The review of the literature shows that the chemical composition and nutritional properties of the camel thorn have not been fully studied.

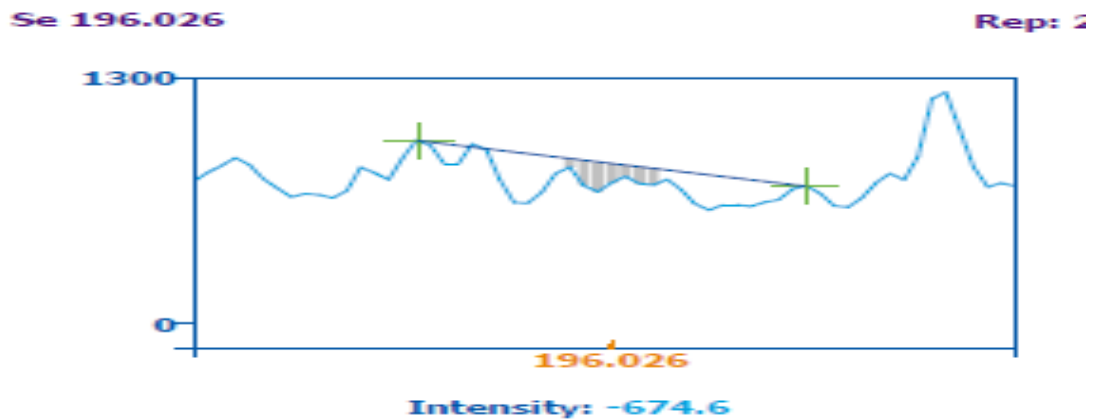
Therefore, *Alhagi canescens* plant was selected as the research object. For this purpose, at the end of August, the upper part (stem) of the ripe pods was picked and chopped into 3-4 cm lengths. The presence of macro and microelements in the plant sample was determined by optical emission spectrometric (ISP – OES) and X-ray fluorescence (XRF) methods.

The optical emission spectrometric (ISP – OES) detection device has a high level of accuracy and allows to measure the elements in the sample with an accuracy of 10-9g.

Figures 1-2 show the determination of selenium and zinc elements in the shell sample by the optical emission spectrometric method.



**Figure 1. The result of determination of the zinc element in the camel thorn by the optical emission spectrometric method**



**Figure 1. The result of determination of the selenium element in the camel thorn by the optical emission spectrometric method**

Table 1 shows the amounts of selenium and zinc elements in the shell sample checked by the optical emission spectrometric method

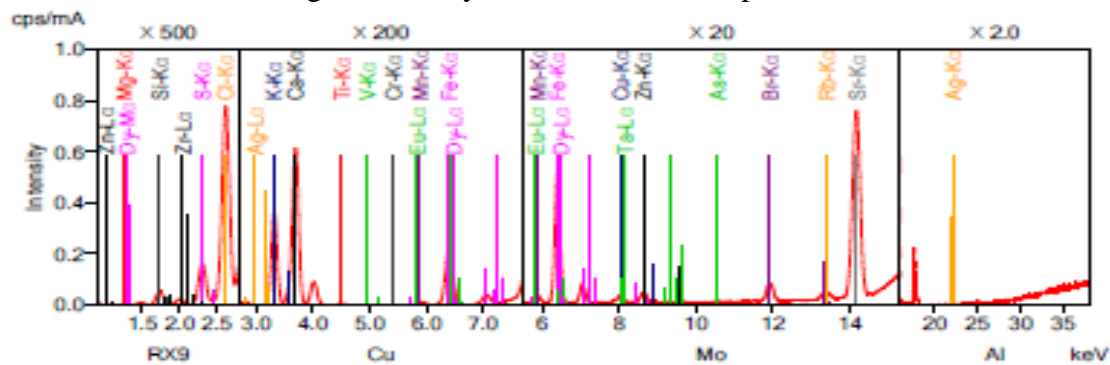
**1-table**

**OES analysis results**

Example	Zn 670.784 in (mg/100g)	Se 206.836 in (mg/100g)
Camel thorn	6,238	0

The results of X-ray fluorescence (XRF) analysis of the pocket sample are given in Figure 3 and Table 2.

**Figure 3. X-ray of the camel thorn specimen**



**Figure 3. X-ray fluorescence (RFA) analysis result.**

**2-table**

**The amount of macro and microelements in the camel thorn (mg/kg)**

Element name	The amount is mg/kg	Element name	The amount is mg/kg	Element name	The amount is mg/kg
Copper (Cu)	0,0030	Bromine (Br)	0,0018	Rubidium (Rb)	0,0006
Potassium (K)	3,14	Titanium (Ti)	0,0136	Strontium (Sr)	0,0115
Calcium (Ca)	3,59	Vanadium (V)	0,0013	Zirconium (Zr)	0,0763
Silicon (Si)	0,857	Chromium (Cr)	0,0010	Zinc (Zn)	0,0032



Magnesium (Mg)	0,526	Manganese (Mn)	0,0079	European(Eu)	0,0093
Chlorine (Cl)	1,26	Iron (Fe)	0,117	Silver(Ag)	0,0003
Sulfur (S)	0,509	Arsenic (As)	0,0003	Tantalum (Ta)	0,0017

Conclusion: When the composition of the bag was studied and analyzed by optical emission spectrometry (ISP-OES) method, it was found that zinc element was present in its composition, and it was not possible to determine the trace element selenium.

The results of X-ray fluorescence (XRF) analysis revealed that the shell contains 21 chemical elements from the periodic table.

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## RELATIONSHIP OF VITAMIN D LEVEL INDICATORS AND THE COURSE OF ACUTE BRONCHIOLITIS IN CHILDREN

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**Abstract.** *Acute bronchiolitis most often occurs in children 1 year of life, which require in some cases inpatient treatment; in the world, acute bronchiolitis is the most common cause of hospitalization in children under 2 years of age. In recent years, extremely important data have been obtained in studying the role of vitamin D in the prevention and course of a number of widespread diseases of modern humans. According to numerous studies, it has been established that vitamin D deficiency leads not only to disruption of mineral and bone metabolism, but is also involved in the regulation of the immune response, as it has an optimizing effect on the functioning of nonspecific defense mechanisms and adaptive immunity, modulates the proliferation of T-lymphocytes, etc.*

**Keywords:** *acute bronchiolitis, vitamin D, newborns, respiratory syncytial virus.*

Actuality. Newborns are at high risk of developing life-threatening respiratory diseases such as acute bronchiolitis and pneumonia. Globally, 1.5 million children under 5 years of age die each year from only pneumonia, which exceeds the number of deaths from any other infectious disease [10].

Acute bronchiolitis is mainly caused by viral agents in children under 2 years of age. The disease generally has a mild clinical course, but severe cases are not uncommon. Data on the etiology of acute bronchiolitis in many countries vary significantly, but the undisputed leader is the respiratory syncytial virus (RSV), RSV causes from 60 to 80% of cases of acute bronchiolitis. The second place in the etiology of OB is occupied by rhinoviruses - from 14 to 30% of cases (in premature babies - up to 40%), followed by bocavirus (14-15%), metapneumovirus (3-12%), less often acute bronchiolitis is caused by enterovirus (serotype D- 68), adenovirus, coronavirus (not SARS-CoV-2), influenza viruses and *M. pneumoniae*; In total, these pathogens account for 1 to 8% of cases of acute bronchiolitis in children [15, 16].

Vitamin D is known to have an immunoregulatory function [2].

Vitamin D is a fat-soluble vitamin and acts as a steroid hormone. There is growing evidence for the role of vitamin D in the immune system. [14]. Dendritic cells and macrophages derived from human monocytes are known to synthesize the active form of vitamin D (calcitriol) [6]. Unlike the renal pathway, calcitriol synthesis in monocyte-macrophages is not regulated by calcium levels but depends on immune inputs. Activated vitamin D activates genes encoding proteins essential for adhesive, gap, and tight junctions, thereby maintaining epithelial cell integrity and enhancing innate immunity. Vitamin D induces the expression of cathelicidin peptide genes. Cathelicidins are known to have antimicrobial activity and are also involved in other immune functions such as chemotaxis, cytokine release, inflammation, vascular permeability and repair. Vitamin D also blunts the Th1 response by inhibiting IL12 secretion and enhances the Th2 response by directly inducing Th2 differentiation mainly through IL4 [2, 4]. Vitamin D suppresses adaptive immunity by reducing the production of proinflammatory cytokines by Th1 lymphocytes and suppressing the formation of memory cells and plasma cells [10].

Vitamin D is postulated to promote in utero lung growth and the development and enhancement of antimicrobial effects, leading to a reduction in early respiratory infections and providing immunomodulatory effects [8]. A meta-analysis of two studies supports the concept that maternal vitamin D supplementation protects against incident asthma in the offspring during the first three years of life, particularly in women with normal serum vitamin D levels ( $\geq 30$  ng/mL) at randomization [12, 13].

Therefore, numerous studies have been conducted to examine the relationship between vitamin D and respiratory infections. Significantly lower vitamin D levels have been reported among children hospitalized with bronchiolitis, in contrast to several authors who observed no such differences [7,11].

Purpose of the study. Our purpose was to examine the association between the clinical severity of acute bronchiolitis and serum vitamin D levels in infants.

Materials and methods of research. The study was conducted in 1 city children's clinic in Tashkent. The work was carried out in 2022-2023, in the autumn-winter and spring periods. The study included 71 children. The first group consisted of 39 children diagnosed with acute bronchiolitis. The second group included 32 children with acute respiratory diseases (mainly pharyngitis, adenoiditis, laryngotracheitis, acute simple bronchitis), whose average age was  $1.5 \pm 0.7$  years. Controls included children hospitalized for noncommunicable diseases (eg, trauma, foreign bodies, neurological disorders). All children requiring admission to the pediatric intensive care unit and those with complex comorbidities (eg, chronic pulmonary disease or congenital anomalies) were excluded.

Clinical examination included questionnaires, medical history, and physical examination. Survey methods included: a survey to identify data on education, marital status of parents, a survey to identify past and concomitant diseases, a survey to identify allergic history, obstetric and gynecological history data (number of pregnancies, births, weight of newborns, dates of discharge from the hospital, vaccination calendar etc.).

General blood and urine tests, biochemical blood tests (ALT, AST, bilirubin, CRP), and instrumental studies (as indicated) were performed.

Serum vitamin D levels were measured on admission. Vitamin D deficiency was considered to be a decrease in the concentration of 25 (OH) D in the blood serum of less than 20 ng/ml (50 nmol/l); vitamin D sufficiency is when the concentration of 25 (OH) D in the blood serum was more than 30 ng/ml (75 nmol/l), and deficiency - the level of vitamin D in the blood remains in the range of 21-29 nanograms/ml [1, 5].

Research results. Of the 39 patients with bronchiolitis included in the study, 51.28% (n=20) were male children and 48.71% (n=19) were female. The average age of the children was  $7.6 \pm 6.8$  months, as shown in Table 1. Patients were hospitalized in the fall, winter and spring in 48.71% (n = 19), 25.64% (n = 10) and 25.64 % (n = 10) cases. A total of 13 patients (33.3%) required admission to the intensive care unit, and 26 (66.7%) were treated in regular wards. The average length of hospital stay was  $7.26 \pm 2.76$  days. The mean length of stay in the intensive care unit was  $3.3 \pm 0.6$  days.

A total of 5 patients (12.81%) had protein-energy malnutrition.

Of the 39 studied, 23 (58.97%) patients received vitamin D supplements (500 IU/day orally), and 16 of them (41.03%) stated that they did not. The average vitamin D level in the study group was  $23.18 \pm 13.45$  ng/ml.

*Table №1*

Sex	Boys 51.28% (n=20)
	Girls 48.71% (n = 19)
Protein-energy malnutrition	Norm 34 (87.17%)
	Protein-energy malnutrition mild degree 4 (10.25%)
	Protein-energy malnutrition moderate degree 1 (2.56%)
Taking Vitamin D	23 (58.97%) took
	16 (41.03%) did not take
Passive smoking	Present 18 (46.15%)
	Absence 21 (53.85%)

Vitamin D levels were normal in 51.28% (n = 20) of patients, 28.2% (n = 11) were deficient, and 20.51% (n = 8) were vitamin D insufficient. Normal vitamin D levels were observed in 47.36% (n = 9) girls and 55% (n = 11) male patients, while there was no significant association between gender and vitamin D deficiency (p = 0.5). Among patients without malnutrition, 70% (n = 14) had normal vitamin D levels compared with 7.69% (n = 3) of patients with malnutrition. Although the latter group of patients had an increased incidence of vitamin D deficiency, the difference was not significant. In 35 (89.74%) of the examined children, the course of the underlying disease was moderate. Children (n=4) from the group with grades 2 and 3 BENP required treatment in the intensive care unit with subsequent transfer to a regular ward.

Among the children of the second group, the distribution of vitamin D levels was as follows: normal levels of vitamin D in 78.12% (n = 25) of patients, 12.5% (n = 4) - deficiency and 9.3% (n = 3) - vitamin D deficiency. The average length of hospital stay was  $5.14 \pm 1.8$  days, no stay in the intensive care unit was required.

Conclusions. Thus, based on the data obtained, the following conclusions can be drawn: the severity of broncho-obstructive syndrome is associated with a burdened premorbid background, the presence of passive smoking, which significantly aggravate the course of the underlying pathology; in the group of patients with OB, no statistically significant correlation was found between the level of vitamin D in the blood serum and the severity of bronchiolitis.

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# MULTIPLE ORGAN FAILURE IN THE PRACTICE OF PEDIATRIC RESUSCITATION: UPDATED PATHOPHYSIOLOGY AND PROGNOSIS

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**Abstract.** *Multiple organ failure is a leading cause of admission to the intensive care units, characterized by a high case fatality rate and significant financial costs. Here we review the mechanisms of multiple organ failure in pediatric patients (triggers, concomitant diseases, release of danger- and pathogen-associated molecular patterns, bacterial translocation, epithelial, endothelial, or mitochondrial dysfunction, and inadequate immune response) and recent diagnostic and prognostic scales.*

**Keywords:** *children, multiple organ failure, systemic inflammatory response, pathophysiology, prognosis.*

The relevance of the problem of treating critical conditions in both adults and children there is no doubt due to the spread of aggressive surgical interventions, increasing the proportion of immunocompromised patients among intensive care patients, genetic defects, development of a care system for newborns with low and extremely low body weight [1,2,3]. Universal syndrome to deal with doctors of intensive care units (ICU), is multiple organ failure syndrome (MON) [4]. MODS is a combination of failure of two or more organs and systems that are observed either simultaneously or sequentially, requires prosthetics or complete replacement of the function of the affected organs, with the effects of mutual potentiation and a high probability of persistence and death [6,7,8]. The syndrome was first described in a series of articles Baue et al., who observed the sequential development of insufficiency of pulmonary function and further liver and kidney function, the development of this syndrome was characteristic on the third day after aggressive surgical operations and not related to shock. The autopsy revealed foci of inflammation in the organs and microcirculation disorders, but inflammatory changes were sterile, that is, they did not have a primary infectious beginning [8,9,10]. First descriptions multiple organ failure (MOF) in children in critical conditions appeared in the eighties of the 20th century; in the 90s, similar works were published regarding MODS in newborns [11,12].

In children, in a number of clinical studies there was multiple sequential organ dysfunction has been described, on average developing for the third or fourth day from the moment of admission to the hospital. The authors also highlight options for the development of early and late MODS. The clinical pathophysiology of MOF in children has been confirmed by numerous experimental studies [13,14,15,16]. Currently, MOF in children is one of the main causes of mortality in the ICU. Since sepsis is the leading cause of patient admission to the ICU, it is believed that sepsis-associated MOF is the most common form of critical illness complicating the course of the underlying disease in pediatrics [17,18]. Thus, in the case of development of sepsis-associated MODS, mortality increases by an order of magnitude compared to the group patients without MODS or with low scores on critical patient severity scales [19]. According to some authors, mortality in the group of children with MODS is expressed in numbers from 13 to 25% [20]. In addition, intensive therapy for MODS places a significant burden on

public health system that is expressed in an increase in the cost of therapy every patient. In the United States, the number of cases of MOF is 42,000 per year among all intensive care patients with a mortality rate of 10.3% [21]. Total hospital costs for treatments for MODS in children are approaching \$1.7 billion per year. In the USA, for caring for children with average hospital stay 74 days (patients with MOF requiring long-term organ function support methods) costs approach \$75,000 per case [22,23].

A number of risk factors have been identified development of MODS in children, including severe hypoxemia at the time of admission to the ICU, cardiac arrest, shock, trauma, acute pancreatitis, acute leukemia, transplantation (as solid organ and stem cells), sepsis, the fact of prematurity and hypoalimentation. They all make their own contribution in the formation of PON, as evidenced by many studies [24,25]. Children are predisposed to the development of a systemic inflammatory response (SIR) and MOF in to a greater extent than adults, due to the imbalance of the mechanisms regulating inflammatory response, vulnerability of the hemostasis system and metabolic reactions, immaturity of the immune and endocrine systems, which predisposes to infection, which subsequently leads to the progression of multiple organ failure syndrome (SPON). The authors indicate that acute respiratory distress syndrome is a common cause of SIDS and MOF in children. (ARDS) – up to 70% of all cases of MODS, asphyxia – 45%, sepsis – 34% of cases [26,27]. The main pathogenetic factor of MODS – the body’s response to massive damage tissues and/or infection, which has a greater influence on the outcome than the fact itself damage, defined as “inflammatory response syndrome.” SVO is being considered at the moment as a key pathogenetic link in critical conditions associated with the development of multiple organ failure. In recent years, analytical articles have begun to appear in the literature emphasizing the low degree of sensitivity and specificity of SVO criteria for development critical conditions and the need to formulate new ideas about the nature and pathogenetic role of systemic inflammation. Systemic inflammatory response syndrome (SIRS) is initially diagnosed in the majority of children (70-80%) admitted to intensive care units, with progression SIRS in sepsis occurs in 15-30% and depends by age group: in younger children, the frequency of transition from SIRS to sepsis is higher, than in older children [21,28].

At the moment, the “danger hypothesis” prevails, which implies that damage to the host’s own cells leads to the release of molecular patterns associated with the damage (DAMP), which, in turn, are capable of disrupt the cellular antigen-presenting response to exogenous antigens or pathogen-associated molecular patterns (PAMP). This hypothesis is supported by a number of studies conducted in the clinic: children who had manifestations of SVO and MOF had higher concentrations of circulating biomarkers PAMP, DAMP and cytokines, which is associated with the severity of MODS. Cytokine levels in such patients lead to dysfunction of the endothelium, apoptosis, realized in the form of ARDS, acute injury kidneys, liver dysfunction. Consequence of cytokinemia and impaired DAMP recognition is microangiopathy and micro thrombosis, mitochondrial autophagy (mitophagy), which looks like catabolism and immune suppression, as well as secondary immunodeficiency due to apoptosis of immune cells [29,30].

Reasons that determine the sequence and number of people involved in MODS organs and their contribution to the outcome in pediatric patients have not been fully determined. There is an opinion that the sequence mechanisms can be presented as follows [27]: Triggering factor(s): ischemia and reperfusion, trauma, oncology, pancreatitis, cardiopulmonary bypass.

Background pathology: congenital disorders metabolism, sepsis, autoimmune condition.



DAMP release.

Impaired metabolism of cytochrome P450.

Increased PAMP levels, including the likelihood of translocation of bacteria from the gastrointestinal microbiome's own pool tract.

Qi Release.

Epithelial dysfunction (example: ARDS).

Endothelial dysfunction (example: microvascular thrombosis and disseminated intravascular coagulation).

Mitochondrial dysfunction (example: catabolism, ICU-associated polyneuromyopathy, muscle weakness).

Dysfunction of immunological effector cells (example: impaired tissue resistance, wound wasting, apoptosis of immunological cells, persistence of immunosuppression, catabolism, wasting).

Initially, the idea of MODS and the gastrointestinal tract (GIT) as the “motor” of MODS was proposed in 1992 by Meakins et al. The idea assumed the presence of MOF without signs of primary infection and sepsis without a primary source of infection or when the primary the source of infection was completely sanitized. Components of this theory may be: elements of damage to the gastrointestinal tract epithelium, translocation intestinal microbiome and contamination gram-negative flora of the gastrointestinal tract with further movement of lipopolysaccharide (LPS) as the main endotoxin and participation in the implementation of the effects of PAMP. It is believed that in children all these mechanisms are implemented [26]. So, due to a systemic inflammatory response, the use of long-term parenteral nutrition, systemic ischemia and reperfusion, immaturity of the villous microcirculation system (especially in premature infants and children with systemic hypoxia) elements are observed apoptosis of intestinal epithelial cells, which is characterized by overexpression of Bcl2 [25]. Dense contacts of enterocytes are broken and damaged due to the activity of free radicals under conditions of ischemia and reperfusion, as well as use of infusion-transfusion therapy based on synthetic colloids. In addition, ruptures of tight junctions are realized based on the action of systemically released cytokines, which can be potentiated by sepsis and systemic hypoxia.

In children, dysfunction of the microbiome has also been described, which is determined by the use of active antibiotic therapy, creating conditions for ischemia and reperfusion intestines, disruption of the trophic function of the gastrointestinal epithelium [33]. Despite the rather large evidence base of experimental studies regarding the participation of the gastrointestinal tract in the genesis of MODS in children, clinical methods for assessing the translocation phenomenon (in particular, biochemical markers of permeability, markers of damage to tight junctions and glycocalyx of capillaries of the gastrointestinal vascular system, detection of LPS or its activity in the patient's blood serum) is clearly insufficient. Clinically, MOF consists of signs of dysfunction of two or more organs and organ systems [34].

Simple calculation of the number of affected organs and organ systems based on the presence or absence of organ failure does not allow identifying MOF on early stages, therefore, scoring the degree of dysfunction of the affected system is considered more informative. Severity rating MODS in pediatrics are associated with peculiarities of physiological parameters, which depend on the periods of childhood age, which must be taken into account when creating a tool for assessing the severity of MODS in children. PELOD (Paediatric Logistic Organ) scale

Dysfunction) is one of several most commonly used severity rating scales MODS in children.

The scale includes variables assessing organ dysfunctions of the central nervous system using the Glasgow Coma Scale, the circulatory system is assessed taking into account heart rate and level systolic blood pressure, recording parameters is made depending on age, the respiratory system is assessed based on the respiratory index (PaO<sub>2</sub>/FiO<sub>2</sub>) and partial pressure of carbon dioxide in arterial blood (PaCO<sub>2</sub>), kidney function is assessed based on the level of creatinine, liver function – based on the level of aspartate transaminase (AST) and prothrombin index (PTI), the blood system - based on the level of leukocytes and platelets. Scale PELOD overestimates the risk of adverse outcome, like scales used in adults. Assessment of the severity of MODS using the PELOD scale dynamically increases prognostic value. PRISM (The Pediatric Risk) scale of Mortality) uses level to evaluate systolic and diastolic blood pressure, heart rate and respiratory rate taking into account the child's age, respiratory index (PaO<sub>2</sub>/FiO<sub>2</sub>), partial pressure of carbon dioxide in the arterial blood (PaCO<sub>2</sub>), levels of glucose, potassium, calcium, bicarbonate, total bilirubin, ratio of prothrombin time to activated partial thrombin time, pupillary reactions and Glasgow Coma Scale. Modifications of the PRISM II and PRISM III scale are simplified versions of it. PRISM scale more suitable for assessing prognosis than for assessing the severity of MODS. While creating digital assessment of the severity of the condition in children in case of MODS, the physiological characteristics of this age group must be taken into account.

In particular, for each age period There are specific scales. For example, in newborns the PELOD scale has lower sensitivity than in children other age groups. Given the impossibility of predicting the exact prognosis of a given patient with MODS using only scale assessment, by many researchers attempts are being made to use various physiological and biochemical methods parameters as markers, which, along with assessment on the scale could clarify the forecast and choose the optimal ones for each specific case, treatment methods for MODS [2,13,34]. The most important drawback of all scales for assessing the severity of MODS is the lack of integration of biochemical and biological markers of MODS into composition of prognostic and diagnostic models, which is undoubtedly the rationale for further research.

**Conclusion:** The pathogenesis of MODS in children consists of the combined action of risk factors, initiating factor(s), implementation of DAMPs and PAMP, systemic inflammatory response and MODS, the mechanisms of which include epithelial dysfunction, endothelial dysfunction, mitochondrial dysfunction and disorders of immunological function.

Existing scales for assessing the severity of MODS and prognosis have undoubted clinical validity, but are not included in their the composition of the components of the PON mechanisms presented above, which makes it justified continuation of clinical attempts to integrate markers of biological origin as part of prediction and diagnostic scales.

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## ASSESSMENT OF THE LEVEL OF NEUROSPECIFIC AUTOANTIBODIES IN BLOOD SERUM IN CHILDREN BORN WITH LOW BODY WEIGHT

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**Abstract.** According to WHO, every year about 30 million babies are born premature, low birth weight or sick and require specialized care to survive. Perinatal damage to the central nervous system unites a large group of brain lesions of different causes and origins that occur during pregnancy, childbirth and in the first days of a child's life. Severe forms of perinatal CNS lesions are observed in 1.5–10% of full-term and 60–70% of premature infants. Purpose of the study: to identify a predisposition to pathology of the central nervous system and internal organs in low-birth-weight newborns by conducting immunochemical screening. Methods. 64 newborns were examined, born at a gestational age of 32-37 weeks with low body weight - 1500.0-2499.0 g. Newborns were divided into 2 groups: those born with a body weight of 1500.0-1999.0 g at a gestational age of 32-34 weeks and those born at a gestational age of 35-37 weeks with a body weight of 2000.0-2499.0 g. The comparison group consisted of healthy full-term newborns weighing more than 2500.0 g. All children underwent a standard clinical examination, the levels of 12 types of IgG autoantibodies to 12 types of antigenic components of brain cells and receptors were assessed, and the immunoreactivity index was calculated. Results: deviations from the conventional norm were present in almost all 12 positions of neurospecific autoantibodies. In newborns with low body weight, the level of autoantibodies to myelin basic protein, NF -200, S 100, GFAP was significantly increased, and the levels were statistically significantly higher in children 1- group, which indicates structural changes in the central nervous system, disruption of myelination processes, formation of astroglia, neurotrophic functions, more pronounced in newborns with a gestation period of 32-34 weeks. Objective signs of cerebral ischemia of the 1st and 2nd degrees with the same frequency (61.5% and 63.2%) were observed in newborns weighing 1500.0-1999.0 and 2000.0-2499.0 g. In newborns with low body weight (1500.0-2499.0 g), regardless of gestational age after 32 weeks, there was an increase in the level of autoantibodies to the receptor structures of the brain responsible for cognitive, emotional-volitional and behavioral reactions, as well as those involved in the implementation autism.

**Keywords:** low body weight, children, gestational age, autoantibodies, neurological status, assessment, receptors, prognosis.

Actuality. According to the WHO, every year about 30 million babies are born premature, low birth weight or sick and require specialized care to survive [15]. The incidence of low-birth-weight preterm newborns is 5-16%, with the greatest attention paid to extremely low and very low birth weight infants, in whom perinatal mortality is up to 90% [7]. Among the causes of disability, damage to the central nervous system accounts for 98.6%, among them neurosensory anomalies - 29%, impaired rates of mental development - 42%; bronchopulmonary dysplasia is about 53%, damage to the cardiovascular system is 30% [2, 6, 13]. The severity of cerebral ischemia is closely related to gestational age and birth weight, and the initial premorbid background of the newborn

child [3,10]. The percentage of practically healthy children born with very low body weight (VLBW) and extremely low body weight (ELBW) does not exceed 10 - 25.0%, but they constitute the main percentage of mortality and disability in young children [11].

Children born with low body weight (1500.0-2499.0 g) have a more favorable early and long-term prognosis in terms of their development and physical health, however, underweight is a risk factor for functional disorders of the central and autonomic nervous systems [7, 2, 14]. The immediate consequences of the birth of children with low body weight have been sufficiently studied and include: the development of respiratory distress syndrome, persistence of fetal circulation, infections, impaired thermocoagulation, necrotizing enterocolitis [2,16] Less is known about the risk of pathological conditions associated with low body weight, which the implementation time frame goes beyond the neonatal period. According to various authors, prematurity and low birth weight cause functional failure of neuropsychic development in the motor, emotional, motivational, and cognitive spheres; In some premature newborns, persistent disorders are observed in the first years of life, manifested in cognitive impairment, learning difficulties, and socialization in society [1,7,16]. Low birth weight newborns are characterized by biological immaturity, limited stomach volumes, and small reserves of iron, calcium, vitamins, fat, and glycogen, which creates the preconditions for a decrease in adaptive capabilities [10]. However, criteria for predicting disorders of the central nervous system, autonomic nervous system and somatic pathology have not been developed. A promising modern direction is the determination of autoantibodies to organs and tissues for preclinical diagnosis of functional and a number of organic changes in them. The pathogenetic role and diagnostic significance of autoantibodies to brain proteins and neurotransmitter receptors has prospects in prognostic terms in children born with low birth weight. Studying the level of autoantibodies to gliospecific proteins is important for understanding the mechanisms of damage to astrocytic glia and the blood-brain barrier (BBB) in low-birth-weight children, as well as for improving methods for early diagnosis of disorders of higher nervous activity and their prevention. Autoantibodies to components of nervous tissue in newborns are of maternal origin, because they belong to class G immunoglobulins - IgG , embryotropic antibodies and freely penetrate trans placentally to the developing fetus. With a persistent abnormal increase in the production of certain biologically active autoantibodies (auto-ATs) in the mother, they, reaching the fetus in excess quantities, cause tissue-specific damage [5]. Suboptimal conditions of intrauterine development, caused by persistent changes in the production of maternal embryotropic antibodies, are not in all cases accompanied by the death of the embryo or fetus, or the birth of a child with developmental defects, but almost always lead to noticeable negative changes in the child's health and a delay in intrauterine development. Somatic pathology of the mother is in 2nd place among the causes of fetal growth retardation and the birth of children with low body weight. When the level of autoantibodies increases in a child, pathological changes in organs can form both due to direct aggression caused by antibodies, and due to prenatal programming of his immune system for increased production of the same antibodies as his mother (the phenomenon of maternal epigenetic immune imprinting) [ 4.9].

The level of antibodies reflects the structural and functional state of the central nervous system, including a number of receptors. Persistent changes in the production of auto-ATs to the following antigens may reflect the presence or formation of various forms of CNS pathology, cognitive and behavioral disorders [1,8].

In this regard, the goal of our work was to identify a predisposition to pathology of the central nervous system and internal organs in low-birth-weight newborns by conducting immunochemical screening in order to

**Materials and methods.** We examined 64 newborns who were born at a gestational age of 32-37 weeks with a low body weight of 1500.0-2499.0 g. Newborns were divided into 2 groups: those born with a body weight of 1500.0-1999.0 g at a gestational age of 32-34 weeks (n =26) and those born at a gestational age of 35-37 weeks with a body weight of 2000.0-2499.0 g ( n =38). The comparison group consisted of healthy full-term newborns weighing more than 2500.0 g, born at 38-40 weeks of gestation (n = 12). All children underwent a standard clinical examination, and the levels of 12 types of IgG autoantibodies to 12 types of antigenic components of brain cells and receptors were assessed, and an immunoreactivity index was calculated. Autoantibodies were determined by solid-phase ELISA on a Rayto analyzer (China), using ELI-Nero-12-Test test systems (Immunculus, Russia). To conduct the entire panel of tests, 0.5 ml of the child's blood serum was required; blood was drawn on days 5-7 of life.

**Results obtained.** Research results showed that low birth weight babies were born to mothers aged 25-34 years. At the same time, the parity of pregnancy draws attention - low birth weight children of the 1st group (32-34 weeks of gestation) were born mainly from the first pregnancy (n = 21; 80.7%), while in the second group (35-37 weeks of gestation) from the first Only 13 (34.2%) children were born during pregnancy, and 25 (65.8%) were born from the 2nd, 3rd and 4th pregnancies. A study of the anamnesis and the presence of somatic diseases in mothers showed that IDA was observed in 8 (30.8%) and 12 (31.6%) women - in groups 1 and 2, respectively (p > 0.05); gestosis was significantly more common in mothers of the second group: 24 (63.1%) versus 10 (38.5%) (p <0.05); somatic diseases were detected in 8 (30.8%) and 14 (36.8%) women of the first and second groups, which was not statistically significant ( p >0.05). The mothers of low-birth-weight children had no history of organic diseases of the nervous system, but 6 (23.1%) and 8 (21.1%) women complained of frequent mood swings and nervousness - in groups 1 and 2, respectively. Only 5 (7.8%) women had higher education, of which 2 were from the first and 3 from the second group.

**Table 1.**

***Assessment of the condition of newborns using the Apgar scale***

Observation groups	Gestational age, weeks	Body weight at birth, g	Grade Apgar scale	
			1st minute, point	5th minute point
Control group, n=12	39.0±0.1	2932±112	7.1±0.3	8.9±0.2
Group 1 (1500-1999), n=26, p1	32.91±0.33	1823±141	5.5±0.3	6.5±0.3
Group 2 (2000-2500) , n=38, p2	36.21±0.27	2329±93	6.3±0.2	7.5±0.2
P1:2	<0.05	<0.05	<0.05	<0.05

Assessment of the condition of newborns using the Apgar scale showed that there was a significant difference in parameters at 1 and 5 minutes of life in children of the 1st and 2nd groups. Newborns of group 2 had a higher Apgar score (Table 1).

Analysis of transient conditions of newborns showed that a protracted course of neonatal jaundice occurred in 16 (61.5%) and 24 (63.2%) low birth weight newborns - in groups 1 and 2, respectively ( $p > 0.05$ ), whereas in the control group - only 3 (25%) children.

A study of the neurological status showed that more than half of low-birth-weight newborns had cerebral ischemia (CI) of grades 1 and 2; grade 3 ischemia was not detected in our studies. As can be seen from Table 2, signs of cerebral ischemia were equally common in both groups. Damage to the central nervous system most often manifested itself as depression syndrome, which was diagnosed in 16 (61.5%) children of the 1st group and 13 (34.2%) children of the 2nd group; agitation syndrome was observed in 8 (30.7%) children of the 1st group and in 16 (42.1%) children of the 2nd group.

**Table 2.**

***Incidence of central ischemia in low birth weight newborns***

Observation groups	Newborns without CI		Newborns with CI 1st degree		Newborns with CI 2nd degree	
	n	%	n	%	n	%
Control group, n=12	12	100	0	0	0	0
1 subgroup (1500-1999), n=26	10	38.5	6	23.0	10	38.5
2 subgroup (2000-2500), n=38	14	36.8	eleven	28.9	13	34.3
R	> 0.05		> 0.05		p>0.05	

Note: P – statistical significance of differences between 1 and 2 subgroups

The next stage of the work was to assess the level of neurospecific autoantibodies. To understand changes in the level of neurospecific autoantibodies, it is necessary to clarify their physiological and pathogenetic significance [9] (Table 2).

Considering the lack of data in the literature on the level of autoantibodies to nervous tissue determined in newborns, we also selected a comparison group. Note that the deviation of the level of autoantibodies from the average level in standard serum, expressed in %, is taken as the conditional norm; the conditional norm lies in the range from (- 20%) to + 10% (green zone). If the level of autoantibodies in the subject exceeds that in the standard by 10-20% (+10 - +19%), then this is interpreted as a relative deviation (yellow zone), if the level of autoantibodies exceeds the standard by 20% or more (+20% or more) – then this is a reliable deviation (red zone) [9].



***Pathogenetic significance of autoantibodies to nervous tissue [8,9]***

Autoantibodies, type	Physiological significance	Pathogenetic significance
OBM	Basic protein of myelin sheaths of axons	Demyelinating marker processes
S100 $\beta$	A highly specific member of the family of Ca <sup>2+</sup> -binding proteins for nervous tissue	Regulator of apoptosis, trophic factor of serotonergic neurons, an increase in autoantibodies to it is accompanied by disturbances in the emotional-volitional sphere, in some cases this increase is initiated by the human papillomavirus
NF-200	Axon specific protein	Accompanies the process of degeneration of nerve fibers
GFAP	Brain-specific glial fibrillary acidic protein, which forms intermediate filaments of the astrocyte cytoskeletal system,	The growth of autoantibodies to it accompanies the proliferation of astroglia - gliosis, including reactive astrogliosis
VGCC	Voltage-dependent Ca <sup>++</sup> channel, membrane protein	Is a specific antigen for cerebellar ataxia, amyotrophic sclerosis, autism
Cholinergic receptors	Reception of neurotransmitters	Marker of cognitive impairment, learning, memory
Glutamate receptors, GABA receptors	Reception of neurotransmitters	Markers of disturbances in the regulation of excitation/inhibition processes
Dopamine receptors	Reception of neurotransmitters	Marker of cognitive impairment and shifts in the emotional-volitional sphere, motivation
Serotonin, opiate and beta-endorphin receptors	Reception of neurotransmitters	As a marker of disorders in the emotional-volitional sphere, autism, bipolar disorders

As our observations showed, deviations from the conventional norm were present in almost all 12 positions of neurospecific autoantibodies. It is noteworthy that the level of autoantibodies to myelin basic protein (MBP) was significantly higher in children born at 32-34 weeks of gestation, relative to the indicators of children of group 2, which indicates a high level of demyelinating processes in them and is confirmed by the presence of periventricular leukomalacia. Thus, MBP was increased on average to 50.3 $\pm$ 5.4% in children of the 1st group, while in more mature newborns of the 2nd group it was increased to 39.7 $\pm$ 2.3%, and in children in the control group, this indicator was at the level of reference values recommended by the authors of the method [9], amounting to 5.2 $\pm$ 0.6% (Table 3).

**Table 3.**

***Level of autoantibodies to nervous tissue in low birth weight newborns***

Autoantibodies, type	1st group, n=26	2nd group, n=38	Control group, n=12
OBM	50.3±5.4	39.7±2.3*	5.2±0.6
S100β	54.7±2.6	48.6±1.8*	7.4±1.0
NF-200	23.0± 3.0	31.5±3.5*	4.6±0.6
GFAP	45.9± 9.4	62.8±8.8*	5.7±0.3
VGCC	-13.0± 1.2	- 2.6±1.1	- 3.0± 1.0
Cholinergic receptors	20.6± 1.4	24.4±4.0	11.0±2.0
Glutamate receptors	17.3±5.8	23.6±11.0	16.5±1.0
GABA receptors	35.2± 2.0	45.0±6.0	6.7±2.6
Dopamine receptors	22.3± 2.0	25.8±5.6	4.6±1.1
Serotonin receptors	37.0 ±7.0	36.5±7.1	13.8±2.5
opiate receptors	24.6± 6.3	30.4±4.8	14.7±3.7
beta-endorphin receptors	52.7±2.6	52.8±3.5	16.3±6.1

Note: \*-differences are statistically significant between the average indicators of the 1st and 2nd subgroups

The level of autoantibodies to GFAP was significantly higher in children of group 2, which indicates intensive proliferation of astroglial cells and gliosis in children, which is more typical for newborns born at 35-37 weeks of gestation. An increase in the levels of auto-ATs to GFAP can accompany proliferative processes in astrocytic glia, activation of astrocytes (in response to damage), cell hypertrophy, and in some cases, cause dystrophic processes and irreversible formation of a glial scar and changes in tissue structures.

At the same time, these children also had an increased level of autoantibodies to protein S 100, which indicates, on the one hand, increased binding of this protein and the prevention of apoptosis, and on the other, a decrease in its trophic effects on serotonergic neurons. The level of autoantibodies to serotonin, opiate and beta-endorphin receptors was significantly increased in all low-birth-weight newborns, which indicates the potential destruction of these receptors, or their blockade, as a prerequisite for disorders in the cognitive, emotional-volitional sphere and learning abilities. Long-term elevated levels of autoantibodies indicate a poor prognosis.

Note that when interpreting the results of a multiplex study of autoantibodies, it is advisable to present not the average values of these indicators, but the number of patients with deviations in the compared groups, and also indicate the direction of the deviation [1,9]. In this light, our results are presented in Table 4.

A decrease in the level of autoantibodies is more typical for long-term deep disorders, and an increase is more typical for reactive processes. The definition of a panel of autoantibodies is fully consistent with new views on the importance of the immune system in maintaining the constancy of the molecular composition of the body and the homeostatic regulation of a wide variety of processes in changing conditions of the external and internal environment.

**Table 4.**

***The nature of autoantibody abnormalities in low-birth-weight newborns***

Autoantibodies, type	Nature of deviations	1st group, n=26		2nd group, n=38		Control group, n=12	
		n	%	n	%	n	%
NF-200	Conventional norm (-20 - +10)	0	0	0	0	12	100
	Relates. deviation	0	0	0	0	0	0
	Ven. deviation	26	100	0	80	0	0
GFAP	Conventional norm (-20 - +10)	0	0	0	0	12	100
	Relates. deviation	0	0	0	0	0	0
	Ven. Deviation	26	100	38	100	0	0
S100 $\beta$	Conditional normal (-20 - +10)	0	0	0	0	12	100
	Relates. deviation	0	0	0	0	0	0
	Ven. Deviation	26	100	38	100	0	0
OBM	Conditional normal (-20 - +10)	0	0	0	0	12	100
	Relates. deviation	0	0	0	0	0	0
	Ven. Deviation	26	100	38	100	0	0
VGCC	Conditional normal (-20 - +10)	26	100	thirty*	78.9*	12	100
	Relates. deviation	0	0	8*	21.1	0	0
	Ven. Deviation	0	0	0	0	0	0
Cholinergic receptors	Conditional normal (-20 - +10)	0	0	7*	18.4	6	50
	Relates. deviation	8	30.7	1*	2.6	6	50
	Ven. Deviation	18	69.3	thirty	78.9	0	0
Glutamate receptors	Conditional normal (-20 - +10)	0	0	0	0	0	0
	Relates. deviation	16	61.5	23	60.5	4	33
	Ven. Deviation	10	38.5	15	39.5	8	67
GABA receptors	Conditional normal (-20 - +10)	4	15.4	3*	7.9	12	100
	Relates. deviation	2	7.6	0	0	0	0
	Ven. Deviation	20	76.9	35*	92.1	0	0
Dopamine receptors	Conditional normal (-20 - +10)	0	0	0	0	12	100
	Relates. deviation	0	0	24*	63.1	0	0
	Ven. Deviation	26	100	14	36.9	0	0

Serotonin receptors	Conditional normal (-20 - +10)	26	100	38	100	4	33
	Relates. deviation	0	0	0	0	8	67
	Ven. Deviation	26	100	38	100		
opiate receptors	Conditional normal (-20 - +10)	0	0	0	0	5	41.7
	Relates. deviation	0	0	0	0	7	58.3
	Ven. Deviation	26	100	38	100	0	0
beta-endorphin receptors	Conditional normal (-20 - +10)	0	0	0	0	5	41.7
	Relates. deviation	0	0	0	0	7	58.3
	Ven. Deviation	26	100	38	100	0	0

Note: \*-differences are statistically significant between the average indicators of the 1st and 2nd groups

The complex functions of the immune system under consideration are based on a pervasive multicomponent system of natural autoantibodies, which rapidly responds with quantitative changes to a variety of functional and metabolic changes in isolated cell populations, organs and the body as a whole.

A number of studies have confirmed that the determination of antibodies to various membrane, cytoplasmic and nuclear antigens of the body's cells and intercellular matrix, as well as secretory products of cells, like a mirror, reflects the antigenic structure of the body and forms a dynamic "Immunological homunculus" [8,9]. Multicomponent assessment of the content of auto-AT allows for a systemic analysis and clarification of the role and participation of pathoimmune mechanisms in the development of low-birth-weight newborns.

#### Conclusions:

1. Low birth weight newborns with a weight of 1500.0-1999.0 g and a gestation period of 32-34 weeks are born from the first pregnancy in 80.7% of cases, which indicates the need for close attention to this cohort of women.

2. NF-200, S 100, GFAP is significantly increased, and it is statistically significantly higher in children with a weight of 1500.0-1999.0 than in children with a weight of 2000.0 -2499.0 g, which indicates structural changes in the central nervous system, disruption of myelination processes, formation of astroglia, neurotrophic functions, more pronounced in newborns with a gestation period of 32-34 weeks.

3. Objective signs of cerebral ischemia of the 1st and 2nd degrees with the same frequency (61.5% and 63.2%) occur in newborns weighing 1500.0-1999.0 and 2000.0-2499.0g.

4. In newborns with low body weight (1500.0-2499.0 g), regardless of gestational age after 32 weeks, there is an increase in the level of autoantibodies to the receptor structures of the brain responsible for cognitive, emotional-volitional and behavioral reactions, as well as those involved in the implementation of autism.

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## PERINATAL HYPOXIA IN NEWBORNS

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**Abstract.** *A comprehensive study of clinical and neurological changes in newborns in the relationship between the nature and duration of perinatal hypoxia (PH) was carried out. To assess the state of clinical and neurological changes, 52 newborns who underwent perinatal hypoxia were examined.*

*The anamnesis of mothers who underwent combined perinatal hypoxia was significantly worse than in the group of children with acute asphyxia. Anemia, acute respiratory viral infection (ARVI), preeclampsia, fetoplacental insufficiency (FPI), the duration of the anhydrous interval, pathological childbirth served as predisposing factors contributing to the development of perinatal hypoxia. For an objective quantitative assessment of the dynamics of the neurological status of newborns, the "Scoring of the severity of perinatal encephalopathy", developed at the Research Institute of Pediatrics of the Russian Academy of Medical Sciences by A.A. Stepanov (1998), was used. It is based on an integrated assessment of motor activity, innate reflexes and behavioral reactions of newborns, taking into account the quantitative characteristics of each newborn. The data obtained indicate that the duration of hypoxia, the state of health, the course of pregnancy and childbirth in the mother determine the severity of perinatal brain damage and affect the severity of clinical and neurological patterns. Combined perinatal hypoxia leads to deeper brain disorders and contributes to the formation of two or more syndromes in one child.*

**Keywords:** *dynamics, clinic, neurology, index, newborn, perinatal, hypoxia.*

**Actuality.** The development of perinatal lesions of the central nervous system is based on numerous factors that affect the condition of the fetus during pregnancy and childbirth and the newborn in the first days of his life, causing the possibility of developing various diseases both in the first year of a child's life and at an older age. [2,3,4,6] Intrauterine intoxications and infections, in addition to clearly defined, specific metabolic and infectious disorders, also have a nonspecific damaging effect on the fetal nervous system, leading to impaired uteroplacental blood flow and the development of chronic intrauterine hypoxia. In turn, in traumatic childbirth, in addition to direct mechanical damage to brain structures, situations can arise that lead to disruption of vertebrobasilar blood flow, the development and intensification of cerebral ischemia and hypoxia. [1,2, 3,5,6,12,13 ]

In newborns with hypoxic-ischemic encephalopathy, a state of moderate severity was observed at birth and subsequent violations of the period of early adaptation. Hypoxic-ischemic encephalopathy in newborns was manifested by excitation syndrome (53.4%) and CNS depression syndrome (46.6%). Newborns with hypoxic-ischemic encephalopathy are characterized by hypoxic damage to the cardiovascular system, which was confirmed by persistent tachycardia, arrhythmia, signs of hypertrophy, and moderate changes in the ventricular myocardium. Neurosonography in infants with hypoxic-ischemic encephalopathy often reveals signs of immaturity, subependymal cysts and choroid plexus cysts, periventricular hemorrhages in the lysis stage. [10,12,13] Neurological disorders are detected in 25% of surviving full-term infants with severe HIE. [3,4,8] For the diagnosis of hypoxic-ischemic encephalopathy (HIE) in newborns,

clinical characteristics are used, based on the use of standard neurological scales, which make it possible to distinguish between normal and deviant neurological status, the prognostic assessment of which is about 15%. At the same time, the involvement of anemic syndrome in the severity of perinatal CNS damage remains poorly understood [7,12,13].

Thus, with an unfavorable course of the ante- and intranatal periods, hypoxia acts as a universal etiopathogenetic factor.

Purpose of the study. To analyze the dynamics of clinical and neurological parameters of newborns depending on the duration of PG.

**Materials and methods.** The work was carried out on the basis of the State Children's Clinical Hospital No. 1 in Tashkent. The studies were carried out in 52 newborns. Depending on the course, clinic and CNS lesions, according to the duration and nature of hypoxia, newborns were divided into 2 groups.

Group 1, who underwent acute asphyxia and Group 2, combined perinatal hypoxia. When examining children, the somatic and neurological status was assessed daily throughout the entire period of inpatient treatment. For an objective quantitative assessment of the dynamics of the neurological status of newborns, the "Scoring of the severity of perinatal encephalopathy" was used, developed at the Research Institute of Pediatrics of the Russian Academy of Medical Sciences A.A. Stepanov (1998). [1] It is based on an integrated assessment of motor activity, innate reflexes and behavioral reactions of newborns, taking into account the quantitative characteristics of each newborn. The coefficient k was calculated individually at admission, after 5-8 days of treatment and before discharge (satisfactory condition at  $k < 0.5$ ; moderate  $0.6 < k < 1.0$ ; severe at  $k > 1.0$ ).

Clinical analyzes of blood, urine, feces, bacteriological studies were carried out weekly according to the indications of X-ray examination.

**Results obtained.** The study of the health status of mothers, children examined by us showing that mothers whose children had suffered acute asphyxia were more likely to have anemia (46.1%) and pathology of the birth act (30.7%), and in mothers of children who had combined PH, in anamnesis, preeclampsia (57.6%), anemia (57.6%), acute respiratory viral infections (73%), infections of the genitourinary sphere (57.6%), pathological births (46.1%), FPI (46.1%).

In the process of monitoring the children of the 1st group, it was revealed that acute asphyxia caused more neuro-reflex excitability (75%). At the same time, in newborns, the clinic was manifested by general anxiety, spontaneous large-scale nystagmus, increased muscle tone of the flexors, high knee reflexes, increased proboscis reflex, Babinsky, Moreau reflexes. Against this background, there was a decrease in protective, search and sucking reflexes, as well as support reflexes, automatic walking and crawling. The condition of these children upon admission to the neonatal pathology department was assessed as  $k > 1.0$

**Clinical and neurological condition in newborns with perinatal hypoxia ( $M \pm m$ )**

*Table №1*

<b>Index</b>	<b>1 group (n=26)</b>	<b>2 group (n=26)</b>
Scream	6,5±0,5	12±1,3
Unconditioned, tendon, behavioral reflexes	10,3±0,5	16±1,3
Cyanosis	10±0,6	15,3±1,3
Suction	5,8±0,2	12±1,3



Regurgitation	6,3±0,4	9,2±1,0
Tachycardia	6,5±0,5	9,2±3,6
Bradycardia	5,2±0,4	10,6±1,3
Violation of thermoregulation	5,6±0,4	8,9±1,1
Bed days	10,3±0,5	16±0,8

In newborns who underwent combined PH, hypertensive-hydrocephalic syndrome was more often noted (30.7%), signs of CNS depression were detected from birth, which, as ventriculomegaly developed, gradually transformed into symptoms of hypertension. Newborns of this group had CNS depression syndrome (15.3%) on the first day of life. The clinic was manifested by a state of general depression, intermittent convergent or divergent strabismus, medium- and large-scale horizontal and vertical nystagmus, muscle hypotension, hyporeflexia, and inhibition of all reflexes. On examination, attention is drawn to an increase in flexor muscle tone, a sharp weakening, soreness in children, a monotonous cry, pronounced marbling of the skin, diffuse cyanosis at rest, a weak sucking reflex or lack thereof, regurgitation with a fountain, vomiting, persistence of oculomotor and autonomic disorders. These newborns are characterized by frequent large-scale tremor of the limbs, lability of the pulse and respiration. Their condition upon admission to the intensive care unit (ICU) was regarded as very serious ( $k > 1.5$ ).

The clinical characteristics of children of the 1st group shows that the neonatal period may be complicated by bronchopneumonia in 31.4%, omphalitis in 11.5%, anemia in 19.2% of newborns.

Newborns who underwent combined PG developed generalized forms of infection. At the same time, sepsis (34.6%), bronchopneumonia (75%), omphalitis (23%), anemia (80.7%), nonspecific enterocolitis (NEC) (34.6%) were observed, in 2 children - a condition from the first minutes of life was assessed as very difficult, against the background of artificial lung ventilation (ALV), hyperalized tonic convulsions in the form of decerebrate rigidity were noted, resulting in death.

#### **Laboratory tests in children with perinatal hypoxia**

*Table №2*

Index	Groups		
	1 group (n=26)	2 group (n=26)	p
Hemoglobin<100: on admission	144±8,2	148±10,2	0>0,5
After 5-8 days	105±4,3	89,9±4,8	0>0,5
Leukocytes: *10 <sup>9</sup> on admission	12,4±0,6	16,0±0,7	0<0,1
After 5-8 days	9,7±0,6	12,1±0,7	0<0,1

The examination revealed a decrease in hemoglobin, because in case of purulent-septic diseases, the blood thickens as a result of the ingress of the liquid part of the blood into the tissues. In this case, when the total (absolute) number of red blood cells decreases, the relative number increases. Therefore, the relative content of hemoglobin in the amount of analyzed blood on the days of arrival of children was high.

During neurological examination of newborns, ultrasound examination of the brain in real time. Conducted on the sagittal and frontal surfaces of the brain.

The study of the neurological status in newborns who underwent acute asphyxia according to brain ultrasound data was characterized by increased echo density in the periventricular zones, ventriculodilatation of the lateral ventricles, and for newborns who underwent combined perinatal hypoxia, an increase in overall echogenicity, narrowing of the ventricles, cerebral edema.

The neurosonographic revealed changes correlated with the severity of perinatal lesions of the central nervous system (CNS) and the severity of infectious inflammatory diseases (IID) in them.

The data obtained indicate that the duration of hypoxia, the state of health, the course of pregnancy and childbirth in the mother determine the severity of perinatal brain damage and affect the severity of clinical and neurological patterns. Combined perinatal hypoxia leads to deeper brain disorders and contributes to the formation of two or more syndromes in one child.

#### **Conclusions:**

1. The duration and nature of the transferred perinatal hypoxia determine the severity of perinatal brain damage, affect the severity of neurological symptoms in newborns.
2. For a quantitative assessment of the dynamics of the clinical and neurological status, it is recommended to use a scoring test for newborns who have undergone PH.
3. Newborns who have undergone combined hypoxia should be included in the high-risk group for the development of IVZ.

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## INFLUENCE OF MENTAL LOAD ON NEUROVEGETATIVE REGULATION OF HEART RHYTHM IN YOUNG CHESS PLAYERS

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**Abstract.** *Preservation and strengthening of the health of children and adolescents is one of the most essential tasks of the State in the context of the transition to new standards of education in general education schools, connected with the introduction of innovative pedagogical technologies, increasing the level of information component and intensification of mental loads (additional classes, sections, circles), computerization of the educational process [2, 3, 8]. The beginning of learning at school is one of the most stressful periods of life activity when the mechanisms of brain support for cognitive activity are formed during a sharp change of social conditions [1, 2].*

**Keywords:** *neurovegetative regulation, stressogenic period, neurodynamic indices, spectral rhythm, supragmentary and segmentary level.*

Data on the physical development of children studying software innovative programs are diverse: both deterioration of indicators [5] and absence of adverse changes of indicators [6], or prevalence of average values of indicators of physical development among the surveyed population of students [4] were revealed. A rather close connection between the physical development indicators, somatotype and functional state of the cardiovascular system has been established [3, 8, 9]. An important role in the adaptation of a child's organism to mental loads is played by the peculiarities of neurovegetative regulation of cardiovascular system activity, which are the indicators of adaptive processes of the organism as a whole [6, 7]. Statistical characteristics of the cardiac rhythm of children 7-9 years old are rather stable individual indicators and can serve for evaluation of corrective actions [3, 5].

Intellectual loadings in systematic chess practice contribute to the increase of cognitive needs, independence of thinking, and the overall level of development of children. The researches spent so far are devoted to studying of psychological or pedagogical aspects of influence of the raised intellectual loadings at software lessons of the program of chess general education [3, 5, 7, 8]; however results of numerous medical and pedagogical examinations of last years testify to a lousy situation with health of schoolboys, and growth of various functional disorders and chronic diseases among schoolboys is connected more often with educational process and introduction of innovative programs of training [7, 8].

**Objective of the study:** To study the data of comparative analysis of peculiarities of neuroinhibitory regulation of heart rhythm in a state of rest and at the sample with mental load.

**Materials and methods of the study:** the study is based on data from a survey of 87 children aged 6 to 11 years, engaged in professional chess, including 58 boys (66.7%) and 29 girls (33.3%), the average age of 10.1±0.2 years. Among the children of chess players, 43 had at least 2 years of experience in chess, and 44 had more than 3 years of experience. The average length of

experience in sport is  $3.1 \pm 0.01$  years. All children chess players once a year pass medical examination. These children have made the primary group.

The comparison group consisted of 85 children from 2nd and 4th grades of Tashkent secondary schools who did not participate in sports sections. The average age of these children was  $9.8 \pm 0.3$  years, 501.6 per cent (43 children) were boys and 49.4 per cent (42 children) were girls.

Comparative analysis was carried out among the children surveyed, including a study of neurodynamic indicators and the activity of various levels of neurovegetative regulation of the heart's rhythm at rest and at tests with mental strain. The "learning" mental load (ML) for second-graders was to solve problems on addition and subtraction, for fourth-graders on multiplication and division).

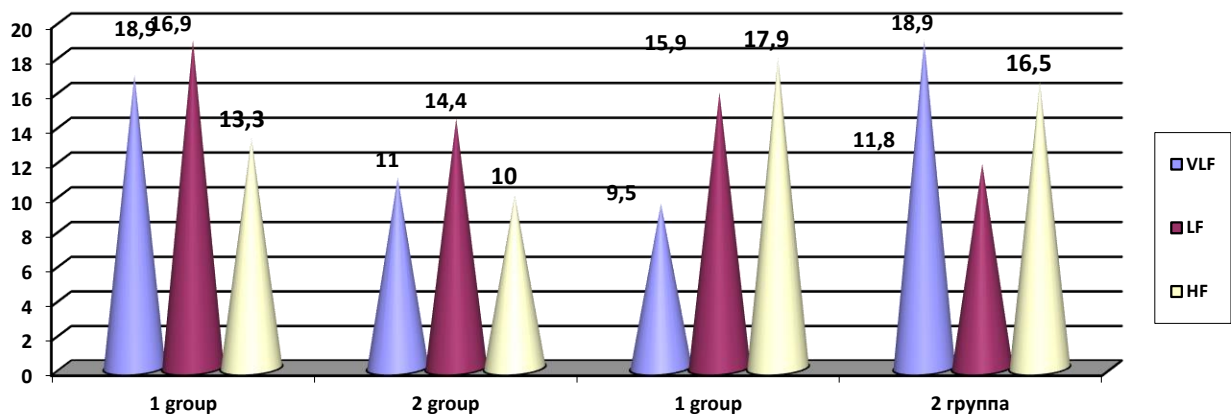
The method of cardiointervalography of R.M. Baevskiy's software with the help of hardware-software complex "Ritm" (HSC "Ritm," Republic of Uzbekistan, firm "ALEN") was used for the research [1]. The examination was conducted in the morning hours, in the position of the test subjects sitting down. Heart rate (HR), activity indices of sympathetic and parasympathetic links of ANS were registered. We calculated the fashion amplitude (A<sub>mon</sub>) - a conventional indicator of activity of the sympathetic regulatory link; the difference between the maximum and minimum values of cardiointervals (M<sub>x</sub>D<sub>Mn</sub>) characterizing the maximum amplitude of regulatory influences; the RMSSD indicator showing the activity of the parasympathetic regulatory link; pNN50 - an indicator of the degree of prevalence of the parasympathetic regulatory link over the sympathetic one. The degree of activity of the autonomous and central regulatory circuits was estimated by the values of CC1 and CC0, respectively. The degree of prevalence of activity of the central regulation mechanisms over the autonomous ones reflected the stress index (voltage index of regulatory systems, SI), the degree of centralization of heart rhythm control - the index of centralization (1C). The contribution of specific regulation mechanisms (parasympathetic - HF, sympathetic - VLF and vasomotor center - LF) to the total activity level of regulatory systems (TR) was calculated from the power of their spectrum in %.

Four main levels were adopted to assess the reliability of statistical indicators: high -  $p < 0.001$ , average -  $p < 0.010$ , low (marginal) -  $p < 0.050$ , insignificant (unreliable) -  $p > 0.050$ .

**Research results:** when studying the peculiarities of neurovegetative regulation of heart rhythm as an integral indicator of adaptive processes, no intergroup and gender differences in the initial values of the total power of the spectrum were revealed in the 2nd-grade pupils. In boys of the main group, there was an increase in the indices of the supra-segmentary level of heart rhythm regulation in comparison with the indices of girls of the comparison group.

Conducting a sample with mental load resulted in an increase in the activity of the segmental level of heart rhythm regulation - both sympathetic and parasympathetic parts of the autonomous nervous system. At the same time, the activity of supra-segmentary rhythm regulation was also increased in girls, which was documented by the increase in HF-vibration capacity.

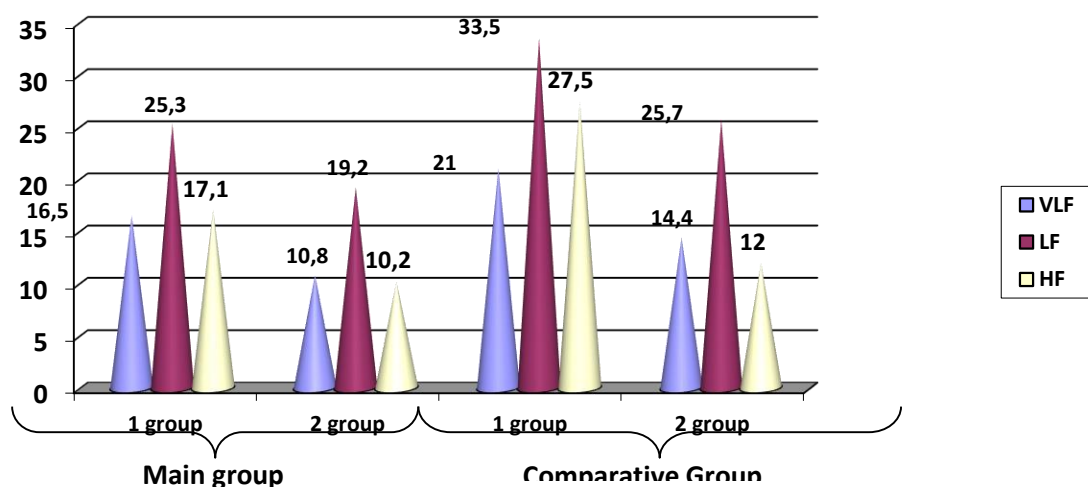
Pupils of the 4th grade had an insignificant predominance of the suprimental level of MS regulation in the main group, while the segmentary level - in the comparison group (Fig. 1). In comparison with the 2nd-graders' indicators, an increase in the significance of the supra-segmentary level of heart rhythm regulation in girls of the main group and the comparison group by 25% on average ( $p < 0.05$ ) can be noted.



**Fig. 1. Heart spectral rhythm readings as a function of age**

In response to the mental load, the activity of both supra-segmentary and segmental levels of PC regulation ( $p < 0.05$ ) increased, with a higher proportion of LF and VLF fluctuations in the structure of the total spectrum power. In female chess players, the response was the predominant growth of the influence of the sympathetic department ( $p < 0.01$ ) and its prevalence in the structure of the total spectrum power. In the control group, the expressed sympathicotonic reaction with increase of absolute (in 2,1-2,6 times,  $p < 0,05-0,01$ ) and relative power of low-frequency oscillations (more than in 1,8 times,  $p < 0,01$ ; the share of VLF-vibrations is more than 43%) was revealed, that characterizes excessive activation of sympathetic-adrenal system on the influence of stress factors.

The influence of "chess" load at chess players of 2nd classes caused more pronounced activation of supra-segmentary and segmentary levels of regulation in comparison with "training" load (relative power of VLF-vibrations is more than 30%, LF-vibrations - more than 39%), at the same time the tendency to decrease the power and share of HF-vibrations was established: from  $24.8 \pm 1.9\%$  to  $15.3 \pm 1.3\%$  ( $p < 0.01$ ) for boys (at "study" load -  $29.2 \pm 2.20\%$ ,  $p < 0.001$ ) and from  $36.4 \pm 2.2\%$  to  $20.0 \pm 1.4\%$  ( $p < 0.01$ ) for girls (at "study" load -  $31.3 \pm 2.2\%$ ,  $p < 0.001$ ) (Figure 2).



**Fig. 2. The age-related spectral rhythm of the heart (mental capacity)**

Adaptive reactions to the "chess" load in chess players of the 4th grade were characterized by the preferential activation of the supra-segmentary level of MS regulation with moderate sympathicotonic reaction: the share of LF-vibrations was 35% in girls and 26% in boys. The relative power of VLF-vibrations in female chess players of the 4th grade after the chess problem was  $37.9 \pm 1.4\%$  ( $26.8 \pm 1.2\%$  after the "learning" load,  $p < 0.001$ ) and  $42.2 \pm 1.7\%$  (against  $38.6 \pm 1.7\%$ ,  $p < 0.05$ ) in boys, which reflects the most significant contribution of the central supra-segmentary structures of neurovegetative regulation to the mental performance. The total LF-vibration power values were 35% lower than those of chess players of the 2nd grade ( $p < 0.01$ ).

Thus, spectral characteristics of heart rhythm are used as markers of the degree of tension of mechanisms of adaptation of an organism to the influence of environmental factors (R.M. Baevsky et al., 2000).

When assessing the results of the Slow Wave Variability spectral analysis of children at the age of 7-8 years old, the initial HR value as well as the total spectrum power did not have reliable intergroup differences. The following gender differences were revealed: the value of HF oscillations characterizing the influence of segmental level (parasympathetic department) of vegetative regulation on SWs was the highest in the main and the comparison group of girls compared to boys. A calculation of the vagosympathetic index (LF/HF) in boys at the given age section eutonia was revealed (in the main group  $1.10 \pm 0.20$ , in the comparison group -  $1.05 \pm 0.1b$  units), in girls it was  $0.82 \pm 0.18$  and  $0.53 \pm 0.24$  units, respectively. According to the literature, in the specified age period there is an increase in parasympathictonia (D.A.Dmitriev et al., 2004); judging by the results presented by us, it occurs in girls at an earlier stage of development.

#### **Conclusions:**

1. In ontogenesis in children of both sexes from 8 to 11 years of age, there is an increase in the activity of supra-segmentary and segmentary level of heart rhythm regulation and inotropic function and tone of large vessels. In 11-year-old girls, as compared to boys, the activity of supra-segmentary level of regulation of Chrono- and inotropic heart function at rest is higher; the increasing significance of parasympathicotonic effects on chrono- and inotropic function at mental load in girls was revealed at earlier age (8-9 years) as compared to boys (11 years).

2. At 11 years of age, irrespective of sex and curriculum, there is greater stability in the spectral characteristics of the average dynamic pressure in response to mental load, compared with 8-year-old children.

3. Adaptation to additional intellectual load (chess general education program for 3 years) leads to differences in response to mental load: Unidirectional changes in indicators of slow-wave variability of heart rhythm and stroke volume - increase of importance of humoral-metabolic factors of regulation (increase of relative power of very low-frequency fluctuations of rhythm up to 25-37%) and activity of sympathetic department (increase of absolute power of LF fluctuations up to 30%,  $p < 0,05$ ); in the comparison group the response was accompanied by a pronounced sympathicotonic reaction with a significant increase in absolute power of low-frequency heart rhythm oscillations (more than 2 times,  $p < 0.01$ ), relative power of LF oscillations of average dynamic pressure (up to 57%) and insignificant shifts of spectral characteristics of the shock volume.

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## CLINICAL FEATURES OF CHRONIC GASTRODUODENITIS IN SCHOOLCHILDREN

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**Abstract.** *Gastroenterological pathology, including chronic diseases of the upper digestive tract in children, represents a serious medical and social problem due to its significant prevalence, course characteristics and high risk of early disability. Numerous studies examining the prevalence of chronic digestive diseases in various regions of the world indicate their high level. In Uzbekistan, there are a few studies reflecting the results of epidemiological studies among children with diseases of the gastrointestinal tract [1,2]. In the last decade, there has been no trend towards a decrease in the prevalence of pathology of the upper digestive tract in children; on the contrary, there has been a steady increase. According to various authors, its frequency has increased 2–2.5 times in recent years, which is associated both with a true increase in the number of patients with inflammatory lesions of the upper digestive tract, and with the use of new diagnostic techniques[3]. Features of the course of chronic gastroduodenitis in childhood are associated with the presence of critical periods affecting the formation of the gastrointestinal tract due to uneven growth and systemic organ disintegration against the background of intense morpho functional changes, immaturity of enzyme systems, tension in metabolic processes and restructuring of the neuroendocrine system of the body [4,5].*

**Keywords:** *epidemiological, chronic digestive disease, gastroduodenitis, esophagogastroduodenoscopy, hyperemia*

**The purpose of the work-** is to study the features of the clinical course of chronic gastroduodenitis in schoolchildren.

**Materials and methods.** 132 children aged 7 to 16 years were examined, including 72 (54.6%) boys and 60 (45.4%) girls. The research was carried out at school No. 235 in the Yunusabad district of Tashkent. An analysis of the life history and illness was carried out by questioning schoolchildren and their mothers, an analysis of the history of the child's development according to F112, an assessment of the current somatic status and endoscopy.

**Results and discussion.** In all examined patients, the diagnosis of chronic gastroduodenitis was confirmed endoscopically. We conducted an EGD study on 30 schoolchildren. Clinically, these children were diagnosed with gastroduodenitis. Esophagogastroduodenoscopy was performed under local anesthesia using a flexible fiber endoscope "Olympus CV 260" (Japan). Based on our endoscopic studies, it was noted that the most common gastritis in children was gastritis with predominant damage to the antrum of the stomach (32.1%) and widespread gastritis (24.3%), while isolated damage to the body and vault of the stomach was present only 18,6%. In 1 (3.3%) examined patient, changes were noted in the esophagus: hyperemia of the mucous membrane in the terminal section with isolated erosions. In 7 (25%) children, changes were observed in the bulb of the 12th intestine. The mucous membrane of the bulb is swollen, hyperemic.

The study found that the peak incidence of gastroduodenitis occurs in the age category of 14-16 years – 61.2%; at 11-13 years old – 23.3%; 7-10 years – 15.5%. An analysis of complaints

shows that children of the younger age group more often complained of abdominal pain, children aged 11-13 years - of dyspeptic symptoms, 14-16 years - of dyspeptic symptoms and astheno-vegetative complaints.

Pain syndrome of varying intensity was observed in 100% of cases, in the form of attacks lasting 5-10 minutes: mild - 8.3%, moderate - 64.3%, severe - 27.4%. A connection with food intake was noted in 51 (38.63%) children, and in 37 (28.1%) children it was not associated with food intake; in 44 (33.3%) children, Moynihan's rhythm of pain was noted; pain - eating - reducing pain. We regarded the last group of patients as a risk group for peptic ulcer disease. Seasonality of the pain syndrome (spring-autumn) was detected in 71 (53.8%), which was due to the weather lability of patients. In the children examined, the nature and localization of pain was varied. In 38.6% of them, pain was localized in the pyloroduodenal zone and radiating to the right hypochondrium.

***Comparative characteristics of the localization of pain in the examined children.***

Localization of pain	7-10 years		11-13years		14-16		TOTAL
	abs	%	abs	%			
Epigastric region	12	9,01	15	11,4	18	13,7	45(34,1%)
Right hypochondrium	4	3,02	6	4,54	11	8,3	21 (15,9%)
Left hypochondrium	4	3,01	4	3,01	7	5,28	15(11,3%)
Pyloroduodenal region	13	9,8	17	12,9	21	15,9	51(38,6%)

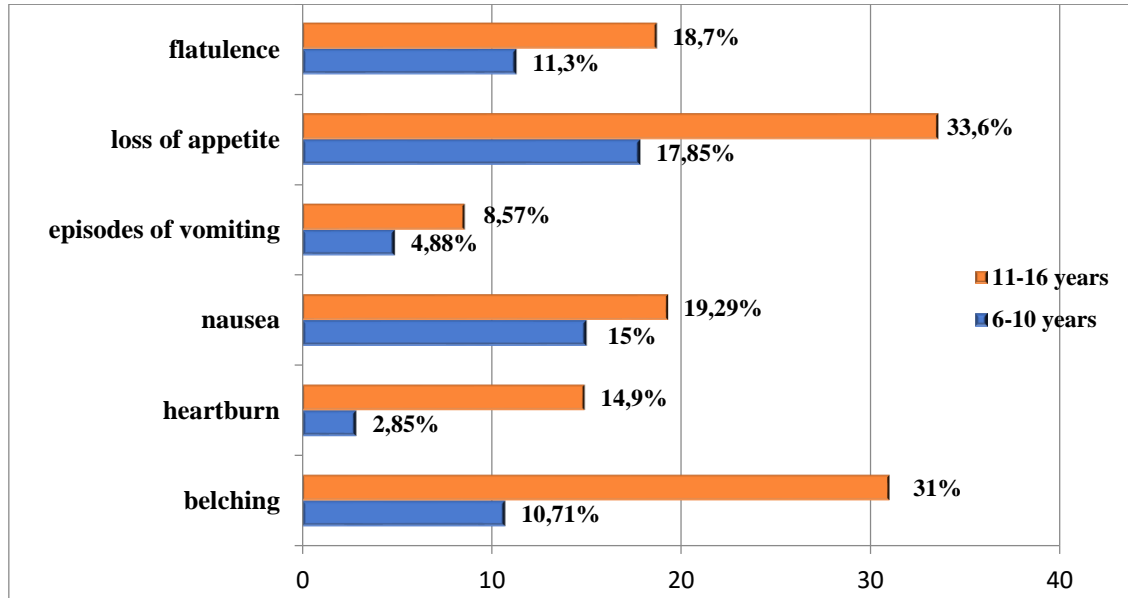
Children noted irradiation of pain to the right hypochondrium, regardless of the topography of the inflammatory process in the coolant. Most likely this was due to a concomitant violation of the motor-evacuation function of the biliary tract. The pain in most children was aching in nature (69.5%). The main factor that aggravated the pain was errors in diet (fatty foods, coffee, carbonated drinks with dyes, cakes, ice cream, fried foods), and less often physical activity. The pain subsided after taking enzymes and antacids. The duration of pain averaged 4.8 months, which most often determined the absence of indications for esophagogastroduodenoscopy. Only in 30 schoolchildren (2,14%) the duration of the pain syndrome was 1 year.

Dyspeptic syndrome was observed more often in adolescents (88.6%) and was manifested by heartburn (28.03%) and belching (60.6%). Appetite disturbances were observed in 72 (51.4%) of the examined children. The tongue was covered with a white or yellowish coating in 52 (37.14%) children. Also, 25 (18%) children complained of bad breath. 56% had a history of chronic constipation. Every other day in 50 (35.71%) children, stool passes once every 2-3 days in 10 (7.14%) children, in 15 (10.71%) cases of loose stool alternate with constipation and 5 (3.6%) noted that they quite often experience diarrhea and diarrhea. 57 (40.71%) children complained of flatulence. 86% of children had a high and moderate degree of physical activity during the day. Analysis of the diet and quality of nutrition shows that 58.3% of children ate regularly, 41.7% of children had irregular nutrition. 73 (55.3%) children had a balanced diet, and 49 (44.7%) children had an unbalanced diet.

Manifestations of polyhypovitaminosis were noted in 84 (61.4%) children. Clinical signs of polyhypovitaminosis were: pallor and dry skin, angular stomatitis, cheilitis, increased fragility

of nails and hair, transverse and longitudinal striations of nails, general weakness, and fatigue. Asthenovegetative syndrome was more often observed in schoolchildren aged 11-16 years and was manifested by increased fatigue in 36 (45%), headaches in 22 (27.5%), irritability, emotional lability in 46 (57.5%) children. At the same time, symptoms of autonomic dysfunction were determined in 18 (22.5%) children aged 11 to 16 years.

***Comparative characteristics of dyspeptic manifestations in children.***



The study of the morpho-functional features of changes in the mucous membrane of the stomach and duodenum in children was carried out using endoscopy. Endoscopic signs of damage to the mucous membrane were the severity of hyperemia and the area of its distribution, the condition and nature of the gastric folds and ridges, the amount and transparency of mucus accumulating in the mucous lake, the presence of various impurities in it, the appearance of hemorrhages, erosions, ulcers, bulges and other formations, the duration of their manifestation, the state of physiological sphincters and the activity of peristalsis.

When performing the study, first of all, the localization of changes was determined: gastritis of the body, antrum, pangastritis. The presence of edema, hyperemia, vulnerability of the mucous membrane, hyperplasia and atrophy of the folds, the presence of erosions, the visibility of the vascular pattern, and submucosal hemorrhages were taken into account.

We conducted an esophagogastroduodenoscopy study on 30 schoolchildren. Clinically, these children were diagnosed with gastroduodenitis. Esophagogastroduodenoscopy was performed under local anesthesia using a flexible fiber endoscope “Olympus CV 260” (Japan). Based on our endoscopic studies, it was noted that the most common gastritis in children was gastritis with predominant damage to the antrum of the stomach (32.1%) and widespread gastritis (24.3%), while isolated damage to the body and vault of the stomach was present only 18.6%. However, it is extremely difficult to clearly limit lesions to only the antrum or only the fundus. When examining the mucosa, the border of inflammation never looks like a clear border strip, but smoothly passes from the zone of inflammation to areas of unchanged mucous membrane. In 1 (3.3%) examined patient, changes were noted in the esophagus: hyperemia of the mucous membrane in the terminal section with isolated erosions. In 5 (25%) children, changes are observed in the bulb of the 12th intestine. The mucous membrane of the bulb is swollen, hyperemic.

Based on the studies conducted, the structure of gastroduodenal pathology in the examined schoolchildren was established. Our data showed that functional disorders of the gastrointestinal

tract predominate in children of primary school age. Functional disorders can be considered as a special case of dysfunction of an organ that is not associated with its organic damage. When dividing children with chronic diseases of the digestive tract into age groups, it was noted that the largest group consists of adolescents aged 11-16 years (57.2%). In children 6-10 years old, there is a high incidence of functional gastric disorders (FSD) - 42.8%. The structure of gastroduodenal pathology in the age aspect has been established; it has been shown that in primary school children, gastroduodenal diseases predominate, and with age they transform into organic pathology. If children have dull, aching pain, localized mainly in the epigastric region and occurring a short time after eating, often accompanied by belching of air, eaten food or sour, isolated damage to the stomach can be assumed. However, similar clinical symptoms could be detected with damage to organs located near the stomach, or with their combined lesions. For a final conclusion about the condition of the gastric mucosa, an endoscopy is necessary.

The structure of gastroduodenal pathology in the age aspect has been established; it has been shown that in primary school children, gastroduodenal diseases predominate, and with age they transform into organic pathology. Prevention of all variants of gastroduodenal pathology involves proper organization of diet, work and rest, timely identification of concomitant diseases, especially the digestive organs, and adequate treatment of patients. The main task is not only the effective treatment of diseases of the gastroduodenal organs, but above all the timely identification of risk groups for this pathology and the prevention of the development of the disease.

### **Conclusions**

1. During the study, it was found that in the structure of gastroduodenal pathology in primary schoolchildren, functional stomach disorders prevail - 42.8%; in high school, the proportion of patients with chronic pathology increases - 57.2%.

2. The clinical picture of chronic gastroduodenitis is characterized by a predominance of aching nature with predominant localization in the peri-umbilical and epigastric areas. Dyspeptic syndrome was observed more often in adolescents in the form of nausea, belching, and loss of appetite.

3. Chronic gastroduodenitis is extremely rare and occurs as an isolated disease. The entire gastrointestinal tract is involved in the pathological process with the manifestation of biliary dysfunctions, reactive changes in the pancreas, and impaired motility of the digestive tract. Early diagnosis of this disease is necessary, followed by preventive measures to prevent the development of combined pathology of various parts of the gastrointestinal tract.

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# MORPHOFUNCTIONAL CHANGES IN THE BREAST: INSIGHTS FROM CLINICAL, IMAGING, AND HISTOPATHOLOGICAL PERSPECTIVES FOLLOWING CHEMOTHERAPY AND RADIATION THERAPY IN WOMEN

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**Abstract.** *This review article delves into the intricate morphofunctional changes observed in the breast tissue of women after undergoing chemotherapy and radiation therapy. The study employs a comprehensive approach, integrating clinical assessments, advanced imaging techniques, and rigorous histopathological examinations to unravel the dynamic interplay between cellular adaptations and tissue architecture. Objective: This review aims to comprehensively examine the morphofunctional changes in the breast following chemotherapy and radiation therapy in women undergoing breast cancer treatment.*

**Keywords:** *Adjuvant therapy, early-stage breast cancer, chemotherapy, endocrine therapy, targeted therapy, predictive biomarkers, Post-mastectomy radiotherapy, automated breast density, breast carcinoma regression, breast density, mammography, SECRAB trial.*

**The purpose** of this review is to provide a comprehensive exploration of morphofunctional changes in the breast subsequent to chemotherapy and radiation therapy in women with breast cancer.

**Learning materials and Methods:** The methodology employed in this review involves a comprehensive examination of peer-reviewed studies and relevant literature to synthesize insights into morphofunctional changes in the breast post-chemotherapy and radiation therapy. A systematic search was conducted across electronic databases, including PubMed, Web of Science, and relevant medical databases. Keywords such as "breast cancer," "chemotherapy," "radiation therapy," and "morphofunctional changes" were used to identify pertinent studies.

**Learning results:** The study conducted by Abram Recht, M.D., and team investigates the optimal sequencing of chemotherapy and radiation therapy in early-stage breast cancer patients undergoing breast-conserving therapy. In this randomized trial involving 244 patients at substantial risk for systemic metastases, the researchers explore the impact of a 12-week course of chemotherapy administered before or after radiation therapy. The findings reveal notable differences in the five-year actuarial rates of cancer recurrence and distant metastases between the two groups. Specifically, the group receiving chemotherapy before radiation therapy exhibits lower rates, suggesting a potential preference for this sequence in patients at substantial risk for systemic metastases. This study not only contributes valuable insights into refining breast cancer treatment strategies but also emphasizes the need to tailor treatment sequences for optimal efficacy. The work holds significance for clinicians and researchers alike, adding to the ongoing discourse on breast cancer treatment and providing critical information for enhancing patient outcomes. [ 1 ]

In a rare and intriguing case, Reza Matloob, MD, and colleagues present an unusual instance of partial breast necrosis following chemotherapy for recurrent ovarian cancer. Breast

necrosis is a seldom-seen occurrence owing to the breast's rich blood supply. This case, possibly the first of its kind, sheds light on breast necrosis as a systemic complication of chemotherapy, expanding our understanding of potential side effects. The 54-year-old patient, with a history of ovarian cancer and prior chemotherapy, developed breast discoloration and pain after initiating the BEP chemotherapy regimen. This led to partial breast necrosis, a condition where necrotic tissue eventually sloughed off after conservative management, followed by surgical repair.

The authors meticulously explore potential causes of breast necrosis, delving into existing literature on calciphylaxis, cardiac bypass surgery, warfarin-induced necrosis, and other reported cases. They highlight the scarcity of documented breast necrosis cases post-chemotherapy, emphasizing the need for heightened awareness among physicians. The absence of such reports for the BEP chemotherapy protocol adds a unique dimension to this study. This comprehensive case report not only contributes to the understanding of rare chemotherapy-related complications but also underscores the importance of recognizing and managing breast necrosis promptly. The authors conclude by advocating for increased awareness of potential causes of breast necrosis to facilitate timely intervention and appropriate management strategies. [2]

Another study led by Gabriel N. Hortobagyi, MD, the authors tackle the intricate management of Stage III Primary Breast Cancer employing a multimodal strategy involving primary chemotherapy, surgery, and radiation therapy. Conducted from March 1974 to March 1985, the research encompasses 191 eligible patients, distinguishing between Stage IIIA and Stage IIIB based on tumor characteristics, with the latter presenting challenges due to skin involvement, chest wall fixation, or node engagement. Highlighting the historical struggles in treating Stage III breast cancer, the authors note grim 5-year survival rates ranging from 10% to 45%. Traditionally, radical mastectomy and radiation therapy were the go-to treatments. The study pioneers a new approach by integrating primary chemotherapy to enhance outcomes. Results exhibit an impressive 87.4% overall response rate to the initial FAC chemotherapy cycles, rendering 96.5% of patient's disease-free post-local treatment. The study explores the correlation between clinical and radiographic remission and the absence of residual disease, emphasizing the efficacy of the multimodal protocol. Survival analysis reveals a median disease-free survival of 30 months for Stage IIIB and an encouraging 71% 5-year disease-free survival for Stage IIIA. Overall survival projections stand at 84% and 56% at 5 and 10 years for Stage IIIA, while Stage IIIB demonstrates a median survival of 48 months with 44% and 26% projected survival at 5 and 10 years. Examining additional factors such as age, BCG immunotherapy, and treatment program duration, the study provides a comprehensive evaluation of the multimodal approach's efficacy. Notably, despite the treatment's complexity, the authors report no significant increase in surgical complications. In summary, this study pioneers Stage III Primary Breast Cancer management, demonstrating the potential benefits of combining primary chemotherapy, surgery, and radiation therapy. The results underscore the significance of personalized, comprehensive strategies in improving outcomes for advanced breast cancer patients. [ 3 ]

The study led by Erika M.S. Negrão and team, the focus is on the impact of breast cancer phenotype on Magnetic Resonance Imaging (MRI) response evaluation following neoadjuvant chemotherapy (NAC). Neoadjuvant chemotherapy is standard for locally advanced breast cancer, offering benefits like increased eligibility for conservative surgical treatment. The research spans October 2014 to July 2017, involving 219 patients diagnosed with invasive breast carcinoma. MRI plays a crucial role in assessing tumor extent and treatment response, allowing classification of

breast cancer phenotypes. Despite MRI's sensitivity in evaluating tumor response after NAC, discrepancies with surgical pathology exist, with potential implications for the extent of surgery required. Pathologic complete response (pCR) after NAC is linked to better prognosis, particularly in aggressive subtypes. While breast MRI is generally accurate in assessing treatment response, factors influencing its accuracy, especially in detecting pCR, are not extensively explored. The study employs high-field MRI with contrast agent administration and thorough imaging protocols. Breast lesions are classified using BI-RADS® lexicon, and post-NAC MRI is compared with pathological outcomes. Results reveal an overall MRI accuracy of 80% in diagnosing pCR, with varying sensitivity and specificity across molecular subtypes. Luminal B/Her-2 negative subtype shows higher agreement rates among observers. Statistical analysis identifies a significant association between discordance rates and the presence of non-mass enhancement (NME) in pre-treatment MRI. Multivariate analysis confirms the influence of NME on MRI performance after NAC. [ 4 ]

The article by Funmilola A. Fisusia, and Emmanuel O. Akala explores the significance of molecular classifications, such as Basal-like, Luminal-A, Luminal-B, HER2-positive, and normal-like tumors, in guiding therapeutic approaches. The review emphasizes the impact of intrinsic subtypes on prognosis, highlighting the aggressive nature of HER2-positive and basal-like subtypes. Adjuvant therapies, including endocrine therapy and immunotherapy (e.g., trastuzumab), have shown promising results in improving survival rates for specific BC subtypes. The focus then shifts to the role of combination therapy in BC management, encompassing neoadjuvant chemotherapy, surgery, radiotherapy, and adjuvant chemotherapy/endocrine therapy. Neoadjuvant therapy, particularly in early-stage BC, aims to make tumors operable and assess treatment response. The article delves into historical perspectives on combination chemotherapy, emphasizing its advantages in terms of efficacy, dose reduction, and decreased toxicity. The integration of taxanes, such as paclitaxel and docetaxel, into chemotherapy regimens for metastatic BC is discussed, highlighting their efficacy. The overview concludes by underscoring the importance of carefully selecting therapeutic combinations based on the molecular profile of BC. The goal is to maximize therapeutic benefits while minimizing unnecessary agents to optimize treatment outcomes for BC patients.[ 5 ]

Elena Provenzano's article, "Neoadjuvant Chemotherapy for Breast Cancer: Moving Beyond Pathological Complete Response in the Molecular Age," delves into the transformative landscape of neoadjuvant chemotherapy (NACT) for breast cancer, emphasizing its evolution from treating locally advanced cases to a pivotal role in managing biologically aggressive diseases. The article discusses the advantages of NACT, including its impact on surgical options, such as enabling breast conservation surgery, and its role in determining further adjuvant therapy based on treatment response. Provenzano explores the importance of accurately identifying pathological complete response (pCR) and the associated prognostic implications. The article provides a comprehensive analysis of predictors of response to NACT, focusing on molecular subtypes, including luminal, HER2+, and triple-negative breast cancer (TNBC). Additionally, it emphasizes the crucial role of pathologists in optimizing patient care, addressing issues such as specimen handling, size measurement, and assessing residual disease.

The review underscores the significance of adapting to the molecular age, where understanding tumor biology guides treatment decisions and where NACT not only influences immediate clinical outcomes but also serves as a platform for innovative trial designs and the rapid

integration of effective drugs into clinical practice. Overall, Provenzano's work contributes to the nuanced understanding of NACT's role in breast cancer management, emphasizing the need for tailored approaches and meticulous evaluation of treatment response for optimal patient outcomes.[ 6 ]

The article by Rebecca L. Read and Kathy Flitcroft delves into the underutilization of neoadjuvant chemotherapy (NAC) in operable breast cancer cases, despite its recommendation in recent guidelines. While initial trials failed to demonstrate a clear survival advantage, the analysis argues that advances in chemotherapy and understanding breast cancer subtypes make reevaluation timely. Emphasizing surgery's ongoing role, the article defines tumor response parameters, distinguishing clinical and pathological responses. It outlines potential drawbacks, including surgery delay in non-responsive cases and the loss of detailed pathology guiding multidisciplinary approaches. However, my reading suggests NAC's benefits outweigh these, allowing oncological outcome prediction, increasing breast-conserving and reconstructive surgery rates, enabling more timely treatment, downstaging the axilla, and fostering participation in novel therapeutic trials. The article underscores the need for personalized approaches and evidence-based resources to aid women in evaluating the nuanced benefits and drawbacks of NAC for their specific situations.[ 7 ]

Another research was conducted by Noam F. Pondé. The article explores advancements in adjuvant systemic therapy for early-stage breast cancer, acknowledging the substantial progress made in treatment options since the late 1970s. The primary focus lies on three systemic modalities: chemotherapy, endocrine therapy, and targeted therapy. Extended adjuvant endocrine therapy for ER+ cancer is examined, particularly in the context of late relapses, with a cautious approach to balance benefits and risks. The article discusses strategies like dose-dense chemotherapy, emphasizing the superior efficacy observed in certain subgroups, notably those with ER- disease. It evaluates the potential of capecitabine post-neoadjuvant chemotherapy, drawing insights from the CREATE X trial, although acknowledging associated risks and the need for further study. The integration of endocrine therapy with targeted therapies, such as CDK4/6 inhibitors and PI3K inhibitors, is explored. The piece underscores the evolving landscape, necessitating personalized approaches, consideration of patient characteristics, and the quest for predictive biomarkers. Overall, the article provides a critical assessment of recent developments, highlighting the complex balance between treatment escalation and de-escalation in the evolving field of early-stage breast cancer therapy.[ 8 ]

In Jacques Bernier's article, "Post-mastectomy radiotherapy after neoadjuvant chemotherapy in breast cancer patients: A review," the author addresses the complexities surrounding post-mastectomy radiotherapy (PMRT) in patients who have undergone neoadjuvant chemotherapy. The review delves into the challenges of determining the indications for PMRT, particularly in cases where pathologic complete response is achieved after neoadjuvant chemotherapy. Bernier emphasizes the importance of assessing risk factors, such as tumor size, lymphovascular invasion, and nodal involvement, to make informed decisions about PMRT. The article also explores the impact of response to neoadjuvant chemotherapy on local regional control. The author discusses the need for further studies, including large randomized trials, to refine the criteria for selecting patients who would benefit from PMRT. The review highlights the evolving landscape of radiotherapy technology and techniques, emphasizing the role of modern approaches like intensity-modulated radiation therapy (IMRT) and volumetric modulated arc therapy (VMAT)



in optimizing treatment outcomes and minimizing toxicity. Bernier concludes by underlining the ongoing challenges and unresolved issues in determining the exact role of PMRT in breast cancer patients treated with neoadjuvant chemotherapy and mastectomy.[ 9 ]

Another research, conducted by Si-Ye Chen and Guang-Yi Sun showed some important data. This retrospective analysis of a randomized controlled clinical trial involving 584 women with high-risk breast cancer investigated the impact of timing intervals on postmastectomy radiotherapy (PMRT) following adjuvant chemotherapy. Optimal cutoff values identified were SRI <210 days and CRI <42 days, indicating associations with improved overall survival. Patients with SRI >210 days faced a higher risk of distant metastasis and worse overall and disease-free survival. Similarly, CRI >42 days was linked to increased risks of distant metastasis and poorer overall and disease-free survival. Notably, moderate delays in SRI (180-210 days) did not significantly affect outcomes. The study underscores the importance of timely initiation of PMRT after chemotherapy in high-risk breast cancer, emphasizing the adverse impact of prolonged treatment intervals on crucial oncologic endpoints. [ 10 ]

In another comprehensive review, David Krug explores the evolving landscape of post-mastectomy radiotherapy (PMRT) and regional nodal irradiation (RNI) in breast cancer patients following neoadjuvant chemotherapy (NACT). Historically utilized for locally advanced, inoperable tumors, NACT's role expanded with growing chemotherapy indications. Krug emphasizes the challenge it poses to conventional radiotherapy decisions, as it alters pathologic parameters and adds prognostic information. While established guidelines recommend RNI and PMRT in high-risk cases, controversy surrounds intermediate-risk patients. The review underscores the lack of prospective data on adjuvant radiotherapy post-NACT, highlighting the reliance on retrospective studies. The paper synthesizes findings on individualizing RNI and PMRT based on treatment response, revealing a dearth of conclusive evidence. Ongoing randomized trials, such as NSABP B-51/RTOG 1304 and Alliance A11202, aim to address these knowledge gaps, emphasizing the critical need for tailored radiotherapy approaches in the rapidly evolving landscape of breast cancer treatment.[ 11 ]

Next important research was conducted by S. J. Bowden and the team also gives important data about the optimal sequencing of adjuvant chemotherapy and radiotherapy in early breast cancer treatment. Notably, there is a lack of consensus among clinicians regarding the ideal approach, with variations in practices observed. The timing of these treatments is crucial, as delaying radiotherapy beyond 8 weeks may significantly increase local relapse rates. Existing studies present inconsistent findings on the impact of delayed radiotherapy, complicating the determination of an optimal treatment timeline. Synchronous chemotherapy and radiotherapy, although avoiding delays, pose concerns due to potential increased toxicity, particularly with certain chemotherapy regimens. The text emphasizes ongoing efforts, such as the SECRA trial, to provide more conclusive evidence on the most effective sequencing strategy. Until further evidence emerges, a cautious recommendation leans towards a sequential schedule for specific chemotherapy regimens, acknowledging potential toxicities associated with synchronous treatment.[ 12 ]

The study by Hak Jae Kim explores the sequencing of adjuvant chemotherapy and radiotherapy in the treatment of high-risk breast cancer patients following mastectomy. Historically, conventional practice involved administering chemotherapy before radiotherapy, aiming to capitalize on chemotherapy's potential to reduce metastatic spread. However, recent

trials have challenged this approach, suggesting potential survival benefits when radiotherapy is administered between chemotherapy cycles. The retrospective analysis, conducted between 1986 and 2000 on 275 patients, categorized them into groups based on the sequence of treatments: chemotherapy followed by radiotherapy (CTRT), radiotherapy followed by chemotherapy (RTCT), sandwich therapy, and concurrent chemoradiotherapy (CCRT). While no significant differences in overall and disease-free survival were observed among the groups, a subgroup analysis of patients with positive or close resection margins hinted at improved outcomes with early radiotherapy. The study adds valuable insights to the ongoing debate on the optimal sequencing of postmastectomy adjuvant therapies, emphasizing the need for further research in this critical aspect of breast cancer management.[ 13 ]

The study by Atsushi Fushimi and Rei Kudo investigates the potential of mammography in predicting pathologic complete response (pCR) after neoadjuvant chemotherapy for breast cancer. While MRI is typically more correlated with pathologic response evaluation, mammography's accuracy is hindered by the variable behavior of microcalcifications. Traditionally associated with necrosis, microcalcifications were expected to increase with neoadjuvant chemotherapy, yet the study observes cases where they decreased. The research aimed to identify characteristics of breast cancer patients showing a reduction in microcalcifications post-treatment to enhance clinical response evaluation through imaging analysis. The retrospective analysis, conducted from January 2013 to June 2017 on 70 patients, revealed that HER2 positivity was higher in cases with microcalcifications. Interestingly, among patients with microcalcifications, those exhibiting a decrease tended to have segmental or pleomorphic/linear microcalcifications without a mammographic mass. The sensitivity of decreased microcalcifications for predicting pCR was 28.6%, with high specificity (89.5%). The study suggests that neoadjuvant chemotherapy may selectively decrease malignant microcalcifications, especially segmental and pleomorphic/linear types, potentially providing valuable insights into treatment response. [ 14 ]

Similar research work was done by Lianhuang Li and his team, in which they explore the efficacy of label-free multiphoton imaging in evaluating breast carcinoma regression after preoperative chemotherapy. Focused on overcoming the limitations of existing diagnostic techniques, the study employs two-photon excited fluorescence (TPEF) and second-harmonic generation (SHG) imaging technologies. The multiphoton images vividly illustrate the distinct morphological features of breast carcinoma, allowing for precise categorization of tumor response levels—ranging from slight to significant and complete responses to neoadjuvant therapy. Through quantitative analysis, the research unveils significant differences in tumor cell density and collagen content, providing valuable insights into the effectiveness of preoperative treatment. The introduction of the Mandard classification system for grading pathological response enhances the diagnostic accuracy, promising a more comprehensive understanding of breast carcinoma regression. However, the study acknowledges challenges, such as the limited penetration depth of label-free multiphoton imaging, while emphasizing the transformative potential of this innovative approach in improving diagnostic precision for breast cancer patients.[ 15 ]

The study led by Jee Hyun Ahn focuses on predicting pathological response after neoadjuvant chemotherapy (NCT) in breast cancer patients through changes in automated mammographic breast density (MD). The research emphasizes the importance of identifying effective predictive factors for pathological complete response (pCR) beyond existing clinical and

pathological markers. The study examines volumetric breast density (Vbd) using the Quantra software, which provides automated measurements, enhancing objectivity and reproducibility.

The retrospective analysis includes 684 breast cancer patients treated with NCT, with 357 ultimately included in the study. The research explores the dynamics of MD before and after NCT, considering both qualitative and quantitative aspects. The  $\Delta Vbd\%$  is calculated using the Quantra software, and patients are categorized based on changes in MD. The study investigates the association between  $\Delta Vbd\%$  and various clinicopathological characteristics, shedding light on the clinical feasibility of  $\Delta Vbd\%$  as a predictive marker for pathological responsiveness to NCT. Key findings indicate that the decreased  $\Delta Vbd\%$  group, characterized by younger age, premenopausal status, and larger tumor size, is less likely to achieve pCR after NCT. The research underscores the significance of breast cancer subtype as a powerful predictor of pCR, with implications for personalized treatment strategies. Overall, the study contributes valuable insights into the potential use of automated MD changes as a predictive tool for treatment response in breast cancer patients undergoing NCT.[ 16 ]

**Conclusion:** In navigating the complex landscape of breast cancer treatment, this comprehensive review illuminates the morphofunctional changes occurring post-chemotherapy and radiation therapy. Integrating clinical, imaging, and histopathological perspectives, the study underscores the importance of tailored approaches. Notable contributions from diverse studies shed light on optimal sequencing, rare complications, multimodal strategies, and predictive factors. Collectively, these insights propel the discourse on refining breast cancer treatment, emphasizing the need for personalized, evidence-based interventions to enhance patient outcomes.

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15. Evaluation of breast carcinoma regression after preoperative chemotherapy by label-free multiphoton imaging and image analysis. Lianhuang Li
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# IMPROVING EFFECASY OF THE TREATMENT OF LONG-TERM COMPLICATIONS OF COMBINED SOFT TISSUE INJURIES OF MAXILLAFACIAL REGION WITH CONTRAKTUBEX

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**Abstract.** *Ultra-phonophoresis is one of its effective physiotherapeutic methods, widely used in the past. Allatation, extract of onion and heparin is considered very effective substance for the healing process of scars of maxillofacial region. So, using of ultraphonophoresis with Contractubex can be treated long term complications of combined maxillofacial injuries.*

**Keywords:** *ultraphonophoresis, kontraktubex, scarred tissue, rehabilitation. complications of combined soft tissue injuries, maxillofacial region.*

## INTRODUCTION

Ultraphonophoresis is one of the modern methods of treatment widely used today, in which the necessary drugs are often injected into the body through the skin using ultrasound waves. Ultraphonophoresis is an effective treatment method for improving blood circulation in pathological foci and treating secondary scars. Today, glucocorticoids and other hormonal agents are used as drugs. Joint injuries of the maxillofacial region lead to various consequences and complications, which can appear in the acute, subacute and late periods after the injury [7,8]. Despite the progress achieved in the field of reconstructive surgery in recent years, the treatment of complex defects and deformations caused by facial injuries remains problematic [5,7,10,12,13]. The effectiveness of the anti-scar drug Contractubex produced by the German MERZ PHARMA company, which contains active ingredients such as sodium heparin, onion extract and allatoin, was analyzed in the treatment of late deformational complications with scars [2,10,11]. As a result, it is very important to predict and adequately study the pathogenetic features of their treatment and to improve their quality of life.

In addition, infrared thermometry was used to predict the course of inflammatory processes in the wound area and scar deformation complications. For this, this effective method was used to measure the local temperature at the desired points in the maxillofacial region.

## THE PURPOSE OF THE STUDY

It consists in the development and implementation of modern treatment and rehabilitation methods that increase the effectiveness of treatment of scar deformation complications of joint injuries of the maxillofacial region.

## MATERIALS REVIEW AND METHODS

During the study, 168 patients were treated in inpatient and outpatient departments of the multidisciplinary clinic of the Tashkent Medical Academy, Samarkand City Medical Association, and the Samarkand Branch of the Republican Specialized Traumatology and Orthopedic Scientific and Practical Medical Center in 2019 and 2023 with complications of maxillofacial joint injuries.

(17 years and older) treated patients were recruited. Among these 36.3% patients were admitted to the hospital using traditional treatment methods, and the remaining 63.7% were treated with scar deformation complications of the face-jaw area by ultraphonophoresis with the help of our recommended anti-scar drug "Contraktubex". Patients included in the study were divided into 3 groups:

In the first control group, patients with complications of facial-jaw soft tissue joint injuries were treated conventionally;

in the second main group, the same patients were treated with ozone and low-intensity laser rays;

and the third group included patients who underwent ultraphonophoresis with the help of Contraktubex (Contraktubex) anti-scar drug.

### **DISCUSSION OF THE STUDY**

In this case, patients were treated with a continuous 880 kHz frequency intensity of 0.2 W/cm<sup>2</sup> for 5-6 minutes, a total treatment course consisting of 8-10 treatments. The allothion active agent contained in Kontraktubex (Contraktubex), which is used as a medicine, softens the scars and helps them to be covered with epithelial cells, heparin improves blood circulation in the tissues by dilating the vessels, and has demonstrated a fibrinolytic effect when applied locally. It was found that onion extract reduces the inflammatory process and has an antiproliferative effect. It was also found that contractubex accelerated cell regeneration without hyperplasia and inhibited the proliferation of keloid fibroblasts. As a result of the treatment, the clinical appearance of the patients improved by 40% on 7-14 days after ultraphonophoresis with Contractubex. Later, at 8-14 weeks of the disease, keloid scar tissue on the face was reduced by 30% again, and this showed the effectiveness of conservative treatment. In addition, it was found that the height of the scars decreased by 0.3 cm after the fourth and fifth treatment of patients who underwent ultraphonophoresis with kontrak-tubex ointment. It was also found that the color of the scar tissue is getting closer to the skin color. The reduction of newly identified scars after continuous (8-11 months) conservative treatment in patients indicated the effectiveness of this conservative treatment. Treatment results are based on the following indicators: reduction of complaints; restoration of working capacity; reduction and disappearance of facial deformities and scars were assessed.

**CONCLUSION** It should be noted that the effectiveness of the drug "Contraktubex", which is used for the comprehensive treatment and rehabilitation of scar deformation complications acquired as a result of joint injuries of the soft tissues of the face-jaw area, was found to be highly effective. This has shown a high socio-economic impact on the prevention of injury complications and their effective rehabilitation. But preventing the complications of the disease and predicting their occurrence in advance gives a much more positive result than the treatment of negative consequences.

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## A COMPLEX OF MEDICAL AND SOCIAL FACTORS, LIFESTYLE, QUALITY OF MEDICAL CARE FOR CHILDREN OF THE FIRST YEAR OF LIFE

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**Abstract.** *This article focuses on analysis of the complex of medical and social factors, lifestyle, quality of medical care for children of the first year of life.*

**Keywords:** *postpartum, mortality, WHO, homemaker, maternal milk.*

**Purpose of the study.** Analysis of the complex of medical and social factors, lifestyle, quality of medical care for children of the first year of life.

**Materials and methods.** The studies were carried out in family clinics (1, 28, 56, 23) located in four districts of the city of Tashkent: Mirobad, Yashnoobod, Yunusabad and Shaikhontokhur districts. In total, data from 1,526 children of age were analyzed.

**Results and discussion.** When studying socio-hygienic factors, living conditions and lifestyle of families, 38.3% of mothers were workers, 28.7% were employees, one in three women was a housewife. In 88.9% of cases, family completeness was noted (1356 out of 1526), in an incomplete family - 11.1% (170). Poor and not always peaceful relations between parents were noted in 76.1% of families (1526 to 1162).

**Compliance.** In recent years, there have been a growing number of factors among infants that exclude the period of their postpartum adaptation. According to the World Health Organization (WHO), 39.8% of the incidence of children under the age of one year develops due to cases arising in the perinatal period and is one of the most related factors in the death of children [3,6,9]. In 2010, nearly 115 million children were underweight, 55 million were underweight and 171 million children under the age of five were underweight. In 2010, 43 million preschool children were found to be overweight or obese in developing and developed countries [1,2,7]. According to some authors, the mortality rate of children under the age of 5 in the world is 43 per 1000 births. Compared to children of other ages, children of the first year of life have a relatively high incidence and mortality rate, with the highest rates of physical development at this age. A high incidence rate in children under one year of age plays an important role in the development and implementation of a targeted, evidence-based system of measures based on complete and reliable statistical information. [4,5,8].

**Purpose of the study.** Analysis of the complex of medical and social factors, lifestyle, quality of medical care for children of the first year of life.

**Materials and methods.** The studies were carried out in family clinics (1, 28, 56, 23) located in four districts of the city of Tashkent: Mirobad, Yashnoabad, Yunusabad and Shaikhontokhur districts. In total, data from 1,526 children of age were analyzed.

The source of study of the data of deceased children was: a medical certificate on the perinatal basis of death (Form 106-2), doctor's certificate (Form 106), death notice, infant history (Form 112), Journal of Postmortem Autopsy (Form 112) Form 013-1) and Autopsy Protocol To



establish the cause of each death, expert opinions were conducted, after which the results of infant death were included in specially developed "Maps for the Study of Causes of Infant Death"

Results and discussion. When studying socio-hygienic factors, living conditions and lifestyle of families, it was found that 40.0% of mothers have higher (611 out of 1526), 9.8% (149 out of 1526) general secondary and secondary special education, 42.4% (647 out of 1526) have incomplete higher education, 7.8% (119 out of 1526) have primary education. 38.3% of mothers were workers, 28.7% were employees, and one in three women was a homemaker.

The family is of great importance for the health, social integration and personality formation of the child. In 88.9% of cases, family completeness was noted (1356 out of 1526), in an incomplete family - 11.1% (170). The composition of the family in most cases consisted of 5 people or more (30.2%; 461 of 1,526 families). Analysis of housing data showed that 43.6% of families lived in part of a house or apartment, 29.0% (442 out of 1526) lived in separate apartments, 27.4% (418) in a private house. We also found out those families of children with disabilities, disabled people and the dead line 2.5 times more in unfavorable living conditions (insufficient living area, lack of amenities, and lack of a separate room for disabled people).

Poor and not always peaceful relations between parents were noted in 76.1% of families (1,162 out of 1,526). In 3.2% of families (49 out of 1526 people), conflicts and various conflicts between families members increased, 72.9% of respondents (113 out of 1526), noted that sometimes conflicts and conflict situations arise in their families. In 12.8% (195) of families, parents most often drink alcohol, 98.8% of which are fathers. Conflicts and conflicts in families often arose due to material difficulties (51.9%) and housing problems (19.8%). Scandals and conflicts in one in five families are caused by abuse of the land by alcohol. In addition, one in four families (25.6%) have optimism and confidence in the positive result of the disease. Physical activity to maintain the health of parents and children is of great importance not only for parents, but also for the child. More than half of families (51%) do not engage in morning exercise and physical education, more than half (52%) do not comply with the diet, 2/3 of parents do not comply with the rest regime, incorrectly form free time, do not allocate enough time for upbringing and caring for children of the first age.

Childcare is provided in 75.3% of cases (1,149 people) - by the mother, 18.0% - by the grandmother (275 people), 2.8% - by the mother (42 people), in other cases - by fathers or grandmothers. Thus, we found that only 14.1% of parents engage in special physical education with their children, 51.6% of parents with children perform morning rehearsals, 63.8% of parents conduct air baths and artifacts.

It was revealed that 76.9% of children of the same age (1174 people) feed on natural maternal milk, of which 38.7% of children feed on breast milk up to 6 months, 38.23% - up to 12 months. The reason for the cessation of breastfeeding was: in 18.8% of cases (287 people) insufficient maternal milk, in 4.3% (65 people) the child's refusal to vaccinate, in 6.4% (97 people) mothers considered breastfeeding children of the same age voluntary. In 19.5% of children from 1 month, 38.9% - from 6 months.

It is important for the family that parents have a full understanding of the child's health. 70.1% of parents received information about the health status of their children, mainly from a doctor, 7.5% from a nurse, 20.6% from the child's medical certificates, as well as from special literature and the media (media), the Internet, dating and dating. Although, media, health culture can be of great help in spreading a healthy lifestyle and healthy diet, disease prevention. In the

broad sense, it is necessary to pay attention to the work on the development among the population of an informed attitude not only to their health, but also to the health of future children.

When studying the spread of medical and social risk factors, a relative increased proportion of mothers with chronic somatic and gynecological diseases at birth in families with impaired health of children of one year was noted.

Based on factor analyses, 97.5% of the most important factors were identified: F-1: social, F-2: the degree of maternal morbidity, F-3: socio-psychological and F-4: the factor of economic degree of life, equal to 84.3%, 77.8%, 76.7% and 4. This allows you to determine in advance the share of influence of structural factors (F-1: "level of family well-being" - OR = 2.3, "quality of parental education" - OR = 3.4, "quality of living conditions" - OR = 2.8, "quality of nutrition" - OR = 3.2, "quality of medical care" - OS - h = 3.1; F-2: "chronic forms of extra genital diseases and pathology of motherhood" - OS = 2.9, "hanging obstetric history" - OS = 3.6, "complicated gene" - OS = 3.5; F-3: "value orientation" - OS = 2.3, "family ratio" - OS = 2.5, "motivations" - OS = 3.7; F-4: "composition of family income and expenses" - OS = 3.5)

In the first 3 days after discharge from the maternity hospital, the attendance of newborn homes by practitioners will be 94.9%. We asked parents to assess the availability of health services in a 10-point system. The results are shown in **Table 1**.

*\*Table 1*

*Assessment of availability of health services in a 10-point system, GPA*

Type of medical care	FP- 1	FP - 28	FP - 56	FP - 23
Possibility of timely laboratory and diagnostic examination	7,3±0,02	6,5±0,02	7,5±0,02	7,2±0,01
Uniformity (simplicity) of obtaining qualified help by a General practice pediatrician at one time	6,7±0,01	7,4±0,01	6,9±0,01	6,5±0,01
Equality (simplicity) of obtaining qualified assistance from NGOs in due time	5,7±0,03	6,3±0,01	6,0±0,01	5,9±0,03
Equality (ease) of obtaining advisory (advisory) assistance from Environmental Protection	5,5±0,02	5,4±0,01	6,3±0,03	6,1±0,01
Possibility of timely hospitalization if necessary	7,7±0,02	6,1±0,02	7,8±0,02	7,2±0,03
Get information on child care in cases	7,2±0,01	6,9±0,02	7,1±0,02	7,1±0,02

**FP \*- Family polyclinic.**

The respondents noted insufficient timely qualified and advisory assistance from General practice doctor) s in the regions of clinic services, so the points were 6.3 out of 5.4. Parents rated the section "Possibility of timely hospitalization if necessary" - 7.7 in FP-1 and 7.8 in FP-56.

Although, health authorities should pay serious attention to organizing medical care for children as young as one in OP settings.

Because of insufficient sanitary and educational work, some mothers did not consider themselves sufficiently aware and prepared in all matters related to the care and feeding of newborns. Due attention was not paid to teaching mothers the rules of bathing a child, the technique of losing weight of breast milk, etc.

The identified shortcomings in the organization of trainings for the care and care of newborn children indicate the need to improve the forms and methods of work of family clinics with the families of these children.

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# RESULTS OF MICROSCOPIC ANALYSIS ON DETERMINATION OF FAMILIES RESISTANT TO PEBRINA AND NUCLEAR POLYHEDROSE DISEASE OF MULBERRY SILKWORM

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**Abstract.** *The main task of these studies is the selection of genotypes resistant to yellow disease. Therefore, in order to accurately assess the disease resistance of families, individual butterflies of all casts, breeds and systems were analyzed under a microscope.*

**Keywords:** *selection, pebrina, butterfly.*

The development of silk production in the republic has an ancient and extremely interesting history, for example, there is evidence that the practice of silk spinning existed in the Fergana Valley in the south of Uzbekistan, as well as at the source of the Zarafshan River, 4000 BC. years ago. Its rich traditions, climate, population density, as well as the abundance of culinary resources in the countryside make it a very promising area for investment.

Uzbekistan ranks third in the world in terms of raw silk production and accounts for about 2% of world production.

Thanks to the reforms implemented in the next five years, the silk industry in Uzbekistan developed rapidly. In 2016-2020, the production of silk gauze increased 4 times, the export of silk products increased 3.5 times, and the export of silk gauze increased 50 times, which ensured that Uzbekistan took the 6th place in the world in this regard.

The development of the silk industry in our republic and the production of abundant and high-quality cocoons from silkworms are closely related to the prevention of silkworm diseases. The quality of the seeds prepared from silkworms reared in farms is considered an important factor in preventing the spread of diseases and producing high-quality cocoons [2].

The incubation period of jaundice consists of two stages. The first virions leave the polygon and enter the cell, and in the second stage clinical symptoms of the disease are formed [5].

When the virus is in a latent state, it does not harm insects, does not show visible signs of the disease, that is, transphase-vertically passes from the larval stage to the imago stage [7]. Various negative physical and chemical effects weaken the activation of the latent virus of the worm. The insect becomes infected and dies and spreads the infection horizontally, eventually leading to their death during the feeding period [4].

Under a microscope, because the polygons strongly refract light, they look like oil droplets, which are difficult to distinguish from many oil globules without an expert. But because polyhedra have more faces than fat globules, they can be seen by turning the microscrew of a microscope. If you look closely, the periphery of polyhedra is brighter and less dense than the center of consistency [3], [8], [6].

According to the above authors, the activation of latent infection can be caused by high or low temperature during the feeding period of the worm house, high humidity, very dense

arrangement of worms, poor quality feed, physical and chemical effects. Such reasons may be related to the hot and cold effects of long-term (more than 120 winter days) storage of mulberry silkworms in freezers.

According to some data, some protein and enzyme preparations (alkaline and pancreatic DNAs, pepsins) cause activation of yellow disease viruses in buds of mulberry silkworm US-1 breed and US x B-2 hybrid. The frequency of induction, indicating the percentage of death of worms, was 26.5-24.5% in the first case, and 58.1-47% in the second ca

**Table 1**

**Percentage of diseased and healthy casts of mulberry silkworm by breed and system (2023)**

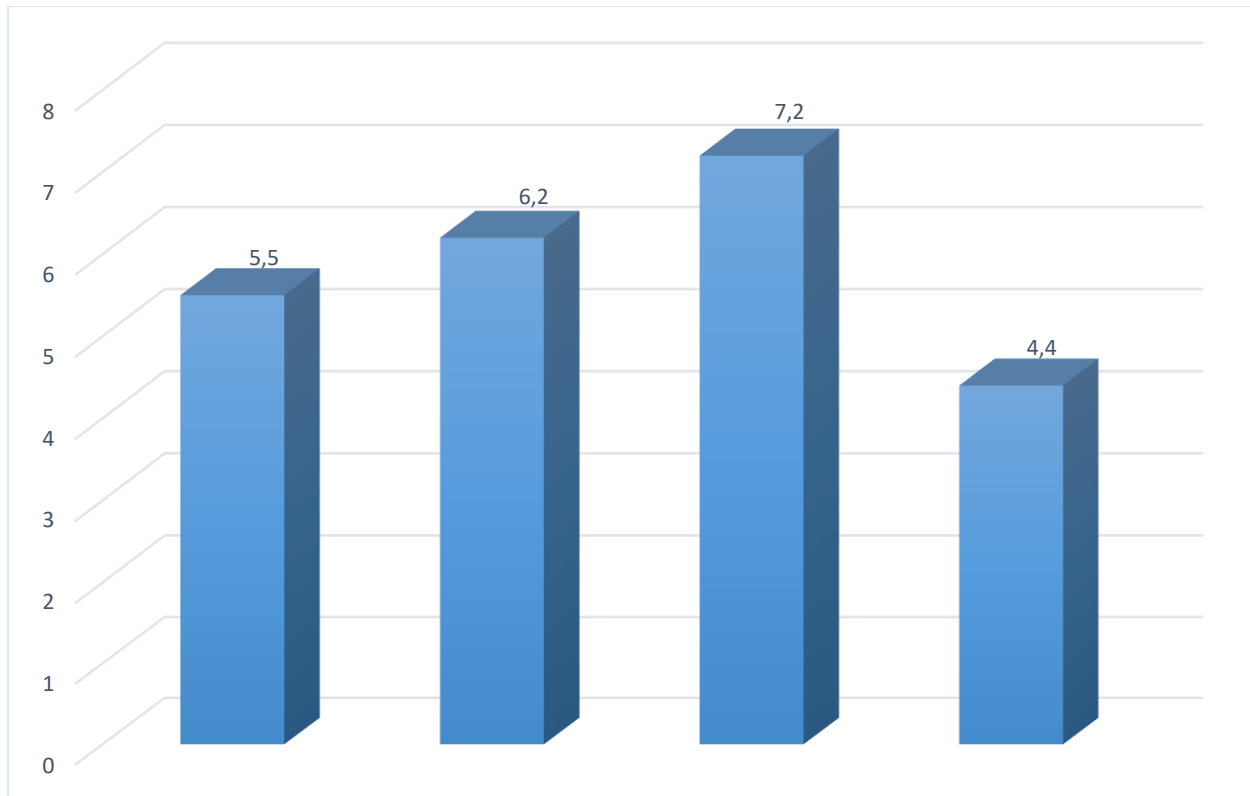
Silkworm breed and systems	Number of butterflies analyzed (♀ & ♂)	Number of sick butterflies, pcs				with nuclear polyhedrosis butterfly %	Healthy butterfly %
		with pebrina	with nuclear polyhedrosis	With bacteriya	healthy		
YA-120	544	6	30	-	508	5,5	93,4
Ipakchi 2	727	19	45	-	663	6,2	91,2
Ipakchi 27	873	18	63	20	772	7,2	88,4
Ipakchi 28	610	13	27	3	567	4,4	92,9

According to the data in Table 1, the experimental breeds and systems had different indicators of resistance to yellow disease, but no sharp observations were observed between breeds and systems. The percentage of butterflies infected with yellow disease was 5.5% in the Ya-120 breed, 6.2% in the Ipakchi 2 breed, and 7.2% and 4.4% in the Line 27 and Line 28 systems, respectively. The index of butterflies infected with Pebrina also confirms that the breeds are resistant to yellow disease.

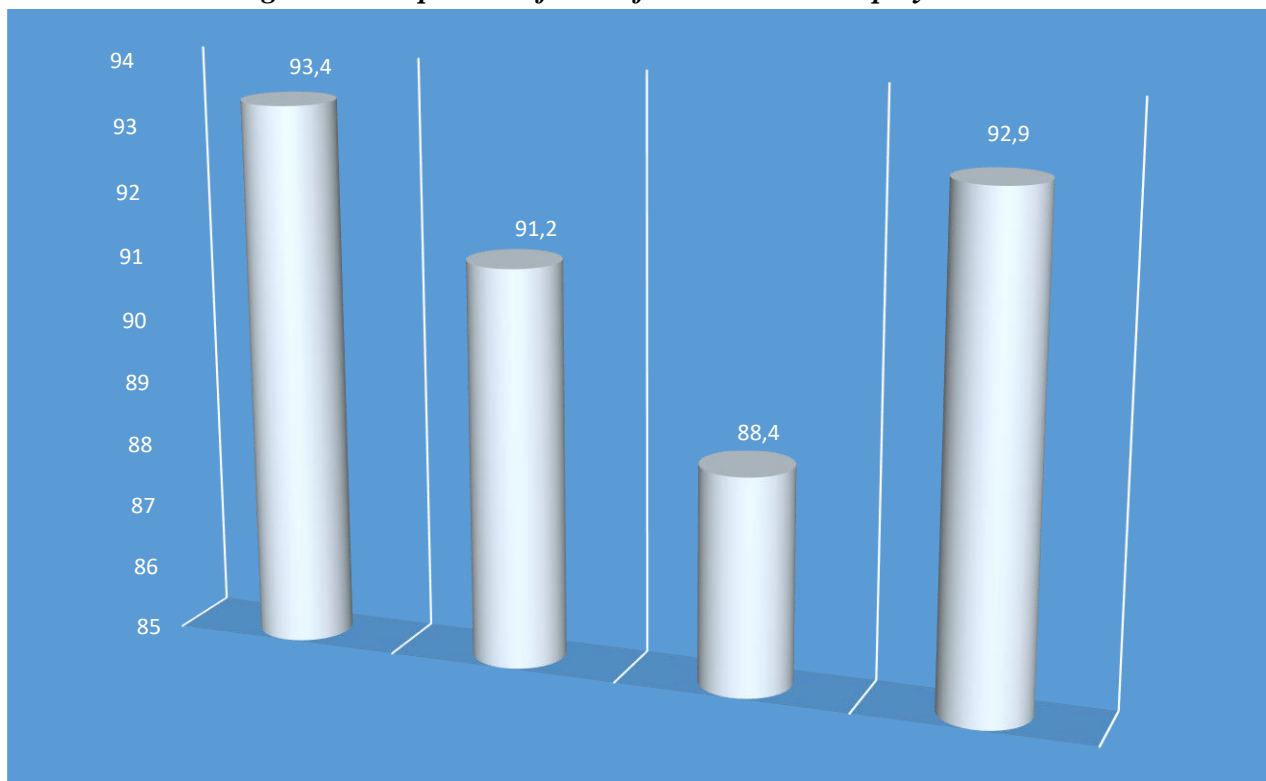
For example, the number of butterflies infected with pebrina was 6 in Ya-120 breed, and 13 in Line 28. According to the analysis of the casts' resistance to bacteria, no bacteria were observed in casts of Ya-120 and Ipakchi 2 breeds. In the studied samples of Line 27 and Line 28, 20 and 3 bacteria were detected, respectively. Figures 4.5.1 and 4.5.2 show the proportion of diseased and healthy worms in mulberry silkworm Ya-120, Ipakchi 2 breeds, Line 27, Line 28 systems.

According to the figures in Figure 2, the percentage of healthy butterflies is higher in Ya-120 (93.4%) and Line 28 (92.9%), and the lowest percentage of healthy butterflies is shown in Line 27 (88.4%).

According to preliminary data, the most disease-resistant breeds this can be considered as a breed of Line 28 and Ya-120. Experiments to determine the resistance of the breed and systems to yellow disease were also carried out in the option of family rearing. Among the families of the mulberry silkworm breeds and systems, selective breeding casts were obtained.



**Diagram 1. Proportion of butterflies with nuclear polyhedrosis**



**Diagram 2. Percentage of healthy butterflies in breeds and systems**

In order to determine the most disease-resistant families, selection families' resistance to yellow disease was analyzed. For this purpose, healthy burns in each family were identified, and the most resistant families were identified according to this indicator. Indicators on the amount of healthy casts in breeds and systems are presented in Table

*Table 2*

*Nuclear polyhedrosis of breed and systems of healthy families number of seats*

YA-120			Ipakchi 2			Liniya 27			Liniya 28		
Famil y seats	Fam. num	Hea thy worm pcs	Fa mis eats	Fa m. nu m	Heath y worm pcs	Fa m seat s	Fa m. nu m	Heath y worm pcs	Fa m seat s	Fa m. nu m	Heath y worm pcs
10	1	10	12	1	11	13	1	17	13	1	8
9	2	11	13	2	9	16	2	7	12	2	9
2	3	22	8	3	18	12	3	18	11	3	11
8	4	12	1	4	28	3	4	31	10	4	13
12	5	7	2	5	26	15	5	11	14	5	6
9	6	11	7	6	20	8	6	25	9	6	14
1	7	27	10	7	14	7	7	26	5	7	18
3	8	17	3	8	25	2	8	33	8	8	15
9	9	11	5	9	23	9	9	22	3	9	24
14	10	4	9	10	17	5	10	28	4	10	21
13	11	5	5	11	23	16	11	7	16	11	3
9	12	11	12	12	11	4	12	30	14	12	6
6	13	14	6	13	21	10	13	21	4	13	21
7	14	13	4	14	24	11	14	20	15	14	5
4	15	16	2	15	26	1	15	35	2	15	25
5	16	15	11	16	13	6	16	27	6	16	17
12	17	7	3	17	25	8	17	25	7	17	16
9	18	11	14	18	7	3	18	31	1	18	27
11	19	8	13	19	9	17	19	4	10	19	13
5	20	15	2	20	26	14	20	14	17	20	-
total		$\Sigma=$ 247			$\Sigma=37$ 6			$\Sigma=43$ 2			$\Sigma=27$ 2

The analysis of the data presented in Table 2 shows that among breeds and systems, breeding families differ sharply in terms of the number of healthy litters. Among the Ya-120 and Ipakchi 2 breeds, the number of healthy litters was 247 and 376 pieces, in the selection systems Line 27 and Line 28, this indicator was 432 and 272. In the researched litters of the Ya-120 breed, families numbering 7, 3, 8 took the first place out of 3 in terms of the number of healthy litters. Families numbering 4, 5, 8 took the top places in Ipakchi 2 breed. Line 27, Line 28 systems have high indicators of families numbered 15,8,4 and 18,15,9, respectively. The above 12 identified families are the most resistant genotypes to yellow disease (nuclear polyhedrosis).

**Conclusions:**

- in the creation of the primary selection material for the production of systems resistant to the yellow disease of the mulberry silkworm, the breeders of the institute recommended 2 Japon-120, Ipakchi 2 breeds and 2 Line 27, Line 28 systems with alternative differences from each other;

- breeds and systems participating in the experiment reacted differently to cold induction. For example, in the Ya-120 and Ipakchi 2 breeds, the cocoon and shell mass is between 1.54-1.65 g and 326-344 mg, respectively, while in the Line 27 and Line 28 systems, these indicators are low, 1.39-1.41 g and is 312-336 mg;

- the percentage of butterflies infected with the disease of the scrotum was 5.5% in the Ya-120 breed, 6.2% in the Ipakchi 2 breed, and 7.2% and 4.4% in the Line 27 and Line 28 systems, respectively;

- according to the research results, the percentage of healthy butterflies is higher in Ya-120 (93.4%) and Line 28 (92.9%), the lowest percentage of healthy butterflies is shown in Line 27 (88.4%);

- Among the Ya-120 and Ipakchi 2 breeds, the number of healthy litters was 247 and 376, and in the selection systems Line 27 and Line 28, this indicator was 432 and 272;

- 12 families selected as the healthiest from 2 (Ya-120, Ipakchi 2) breeds and (Line 27, Line 28) systems are the most resistant genotypes to yellow disease (nuclear polyhedrosis).

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## THE PHYSICAL DEVELOPMENT OF CHILDREN WITH CONGENITAL HEART DEFECTS, DEPENDING ON THE METHODS OF THEIR MANAGEMENT

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**Abstract.** Congenital heart defects (CHD) are an important problem in pediatrics due to their high prevalence and the need for early surgical correction due to significant health disorders and disability in children (Bokeria L.A., Sarsenbayeva G.I., 2008; Gadaeva A.C., 2011).

About 1.5 million children with CHD are born annually in the world [3,7]. According to the European Registry of Congenital Abnormalities and Twins (EUROCAT), for the period 2010-2014, the prevalence of CHD was 8.1, including severe forms — 2.2 per 1000 newborns [7.9]. CHD remains one of the leading causes of infant mortality, ranking second. In the perinatal period, CHD causes 2.5% of deaths (0.25 cases per 1000 births), 6-11% of deaths in the first year of life and about 50% of deaths associated with congenital malformations.

In Uzbekistan, the birth rate of children with congenital heart defects ranges from 5.5 to 12.7 people per 1000 live births [8]. The frequency of CHD depends on the development of the country's healthcare system or the diagnostic methods available to the doctor. (Epidemiology and risk factors for the development of congenital heart defects in children. 2023.)

**Keywords:** congenital heart disease, children, physical development, cardiac surgery, anamnesis.

The purpose of the study. To optimize the methodology of preoperative management of young children with congenital heart defects based on an assessment of the state of physical development, and to develop methods of nutrition correction.

Material and methods of research. The study was conducted on the basis of the clinic of the Tashkent Pediatric Institute. A comprehensive examination of 106 children diagnosed with CHD was conducted in the period from 2020 to 2023: 54 girls (46.7%) and 52 boys (53.3%) aged 0 months to 3 years. The average age of patients at the time of the first hospitalization was 1 year 11 months from month (86 days to 2 years 11 months), the median weight was 8.5 kg (from 6.00 to 13.00 kg). The diagnosis of CHD was confirmed by echocardiographic and X-ray examinations, and in some 9 cases (8.4%) using angiographic examination. Depending on the age (0-12 months and 1 year-3 years), the studied children were divided into 2 study groups.

The main group consisted of 76 children with congenital heart defects who were admitted during the period from March 2020 to March 2023, who underwent the preoperative preparation we proposed. The comparison group consisted of 30 patients with congenital heart defects who were admitted to the cardiac surgery department from 2020 to 2023, who underwent preoperative preparation according to the traditional method before surgery. Depending on the age, all children were divided into 2 study groups.

**Table 1. Distribution of the studied children into study groups depending on age.**

Age distribution	Children with CHD	Boys /Girls	Control group	Boys/Girls
0-12 month	32	15\17	17 (50%)	7/10
1-3 year	44	24\20	13 (50%)	6/7
Total	76 (100%)	39\37	30	13/17 (100%)

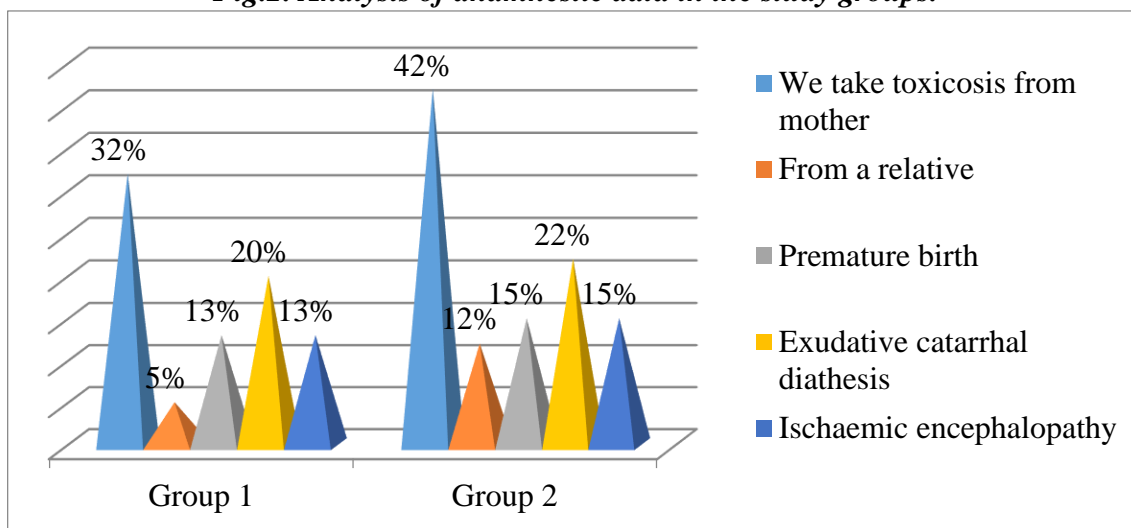
Thus, in the 1st group of the study, 42.1% were children under 1 year old, and 57.9% of children were children under 1 to 3 years old. In the comparison group of 0-12 months, 56.6% were children aged 1-3 years, and 43.3%, respectively.

The assessment of anthropometric indicators of physical development was carried out according to WHO recommendations.

The results of the study. All children had heart failure during preoperative preparation, of which I degree -9 (16.7%), II A degree – 41 (75.9%), II B degree – 3 (5.5%), III degree – one (1.9%) according to the classification of N.A. Belokon. Signs of pulmonary hypertension were detected in 32 (59.3%) children: grade I in 11 children (20.4%), grade II in 13 (24.1%), grade III in 8 (14.8%) patients. Patients received diuretics, cardiac glycosides and ACE inhibitors.

When analyzing the anamnestic data, the following results were determined, 12% of families were urban residents. The average age of parents in the group of children with congenital heart defects was higher than in healthy children. In mothers, it was 27.4±0.39 (18-45 years old) years, 28% of women were beyond the limits of reproductive age. The average age of the fathers was 30±0.42 years (18-50 years). 12% of children were raised in single-parent families. The biological history was burdened in 42% of mothers, pregnancy toxicosis was noted, which worsened during pregnancy in half of them. Viral infections during pregnancy were suffered by 41% of mothers.

**Fig.2. Analysis of anamnestic data in the study groups.**



85% of women gave birth to this child first, but only 73% of them had the first pregnancy. The functional state of newborns was assessed with 8-10 points on the Apgar scale in 90% of children and at the 5th minute - in all. All children from the maternity hospital were discharged for home care, under the supervision of a district pediatrician. 90.1% of children were born full-term. Intrauterine growth retardation was found in 15.8% of full-term infants: 1 stage — 9.5%, 2 stage - 2.8% and 3 stage (intrauterine hypotrophy) — 3.5%.

Features of the physical development of children with CHD in the study groups

When analyzing the anthropometric data of children with CHD and the comparison group, the following results were obtained. Anthropometric data of 106 children from 0 to 3 years of age of both sexes, the average values of growth indicators have their own characteristics corresponding to age-sex standards. The children were divided into age categories. There was a slight difference in the growth rates of children in both boys and girls.

In the course of the study, an analysis of the presence of protein-energy deficiency in children with CHD in the study groups was carried out, management tactics and correction of children's nutrition depending on age and degree of protein-energy deficiency were proposed.

Depending on the state of physical development at admission, the children were divided into the following study groups.

**Table 2.**

***The percentage of examined children with CHD in the main study group according to body weight and body length/height to WHO standard deviations (n=76)***

	The main group (n=76)							
	0-12 months				1-3 years			
	Boys (n=15)		Girls (n=17)		Boys (n=23)		Girls (n=20)	
	No	%	No	%	No	%	No	%
-3SD	3	9,3	4	12,5	6	13,9	5	11,9
-2SD	7	21,8	9	28,1	12	28,5	8	19,1
-1SD	2	6,2	1	3,1	3	7,1	3	7,1
median	2	6,2	2	6,2	2	4,7	3	7,1
+1SD	1	3,1	1	3,1			1	2,3
+2SD								
+3SD	-		-		-	-		

Thus, when analyzing anthropometric indicators, body weight and body length/height, it was determined that at the age of 0-12 months, this indicator was determined at the level of -3CO in 9.3% of cases, and in 18.7% - 2CO in boys and -3CO- 12.5%, respectively -2CO-25% in girls. Also, the signs of BEN were determined in the age group of 1 month-3 years, and respectively in 13.9% of cases it was determined at the level of -3CO, and in 11.9% -2CO in boys and -3CO-28.5%, respectively -2CO-19.1% in girls.

The weight-to-length/height indicator reflects the ratio of the child's weight to the body length/height achieved by him. This indicator is especially important in cases where the age of the child is unknown.

The body mass curve-body length/height allows you to identify those children whose body weight is insufficient, possibly due to protein-energy malnutrition (BENP)/exhaustion or BENP/severe exhaustion.

Assessing physical development, we obtained the following data: body weight and body length/height indicators to standard deviations according to WHO, the indicators in the comparison group were comparable with those of the main study group and were determined as follows, at the age of 0-12 months, this indicator was determined at the level of -3CO in 6.6% of cases, and 2CO in 10% in boys and -3CO- 10%, respectively -2CO-10%.

Detailing the reasons, we found that in the control group, the ratio between children with a deficiency (body weight or height) and the number of children with CHD with low and very low values: by body weight – 17 people (31.5%), height – 16 (29.6%), chest circumference – 19 (35.2%), while in the comparison group there were such children 7 (14%), 6 (8%) and 7 (14%), respectively.

The most reliable indicator in the harmonious development of children is the body mass index (BMI).

**Table 4.**  
**Percentage of examined children with CHD in the comparison group in terms of body weight and body length/height to WHO standard deviations (n=30)**

	Control group (n=30)							
	0-12 month				1-3 years			
	Boys (n=7)		Girls (n=10)		Boys (n=6)		Girls (n=7)	
	No.	%	No.	%	No.	%	No.	%
-3SD	2	11,7	3	17,6	1	7,6	2	15,3
-2SD	3	17,6	4	13,5	3	23,0	3	23,0
-1SD	1	3,3	3	17,6	2	15,3	1	7,6
median	1	3,3	-	17,6	-	-	1	7,6
+1SD	-		-					
+2SD	-		-		-			
+3SD	-		-		-			

**Table 5.**  
**The percentage of examined children in the main study group with CHD according to their BMI to age according to WHO standard deviations (n=76)**

	0-12 month (n=32)				1-3 years (n=43)			
	Boys (n=15)		Girls (n=17)		Boys (n=23)		Girls (n=20)	
	Abs.	%	Abs.	%	Abs.	%	Abs.	%
-3SD	4	12,5	4	12,5	5	11,6	3	6,9
-2SD	6	18,7	5	15,6	8	18,6	11	25,5
-1SD	4	12,5	7	21,8	8	18,6	6	13,9
median	1	3,1	1	3,1	1	2,1	1	2,1
+1SD	-				1	2,1		
+2SD	-							
+3SD	-							

Low BMI values in the range of -3CO and -2CO were determined in 31.2% among boys aged 0-12 months and 28.1% among girls in this age group. Among children with CHD aged 1-3 years, low BMI rates were determined at 30.2% among boys and 30.1% among girls. Thus, the comparison group also identified low BMI in 23.4% of cases aged 0-12 months among boys and in 41.1% of cases among girls, respectively. Among the subjects aged 1-3 years, 30.6% of boys and 38.3% of girls had low BMI. Harmonious growth and weight gain are closely related to the development of functional abilities of organs and systems. Due to hemodynamic disorders, CHD has a direct negative impact on the development of the child.

Thus, when analyzing the physical development of children with congenital heart defects, it was revealed that only a third of patients (30.4%) had an average degree of physical development, while the majority of children (69.6%) had various abnormalities. Thus, physical development below average is typical for 19.6% of children, low – 37.2%. The indicators of 10.7% of children were rated as above average, and 1.96% – as high. Among children with stage I heart failure, patients with an average level of physical development prevailed, whereas with stage II CHF, children mostly had low physical development indicators.

More than half of the children (71.7%) had a decrease in BMI of varying degrees from moderate and severe exhaustion, the rest (38.3%) had a risk of exhaustion and normal BMI ( $p < 0.001$ ), including 16 (21.0%) of them with severe exhaustion.

Low BMI values were due to a lack of body weight and low height. The most frequently detected were: EBD (moderate exhaustion – in 31 patients (40.7%), and mild exhaustion or risk of exhaustion in 27 patients (31.5%), median indicators, these are normal indicators of physical development, were determined in only 5 patients (10.8) children with CHD in the main study group.

The next stage of the study included an assessment of the effectiveness of the proposed management of children in the preoperative period. According to changes in somatometric and biochemical parameters in dynamics in 20 days of life in children with varying degrees of HF and who are on various types of feeding.

At this stage of the study, preoperative preparation of children was carried out, which consisted in nutritional support for children with CHD.

**Table 6.**

***Types of feeding of children with CHD in the study groups.***

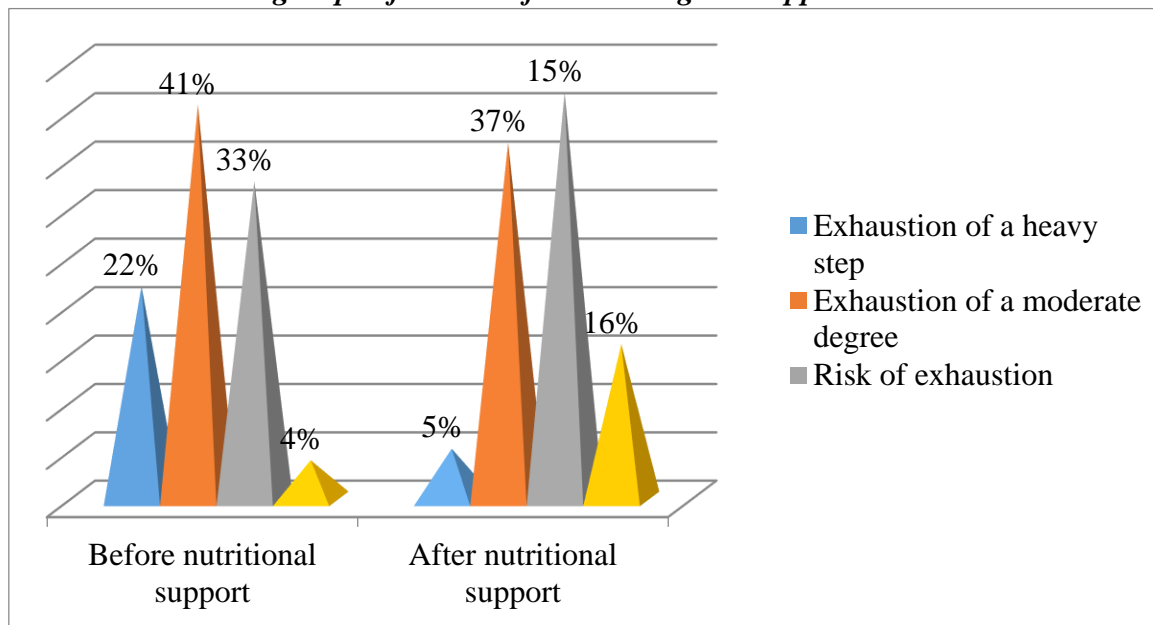
The main research group				Control group
0-12 months	Breast milk +Izikol baby	Breast milk +Mixture(hydrolysis)	Breast milk +Mixture(amino acid)	They received a standard age-related diet and preoperative complex therapy
From 6 months	Complementary food Trimetabol	Complementary food Trimetabol	Trimetabol	
1-3 years	Rational nutrition	Rational nutrition +Balanced mixture (2 months)	Rational nutrition +Balanced mixture (4 months)	

When comparing the studied indicators in children with CHD, depending on the type of preoperative preparation (the main group – up to a year exclusively breast milk and adapted milk formula as supplementary food, timely introduction of complementary foods, from 1-3 years of age, rational nutrition and adapted milk formula as supplementary food.

The control group consisted of children on a standard age-appropriate diet. Considering that the protein level in the diet at 20 days in the compared groups did not significantly differ, we can talk about the lack of energy potential for protein utilization in newborns with CHD who receive exclusively breast milk or adapted formula as food. It is known that children with CHD with HF have higher calorie needs than healthy children. And these needs cannot be met by using only mother's milk or an adapted milk formula, it is necessary to use special fortifiers for mother's

milk. At 20 days of life, children with CHD who received breast milk and supplementary feeding as their main food managed to achieve a higher protein and carbohydrate content in their diet. When analyzing the indicators of physical development after preoperative preparation (after 20 days), the following results were obtained.

**Fig. 2. Analysis of indicators of physical development of children with CHD in the main study group before and after the integrated approach.**

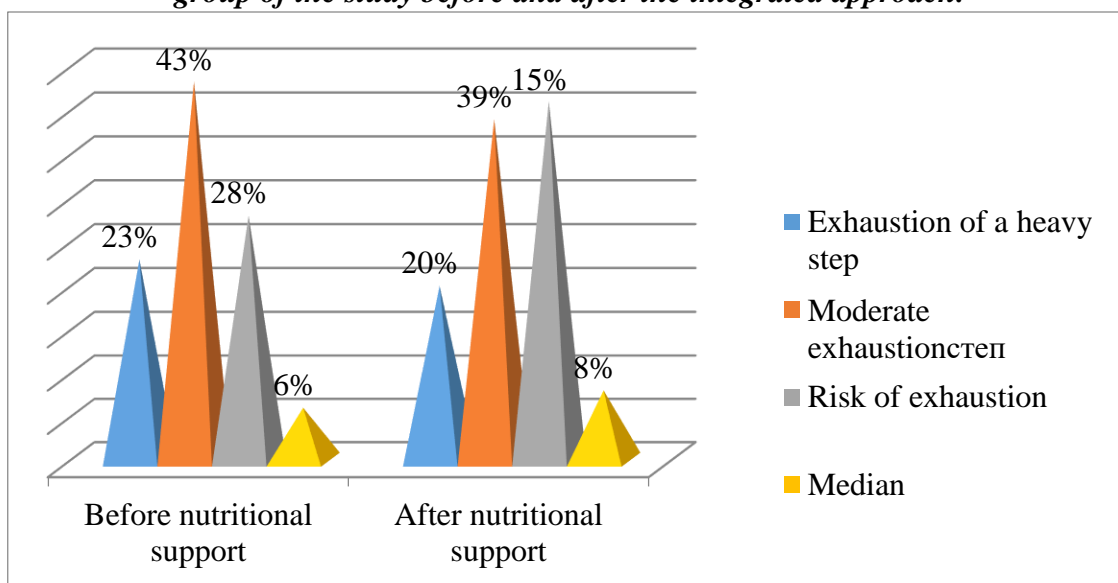


Thus, after an integrated approach, physical development improved in children of the main group, which was manifested in a decrease in the percentage of children with severe EDD from 22% to 5% ( $>0.05$ ), as well as an increase in the median percentage from 4% to 16% ( $>0.01$ )

When conducting a comparative analysis in children of the control group, the following results were obtained.

The physical development of children in this study group also improved, but the indicators were lower than in the main study group, so children with severe EDD decreased from 23% to 20%, and an increase in the median percentage was noted from 6% to 8%.

**Fig. 3. Analysis of indicators of physical development of children with CHD in the control group of the study before and after the integrated approach.**



The improvement in physical development indicators in the control group of the study was comparably lower compared to the main group. Severe EBD in the main group decreased from 21% to 16.6%, compared with the control group from 23% to 20%, and the median values (BMI is normal) were determined in the main study group increased from 4% to 16% compared with the control group from 6% to 8%.

Thus, the use of semi-elemental mixtures based on high-grade protein hydrolysis for a complex approach in patients with CHD makes it possible to improve nutritional tolerance and, after 30 days, improve protein synthesis indicators, reduce the activity of systemic inflammation, and get a tendency to increase somatometric indicators.

#### Conclusion

Young children with CHD in this study are characterized by a lag in physical development and feeding disorders that occur in unfavorable conditions of the medical and social status of families. The analysis of the physical development of children with CHD was determined by the progressive development, respectively, of the effects of hemodynamic disorders. Severe EBD was detected only in every fifth child (21.0%), the risk of mild EBD (exhaustion was determined) in (31.5%); 1/3 of the children were diagnosed with moderate EBD in 40.7% and normal BMI indicators were determined. - 5,2%.

When comparing the results obtained with the control group, it was statistically significant ( $p < 0.05$ ) that the children of the main group had higher (1.6 times) physical development indicators than the children who did not receive the proposed recommendations.

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## PATHOLOGICAL CHANGES IN THE MUCOUS MEMBRANE OF THE ORAL CAVITY IN DIABETES

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**Abstract.** According to WHO, diabetes mellitus is one of the most common diseases. Today, 285 million people in the world suffer from diabetes. This is almost 4% of the entire Earth's population, and by 2030, according to estimates, there will already be 435 million people [1]. Its negative impact on the state of all human organs and systems cannot be overestimated, especially in uncompensated or insufficiently compensated conditions.

This pathology also greatly affects the state of the dental system. People with type 1 and type 2 diabetes are more likely to develop gingivitis, periodontitis, and fungal infections. They also have certain difficulties in eating solid food, taking care of their teeth and oral cavity, treatment and dentures [2].

**Key words:** diabetes, changes in the oral cavity in diabetes, changes in teeth in diabetes.

Among the diseases that are an important risk factor of diabetes there are periodontal pathologies. There is a number of scientific and practical evidence that diabetes and the processes that occur during it affect the condition of periodontal tissues and the dental system as a whole. In addition, they not only affect the development of this pathology, but also contribute to its development, widespread and rapid spread, subsequently destroying periodontal tissues, teeth and jaw [3].

Gums and teeth are almost the first to suffer in diabetes. And at the same time, because of this, the course of the main disease worsens. This correlation between these two conditions has led to the need to take them into account when predicting therapeutic and preventive measures, developing strategies for dental treatment of diabetes and sanitation of the oral cavity. Scientific studies and practice show that the incidence of periodontitis in patients with diabetes is much higher than in people without this pathology. Periodontitis and diabetes are accompanied by other pathological processes, including low strength of dental ligaments, bleeding gums, intensive formation of periodontal pockets and complete tooth loss (loss of teeth). According to some data, periodontitis in one form or another occurs in almost all people with type 1 and type 2 diabetes [4].

### **The main causes of periodontal problems**

An increase in the level of glucose in the blood with the accumulation of glycosylated hemoglobin has a bad effect on cell metabolism and their functioning in all tissues, including periodontal tissues.

- Deterioration of local blood circulation.
- Decreased reactivity of the immune system.
- Changes in the bacterial flora of the oral fluid.
- Changes in the qualitative composition of saliva and its enzymatic activity.

- Autoimmune processes in diabetes.
- Excessive intensity of lipid peroxidation processes.
- Violation of acid-base balance with transition to acidosis [4]

There is an unfortunate association between diabetes and periodontal disease. Studies have shown that if the duration of diabetes is more than 10-15 years, all patients have pathological changes in periodontitis.

Faizullina DB, Associate Professor of the Department of Dentistry and Maxillofacial Surgery of the Postgraduate Education Institute of BSMU [5]

Some mechanisms of periodontitis development in diabetes

Dry mouth

One of the manifestations of diabetes is often a disorder of the glands, including the salivary glands. This leads to dryness or xerostomia. Against the background of the process, the development of periodontal tissue diseases is characteristic. Diabetes itself, along with dry mouth, as well as the general effect of pathological processes lead to a change in the bacterial background in the oral cavity, a decrease in the resistance of the body as a whole and mucous membranes in particular [5].

#### **Cytokine mechanism**

Cytokines are special protein substances that are active at very low concentrations. These are signs of inflammation, in which the anti-inflammatory activity of the immune system should be increased. When there is an inflammatory process (which is what periodontitis actually is), cytokines spread throughout the body, reaching the pancreas and tissue cells that are sensitive to insulin levels. This "saturation" of cytokines leads to a change in the glycemic state, which means that the patient's insulin level in the blood changes and it becomes difficult for him to maintain glycemic control. Against this background, the regeneration ability of periodontal tissue cells decreases, then blood circulation and metabolic processes in periodontitis worsen and its regenerative ability decreases [5].

#### **Causes of stroke**

The vascular component occupies one of the leading positions in the pathogenesis of diabetes mellitus itself and related periodontal diseases. Diabetes mellitus contributes to angiopathy - various disorders of the tone and condition of large and small vessels throughout the body, including the oral cavity. It is associated with a violation of the level of glucose in the blood, poisoning, protein and other types of metabolism.

In diabetes, the relationship between vascular damage and periodontal disease is particularly noticeable during the period when changes in the state of blood vessels occur and diabetic microangiopathy is activated.

At the same time, the oral cavity is rich in small and medium-sized vessels: they supply blood to the periodontal fissure, alveoli, and periodontal tissues. In diabetic microangiopathy, the altered capillaries are relaxed and more permeable, including to cytokines and immune cells. Inflammation, other disorders at the cellular and tissue level, and microcirculation disorders develop. All this worsens the trophism (nutrition) of periodontal tissues, then dystrophic and inflammatory processes increase, and typical periodontitis occurs in diabetes [5].

#### **Immune processes**

The concentration of various immunoglobulins increases in diabetes. Immunoglobulins or antibodies are glycoproteins produced by special blood cells. They recognize foreign agents

(pathogens of infectious, fungal, parasitic diseases) and recognize them in the cells of the immune system. They also weaken the activity of the "harmful" agent and reduce its ability to spread further throughout the body.

At the level of cells and blood vessels, diabetes causes an increase in the formation of special immunoglobulins that activate the immune system. It triggers autoimmune processes, which reduces the resistance of the body and its tissues to the damaging incompatible factors of diabetes [6].

Measures to reduce the risk of developing periodontal disease and other dental problems in people with diabetes

Endocrinologists and dentists should jointly develop dental treatment programs for the treatment and compensation of periodontal diseases and, of course, patients with diabetes.

It is important to convince the patient of the need to carefully follow recommendations for glycemic control, oral hygiene, timely treatment of caries in diabetes, as well as concomitant diseases, including dental diseases. The appearance of bleeding, pain in the gums, their discoloration, discomfort when biting solid food, chewing, brushing the teeth, using an irrigator and other hygiene tools - all this is a reason to immediately consult a dentist.

**The following preventive measures should be observed:**

- Carefully follow the doctor's instructions, take medications that reduce glucose levels or inject insulin on time.
- Constantly monitor blood glucose levels and take measures if they deviate from the norm.
- Diet.
- To quit smoking.
- Regular visits to the dentist and subsequent implementation of his recommendations.
- After consulting an endocrinologist, take dietary supplements that have a positive effect on the changes that accompany diabetes.
- Using a mouthwash to prevent the disruption of microflora and the development of candidal stomatitis.
- Proper care of the oral cavity, prostheses, if any, and the use of an appropriate toothbrush [7].

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## CHANGES IN THE ORAL MUCOSA IN TUBERCULOSIS

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**Abstract:** Tuberculosis of the oral mucosa is a specific infectious tissue damage with a chronic course. Its causative agent is Koch's bacillus. This pathological process develops in patients with reduced immunity of the body, then tuberculosis mycobacteria are introduced into the tissues.

This type of disease manifests itself as tuberculous rashes that occur locally. In their center, a shallow wound depression is formed, which is painful on the surface. It has jagged edges and a grainy bottom with a yellowish tint.

**Keywords:** characteristics of oral tuberculosis, Causes of oral tuberculosis, Symptoms of oral tuberculosis, Diagnosis of oral tuberculosis, Oral cavity treatment of tuberculosis.

Oral tuberculosis rarely develops in patients compared to other forms of this disease. This phenomenon is explained by the low sensitivity of the mucous membrane in the oral cavity to damage by mycobacteria. This pathology is often detected in men. Its development is characterized by a decrease in the general resistance of a person. This process activates the opportunistic flora of the oral cavity. Therefore, additional contamination of the already wounded surface with bacteria occurs. This form is dangerous, because a tenth of the cases of gastric ulcer become malignant. Let's see what oral tuberculosis is in adults and children, how it manifests and how to treat it.

### Characteristics of oral tuberculosis

Tuberculosis of the oral mucosa is a specific infectious tissue damage with a chronic course. Its causative agent is Koch's bacillus. This pathological process develops in patients with reduced immunity of the body, then tuberculosis mycobacteria are introduced into the tissues. This type of disease manifests itself as tuberculous rashes that occur locally. In their center, a shallow wound depression is formed, which is painful on the surface. It has jagged edges and a grainy bottom with a yellowish tint.

In the pathogenesis of tuberculosis, the mucous membrane in the oral cavity causes an effective inflammatory reaction, in which tuberculous granuloma is formed. In its center there is cheesy necrosis surrounded by epithelioid and multinucleated cells.

### The following forms of tuberculosis affecting the oral cavity are distinguished:

Primary infection in adults almost never occurs. It is often diagnosed in childhood. During primary oral tuberculosis, the main routes of infection are inhalation and fecal-oral transmission. Tuberculous lupus erythematosus is often encountered in dental practice. An erosive lesion is located on the surface of the gums. This form often becomes chronic. Untreated ulcers can become malignant. The miliary-ulcerative type of infection with oral tuberculosis occurs in weakened patients. When swallowed, mycobacterium tuberculosis is excreted with sputum. They penetrate the mucous membrane in damaged areas. Most often, ulcers appear on the palate or tongue, less

often on the edge of the gums or on the inner surface of the cheeks. Scrofuloderma is common in children. During the formation of elements, a large node appears first. Then it softens and becomes necrotic, forming a fistula. After the ulcer heals, scars appear in its place. Secondary tuberculosis develops in the tissues of the oral cavity when there is an infectious process of the lungs or skin.

#### **Causes of oral tuberculosis**

Pathology occurs against the background of a sharply reduced activity of the immune system in people, which facilitates the infection of tissues with Koch's bacillus. Most often, focal lesions on the mucous membrane are secondary. Ulcers are caused by the spread of mycobacteria and their metabolic products from active inflammatory sites through the lymphatic vessels or blood stream. When a patient has the pulmonary type, the mucous membrane becomes infected due to the introduction of bacteria present in the sputum into the tissues.

#### **Symptoms of oral tuberculosis**

If the lesion is primary, scaly painful ulcers appear. The elements are located on a dense basis. Above, they are covered with a gray-yellow layered substance. During the disease, the area covered by wounds increases. Regional lymph nodes initially increase in size and then merge into one conglomerate. Purulent lymphadenitis is often observed. The typical appearance of the lupus erythematosus form of tuberculosis is a tubercle with a painless and soft elastic consistency.

During the process, the elements become larger and then merge, forming large affected areas. They are covered with painful sores with a grayish-yellow coating and bleeding granulations.

Later, rough scar tissue is formed in this place, which deforms the mucous membrane. With the billion-wound variant, small foci are formed first. In this place, a wide-open sore will quickly appear. The wounds are painful and have ragged edges, and microabscesses form around them. Affected areas are located on the palate and cheeks. In all forms, patients note lethargy, deterioration of well-being and a rise in temperature.

#### **Diagnosis of oral tuberculosis**

Diagnosis is based on the presence of typical complaints and characteristic clinical manifestations of the disease. This was confirmed by further investigations. Using the diascopy method, a typical sign of the disease is detected when the lesions have a light brown color when pressing on the lips. Pospelov's symptom is determined.

When the tubercle is touched with a probe, its apex is destroyed. Epithelial cells and Langhans bodies are detected during cytological examination of tissue scrapings from the affected area. The main methods for confirming the tuberculous nature of the lesion are the immunological examination of T-SPOT, as well as the Quanti FERON test.

#### **Treatment of oral tuberculosis!**

Patients with this disease are treated in the tuberculosis clinic. Antiseptics with chlorhexidine gluconate are recommended to prevent additional bacterial contamination. Sprays and gels with local anesthetics are used to numb the affected area.

All patients with tuberculosis undergo sanitation of inflammatory sites, which is necessary to prevent the development of tuberculosis in the oral cavity.

For this, dental plaque is removed and caries are treated. If sores appear, you should immediately go to the dentist, even if they do not hurt. The doctor prescribes an effective treatment that prevents the development of complications and malignant degeneration.

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## TREATMENT OF PULP PATHOLOGY IN PATIENTS WITH CHRONIC PERIODONTITIS

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**Abstract.** Our teeth are not only dense organic tissues covered with hard tooth enamel. Inside each tooth is hidden a complex system of blood vessels and nerves necessary to maintain the health of the gums. The sensitivity of the soft tissues in the oral cavity is ten times greater than the sensitivity of other organs. Therefore, any infection that enters the tooth causes inflammation and severe pain. Pathology is also triggered by temperature changes: burns or hypothermia. Unbearable pain forces a person to treat pulpitis and seek help from a dentist. In order to find the right way to treat the disease, you need to know the origin of its occurrence. The core or pulp of the tooth is responsible not only for tooth sensitivity, but also for the production of dentin. Tissue strengthens the tooth from the inside.

**Keywords:** anatomical characteristics of the pulp, periodontitis, pulp pathology, chronic periodontitis.

Anatomical characteristics of the pulp depend on the type of teeth. In the lateral row, as a rule, there is a chamber with three dental canals. The front row and incisors each have one horn. Logically, molars are more difficult to treat than canines or premolars.

Pathological changes in pulp tissues cause swelling and unbearable pain. The pain worsens when touching hot food or pressing on the tooth.

The most common cause of inflammation of the dental nerve (pulp) is the presence of caries. And in a deep stage. The infection reaches the soft tissues through the destroyed tooth tissue, provoking the inflammatory process. A similar situation occurs when the filling falls out or is damaged, when the pulp "opens".

Bacteria can enter the tooth cavity from another source of infection in the body. Inflammation also occurs when the tooth is damaged, when minerals accumulate in the pulp, or when low-quality components are used to fill the canals.

Also, if the nerve is heated during the preparation for prosthetics, treatment of pulpitis may be required. If the sensitivity is increased, swelling of the pulp may occur as a result of the use of chemicals during therapy. During the destruction of the carious cavity, the infection may accidentally enter the pulp chamber.

The dangers of not taking care of your teeth

If the inflammatory process has started, the infection will completely destroy the nerve over time. This requires removing the pulp. But in the absence of therapy, the main risk is the spread of the pathology to the root of the tooth. Here we are talking about tooth loss. Well, the final chord: in an advanced stage, purulent inflammation causes gumboil (destroys the jaw tissue). In this case, decide for yourself how much your patience will be justified.

**Stages of the disease**



The classification of any disease helps to make a quick and correct diagnosis and to choose an effective treatment method for the patient. In the case of pulpitis, everything is relatively simple, there are only two subtypes - acute and chronic.

The first type of inflammation occurs with advanced forms of caries. Bacteria destroy tooth enamel and dentin and the infection enters the pulp. The disease is accompanied by aching, sharp pain, which is aggravated by mechanical or thermal effects on the tooth. Severe pain attacks may occur at night.

Then the process goes to the next stage - all the tissues of the tooth nerve are damaged. The pain syndrome changes from pulsating to constant, unpleasant sensations spread throughout the jaw. Pus forms in the tooth cavity. The phase lasts no more than two weeks. If the treatment of pulpitis is not started in time, the pathology will go to a chronic stage.

To determine the correct diagnosis, the dentist will conduct a preliminary examination. Because if pulpitis develops against the background of other diseases, the diagnosis includes 4-5 stages. The process begins with communication with the patient. It is necessary to understand the stage of inflammation, which is especially important in chronic pulpitis. Therefore, the doctor asks you to describe the nature of the pain in detail. Then a "manual" examination is carried out using medical devices (dental mirror, etc.). In addition, the doctor checks the sensitivity of the affected tooth to temperature changes and weak electric current.

The examination ends with an X-ray examination to assess the condition of the dental nerve and canals. After collecting data and analyzing the image, the doctor plans the pulp treatment process and coordinates it with the patient.

#### **How to fight the disease**

It is not difficult to deal with pulpitis at the initial stage. The nerve in the tooth is preserved, and the doctor relieves inflammation with the help of therapeutic procedures. Biologic treatment eliminates inflammation by antibacterial treatment of the damaged tooth without removing the nerve. After removing the carious tissue and disinfecting the pulp chamber, the dentist applies a compress with calcium hydroxide and places a temporary filling. Then, 3-7 days later, during the next visit, the doctor will take an X-ray. If there is no inflammatory process, then a permanent filling is installed. However, this technique requires a highly qualified doctor, so it is rarely used. For example, with traumatic inflammation of the dental nerve.

It is very important to preserve the pulp, because ... If it is present, the tooth is constantly strengthened due to the production of dentin. Conservative therapy has age restrictions - it is carried out up to the age of 30.

#### **Partial and complete nerve removal!**

If the coronal component of the nerve is separated from the root, partial extraction of the pulp is also acceptable. There must be a large amount of intact periodontal tissue to warrant surgery.

The procedure is performed under anesthesia for patients under 45 years of age.

In practice, pulpitis is treated surgically. The nerve is completely removed, which saves the patient from relapse and retreatment.

#### **Pulp removal is done in two ways:**

Release of living nerve.

Pulp pre-killing (devitalization) with subsequent removal.

In the first option, all work is done in one session. The dentist removes the affected tooth tissue, thoroughly disinfects the cavity, and then removes the inflamed nerve. At the final stage, the filling is installed.

If it is not possible to remove the living nerve from the tooth, it is treated with a medical paste made of arsenic or paraformaldehyde. After 1-2 days, the pulp dies and is removed painlessly. Patients cannot always visit the doctor the next day, in which case the dentist fixes a less concentrated composition for up to two weeks. A temporary filling is placed on top. During the next visit, the doctor will treat the canals with an antiseptic and fill the tooth. Important: this method of treating pulpitis is not used when there is pus and dead tissue in the pulp.

**Traditionally, the treatment of pulpitis consists of 4 stages:**

Application of local anesthesia. Nerve nodes are very sensitive to any impact, so painkillers are indispensable. If caries is present, the affected tooth tissue is removed first. Sometimes it is necessary to remove a healthy part of the tooth to access the pulp. The tooth nerve is removed using a special tool, a pulp extractor. Depending on the stage of the disease, the pulp is pre-treated with arsenic or removed alive. Dental canals are measured and thoroughly disinfected. After treatment, the tooth is filled: first the root canals, then the upper, coronal part of the tooth. In difficult cases, for example, with chronic pulpitis, the doctor installs filling materials only in the canals to monitor the possible recurrence of the disease. If inflammation reappears, intermediate therapy with antibiotics is prescribed. After the permanent filling is installed, the patient may experience pain. It usually does not last more than 2-3 days, a reaction to cold foods and drinks. If the discomfort continues, then the inflammatory process has started again and you should visit the dental office as soon as possible.

**Instructions during pregnancy**

There is a myth that it is impossible to treat teeth while expecting a child. This misconception can have serious consequences. Infection, for example, in the form of caries, can spread throughout the body through blood vessels.

In addition, it is a false belief that X-rays harm the development of the fetus. It has been proven that modern equipment has a minimum radiation dose that does not affect the body. Chronic inflammation is more dangerous. Therefore, when symptoms appear, you should not delay the treatment of pulpitis or caries. The process of childbirth is associated with a decrease in immunity and, as a result, an increase in sensitivity to bacteria and infections. Tooth enamel is not very strong in pregnant women, because... All nutrients are directed to the growth of the baby. Therefore, the appearance of pulpitis and deterioration of the condition of the teeth is a common phenomenon. The second trimester is the most favorable period for dental care. During this period, the child is protected from harmful substances by the placenta. However, if an inflammatory process occurs in the dental nerve, it is not recommended to delay the treatment in order not to expose the baby to unnecessary risk.

During pregnancy, the doctor chooses a gentle treatment method, the filling is installed only in the dental canals. If possible, without using anesthesia. After birth, the patient is given a permanent filling. X-ray examination is performed only in emergency cases.

**Inflammation of the nerve in the wisdom tooth**

Eight has its own characteristics and the doctor often chooses to remove the tooth. The complexity of the therapy depends on the anatomical features of the third molars. Crooked roots, lack of access to the tooth, partial coverage of the gums make the treatment of pulpitis of the eighth

number equal to jewelry work. And this requires the experience and high qualification of the doctor.

### **Conclusion**

Periodontitis results in the loss of periodontal attachment structures. If left untreated, tooth loss eventually may result.

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## PECULIARITIES OF PHYSICAL DEVELOPMENT OF CHILDREN BROUGHT UP IN PRESCHOOL EDUCATIONAL ORGANISATIONS OF DIFFERENT TYPES OF STRUCTURE

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**Abstract.** *Collecting data on children's physical development, such as height, weight and other indicators, helps us take action to support their health and development. In addition, they help solve problems with physical development by offering appropriate recommendations and measures. For preschool organizations, this data is important for informed decisions and the development of child support programs.*

**Keywords:** *children, physical development, pre-school educational organisations.*

**Introduction.** The physical development of children is one of the most important indicators of their overall health [3]. From birth to full adulthood, a child's body goes through many stages of intensive growth and development, and during this period it is particularly sensitive to environmental and external factors [5].

The environment plays an important role in children's physical development [1]. Pre-school educational organisations (PSEs) are the place where children have to move away from home for the first time and get used to a new place. The environment in preschool educational organisations plays a significant role in children's physical development and is key to preschoolers' health and all-round development [4].

Russian scientists have conducted a study to examine the adaptation capabilities of children's organism. The study showed that 54.3% of boys and 56.1% of girls had satisfactory levels of adaptation. However, 45.7 per cent of boys and 43.9 per cent of girls had strained adaptation and unsatisfactory adaptation. This indicates that these children have difficulties in adapting to their environment [2].

It is therefore important to create and maintain a favourable environment that helps children adjust to their new place and develop harmoniously. This study was conducted to investigate the impact of the material used to build preschool educational organisations on children's physical development. The results of the study are of practical significance for making decisions on the construction and reconstruction of preschool institutions, as well as for creating an optimal environment for children's development and learning. Research objective. The main purpose of this study was to find out which type of material in preschools has the most positive effect on children's physical development. This may be useful information for the construction and development of new preschools, as well as for organisations renovating existing facilities. The study can help to identify the optimal environment and conditions for children's development, providing them with the best opportunities for physical growth and development.

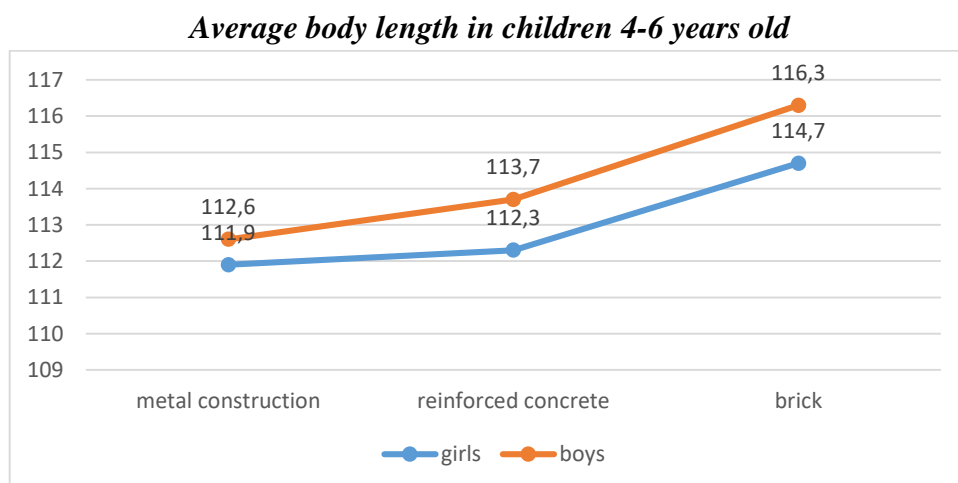
**Research methods and material.** The objects of the study were PSEs built of different building materials. Three types of PSEs were selected: metal structure, reinforced concrete and brick. The study participants were 474 children aged 4-6 years, including 231 boys (48.7%) and

243 girls (51.3%). Of these, 39.9 per cent of the children attended PSEs constructed of brick, 34.2 per cent of reinforced concrete and 25.9 per cent of light metal construction. Various research methods were used to collect data, including hygienic, somatometric, medico-statistical and analytical methods. To carry out anthropometric study of children, a method developed by Kamilova R.T. was used, entitled "Unified Methodology for the Study and Assessment of Physical Development of Children and Adolescents" (Monograph. Tashkent - 1996). This methodology of Kamilova R.T. is one of the most widely used in the field of anthropometry. It involves measurements of various anthropometric parameters such as height, weight, chest circumference and volumes of various body parts. Anthropometric studies of children were conducted with the participation of preschoolers' carers, which allowed creating a comfortable and trusting atmosphere for children.

For statistical processing of the data we used Microsoft Excel 2016 programmes, which provide the necessary tools and functions for various statistical calculations. During the analysis, we calculated arithmetic mean (M), error of mean (m) and standard deviation value ( $\sigma$ ). To further analyse the differences between two independent samples, we used Student's t-test to determine whether the differences between the mean values of two independent samples are significant. In this study, the level of statistical significance was set as  $p \leq 0.05$ , which means that differences between groups of data were considered reliable if the probability of random differences was less than 5%. The methodology for assessing the physical development of preschool children was based on the recommendations presented in the publication entitled "Assessment of physical development and nutritional status of children in Uzbekistan", which was edited by Kamilova R.T. in 2018. This methodological recommendation served as a basis for determining the parameters and criteria by which children's physical development was measured and assessed. The results of the study allow us to assess the differences between PSEs based on different construction materials and their impact on children's physical development.

**Research results.** The results The study revealed that 6-year-old boys attending brick PSEs had a body length of  $116.3 \pm 0.69$  cm, reinforced concrete -  $113.7 \pm 1.12$  cm, and metal construction -  $112.6 \pm 1.23$  cm. Boys attending brick PSEs had significantly ( $p < 0.05$ ) longer body lengths (3.7 and 2.6 cm) than children in metal and reinforced concrete PSEs. Similar results were obtained for girls. Girls 6 years old who are brought up in brick PSEs have ( $114.7 \pm 0.81$  cm) significantly ( $p < 0.05$ ) 2.8 cm longer than in metal PSEs ( $111.9 \pm 1.09$  cm), and compared to reinforced concrete PSEs ( $112.3 \pm 0.93$  cm) 2.4 cm longer (figure 1).

**Figure 1**



Let us consider the data obtained on torso length in 4-year-old girls in brick PSEs had a value of  $31.8 \pm 0.39$  cm, in metal construction children -  $32.0 \pm 0.74$  cm, and in reinforced concrete children -  $31.7 \pm 0.32$  cm. Among 5 years old girls brought up in brick PSEs the torso length averaged  $33.1 \pm 0.83$  cm, in metal structures -  $33.8 \pm 0.49$  cm and in reinforced concrete -  $32.5 \pm 0.61$  cm. But no significant difference was found between the groups. However, 6 years old girls brought up in brick PSEs had significantly ( $p \leq 0.05$ ) longer torso length ( $36.1 \pm 0.34$ ) compared to metal structures ( $35.1 \pm 0.43$  cm) and reinforced concrete PSEs ( $34.2 \pm 0.43$  cm) (table 1).

**Table 1**

**Body and torso length indicators of children aged 4-6 years ( $M \pm m$ )**

Indicators	Body length			Torso length		
	PSEs	MC	RC	B	MC	RC
Age	girls					
4 yrs.	$99,0 \pm 1,18$	$98,9 \pm 0,75$	$99,1 \pm 0,94$	$32,0 \pm 0,74$	$31,7 \pm 0,32$	$31,8 \pm 0,39$
5 yrs.	$105,1 \pm 1,17$	$105,0 \pm 1,12$	$104,7 \pm 1,24$	$33,8 \pm 0,49$	$32,5 \pm 0,61$	$33,1 \pm 0,83$
6 yrs.	$111,9 \pm 1,09$	$112,3 \pm 0,93$	$114,7 \pm 0,81$ *	$35,1 \pm 0,43$	$34,2 \pm 0,43$	$36,1 \pm 0,34^*$ **
	boys					
4 yrs.	$102,0 \pm 0,51$	$102,8 \pm 0,72$	$101,0 \pm 0,79$	$32,3 \pm 0,37$	$32,2 \pm 0,44$	$32,4 \pm 0,60$
5 yrs.	$107,2 \pm 0,88$	$106,7 \pm 0,84$	$107,8 \pm 1,00$	$34,7 \pm 0,46$	$33,5 \pm 0,32^*$	$34,8 \pm 0,44^*$
6 yrs.	$112,6 \pm 1,23$ *	$113,7 \pm 1,12$	$116,3 \pm 0,69$ *	$35,3 \pm 0,75$	$35,1 \pm 0,61$	$37,5 \pm 0,30^*$ *

Note: \* - statistically significant correlations ( $p \leq 0.05$ ); \*\* - statistically significant correlations ( $p \leq 0.01$ ); \*\*\* - statistically significant correlations ( $p \leq 0.001$ ); MC-metal structure, B-brick, RC-reinforced concrete

Similar results are observed when measuring the length of the upper limb. 6-year-old girls raised in brick PSEs have a significantly longer upper limb length,  $46.3 \pm 0.41$ , compared to metal structures PSEs,  $46.2 \pm 0.59$  cm, and reinforced concrete PSEs,  $42.4 \pm 0.57$  cm. When measuring the length of the lower limb, it is also seen that 6-year-old girls brought up in brick PSEs are significantly longer -  $56.8 \pm 0.57$  cm - than girls brought up in metal structures ( $54.9 \pm 0.92$  cm) and reinforced concrete ( $57.4 \pm 0.62$  cm) PSEs, but no significant difference was found (table 2).

**Table 2**

**Upper and lower limb lengths of girls aged 4-6 years ( $M \pm m$ )**

Indicators	Upper limb length			Lower limb length		
	PSEs	MC	RC	B	MC	RC
Age	girls					
4 yrs.	$40,5 \pm 0,72$	$39,5 \pm 0,45$	$39,6 \pm 0,49$	$47,5 \pm 1,17$	$48,3 \pm 0,47$	$46,4 \pm 0,81$
5 yrs.	$41,9 \pm 0,56$	$42,9 \pm 0,69$	$42,3 \pm 0,57$	$51,0 \pm 0,72$	$52,2 \pm 0,69$	$51,2 \pm 0,76$
6 yrs.	$46,2 \pm 0,59$	$42,4 \pm 0,57$	$46,3 \pm 0,41$ ***	$54,9 \pm 0,92$	$57,4 \pm 0,62$	$56,8 \pm 0,57$

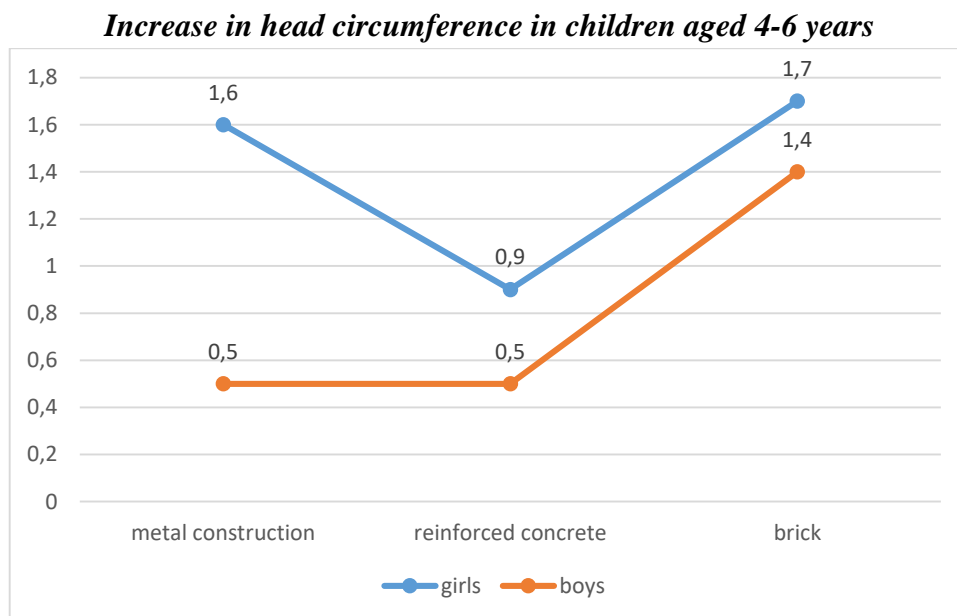
*Note: \* - statistically significant correlations ( $p \leq 0.05$ ); \*\* - statistically significant correlations ( $p \leq 0.01$ ); \*\*\* - statistically significant correlations ( $p \leq 0.001$ ); MC-metal structure, B-brick, RC-reinforced concrete*

In our study we measured circumference indices such as head, chest, abdomen and hip circumferences.

The head circumference of 6-year-old boys raised in a brick PSEs is ( $51.8 \pm 0.20$  cm) significantly ( $p < 0.05$ ) higher by 0.9 cm than boys raised in a metal structures PSEs ( $50.9 \pm 0.26$  cm), and compared to boys raised in a reinforced concrete PSEs ( $51.3 \pm 0.44$  cm) higher by 0.5 cm. Differences in head circumference growth in girls aged 4 to 6 years have been revealed.

Girls attending metal-constructed PSEs have the largest increase in head circumference, which is 1.6 cm. At the same time, children attending reinforced concrete PSEs have a smaller increase in head circumference, which is only 0.9 cm. Girls attending the brick PSEs have the highest head circumference increase of 1.7 cm (figure 2).

**Figure 2**



The obtained data showed that the chest circumferences of boys are significantly ( $p < 0.05$ ) 1-2 cm larger than those of girls in all age groups. Among 6-year-old boys in brick PSEs, the average chest circumference was  $57.7 \pm 0.39$  cm, in reinforced concrete PSEs -  $56.6 \pm 0.78$  cm, and in metal construction PSEs -  $56.8 \pm 0.61$  cm. At the same time, among 6-year-old girls, the mean chest circumference was  $56.1 \pm 0.43$  cm in brick PSEs,  $55.9 \pm 0.69$  cm in reinforced concrete PSEs and  $55.0 \pm 0.71$  cm in metal construction PSEs (table 3).

In the study, it was found that the mean value of abdominal circumference of girls raised in metal construction PSEs is  $52.2 \pm 0.66$  cm. This value is significantly ( $p \leq 0.05$ ) higher than that of girls brought up in brick PSEs where the mean abdominal circumference is  $49.7 \pm 0.66$  cm. However, there was no significant difference in the value of abdominal circumference among girls raised in reinforced concrete PSEs, which was  $50.3 \pm 0.76$  cm.

In boys, there was a significant ( $p \leq 0.05$ ) difference in abdominal circumference between children in metal and brick PSEs. The mean abdominal circumference of boys in metal construction PSEs was  $51.0 \pm 0.62$  cm, while that of boys in brick PSEs was  $53.2 \pm 0.63$  cm.

**Table 3**

**Head and chest circumference in children aged 4-6 years ( $M\pm m$ )**

Indicators		Head circumferences			Chest circumference		
PSEs	MC	RC	B	MC	RC	B	
Age				girls			
4 yrs.	48,8±0,49	49,6±0,24	49,2±0,38	51,8±0,51	52,0±0,35 *	50,9±0,35 *	
5 yrs.	50,0±0,30	50,0±0,31	49,8±0,34	54,0±0,47 *	53,5±0,65 *	52,4±0,57	
6 yrs.	50,4±0,34	50,5±0,26	50,9±0,23	55,0±0,71	55,9±0,69	56,1±0,43	
boys							
4 yrs.	50,4±0,32	50,8±0,29	50,4±0,34	53,6±0,53	54,6±0,45	54,1±0,55	
5 yrs.	50,4±0,37	50,2±0,29	50,8±0,30	54,0±0,45 *	54,7±0,39 *	55,3±0,48	
6 yrs.	50,9±0,26 *	51,3±0,44	51,8±0,20 *	56,8±0,61	56,6±0,78	57,7±0,39	

Note: \* - statistically significant correlations ( $p\leq 0.05$ ); MK-metal structure, K-brick, RC-reinforced concrete

However, there was no significant difference in abdominal circumference between boys in metal ( $51.0\pm 0.62$  cm) and reinforced concrete ( $51.7\pm 0.58$  cm) PSEs (table 4).

**Table 4**

**Abdominal circumference in children aged 4-6 years ( $M\pm m$ )**

Indicator	Abdominal circumferences					
PSEs	MC	RC	B	MC	RC	B
girls			boys			
4 yrs.	50,4±0,68	50,1±0,50	49,5±0,50	51,3±0,80	52,0±0,64	51,9±0,62
5 yrs.	52,2±0,66*	50,3±0,76	49,7±0,66*	51,0±0,62*	51,7±0,58	53,2±0,63*
6 yrs.	52,1±0,68	53,4±0,73	52,9±0,49	52,8±0,69	53,4±0,90	54,0±0,52

Note: \* - statistically significant correlations ( $p\leq 0.05$ ); MK-metal structure, K-brick, RC-reinforced concrete

Thus, the study showed that children attending brick PSEs had the highest scores and children attending reinforced concrete PSEs had the lowest scores. However, it should be noted that the differences in physical development between the groups were not always reliable.

The study makes it possible to draw important conclusions about the influence of education and upbringing conditions on the development of preschool children. The length of body, torso, upper and lower limbs of 6-year-old children attending brick preschools was significantly greater than that of children attending metal construction and reinforced concrete preschools. Maximum gains in physical development were observed in children attending brick preschools. However, further research is required to clarify the reasons for these differences and to optimise the conditions of education and upbringing of preschool children.

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# DEVELOPMENT OF TECHNOLOGICAL ELEMENTS OF CULTIVATION OF SAMPLES OF COCKTAIL-TYPE VARIETIES OF TOMATOES IN UNHEATED GREENHOUSES (IN WINTER-SPRING ROTATION)

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**Abstract.** *The article presents the study of the technological elements of the cultivation of cocktail-type varieties of tomatoes in unheated greenhouses in the territory of Uzbekistan, as well as information about the origin of cocktail-type varieties of tomatoes, the passage of phenological phases and productivity of cocktail-type varieties of tomatoes. The study of the technology of cultivation of cocktail-type varieties of tomatoes in unheated greenhouses and the description of promising varieties are given in the territory of Uzbekistan.*

**Keywords:** *varieties, productivity, fruit, soil and climatic conditions, unheated greenhouses, type, tomato, cocktail type.*

## INTRODUCTION

The role and importance of agriculture in ensuring the safety of food, in particular, the type and quality of vegetable crops, is increasing day by day. In particular, in our country, it is an urgent issue to provide the population with agricultural products, increase productivity and interest, and introduce scientific achievements and modern approaches to the field, using the available resources and opportunities wisely. Since vegetable crops are considered to be extremely rich in biologically active substances, vitamins, enzymes, and mineral salts necessary for human health and work capacity, great attention is being paid to increase their cultivation in our republic. . In this regard, protected land vegetable growing is one of the main branches of agriculture, and it is important to provide the population with products rich in new vitamins in the off-season. Currently, tomatoes, cucumbers, citrus and other vegetable crops are grown in greenhouses in Uzbekistan.

Tomato is one of the leading vegetable crops today. Tomatoes are popular among vegetable crops due to their delicious taste, color and shape, as well as various canned and pickled products, tomato pastes, juices, ketchup, salads and many national dishes. The fruits of each variety or hybrid have their own shape, size, density, color, brightness, chemical composition, aroma and taste. Most of these characteristics may vary depending on the characteristics of the variety and the technology of their cultivation.

Tomato fruits contain 94-95% water, and the mass fraction of dry matter usually varies between 4.5-5.7%. The main share is from sugars (2.5-3.5% of raw materials), which are represented mainly by glucose, to a lesser extent by fructose and sucrose. The percentage of polysaccharides (starch, dextrans, fibers) is 0.84%. A small amount of starch remains in ripe fruits, and more in unripe fruits. The main part of pectin substances (soluble and insoluble pectins, pectic acid) is located in the placental layer of cells, their share is 0.13%. Soluble pectins react with

calcium, which increases the density of fetal tissues and increases their mechanical strength. Pectic acid accumulates in large quantities in overripe tomatoes.

The creation of cocktail varieties and hybrids of tomatoes is a new direction in the selection, which differ from other types and varieties by the size and color of their fruit. In Uzbekistan, the main direction of choosing vegetable crops in greenhouse conditions is high yield of fruits, good taste, large, medium and small fruits. The taste qualities of tomato fruits directly depend on the ratio of soluble substances, fructose, citric acid, soluble substances and titratable acid in them, the most accurate assessment of this quality is possible only by tasting.

Because the density of the shell of cocktail tomatoes and the shelf life of the fruits have not changed, they can be removed after waiting for the ripening of all the tomatoes in the brush (the whole bunch at the same time), not after the first one or two fruits have ripened. These tomatoes are resistant to cracking, but cracking may occur if they are not watered for a long time and then watered heavily.

Cocktail tomatoes can come in a variety of shapes from round to plum and pear-shaped, and the color of the fruit is amazing for its variety and brightness - red, orange, yellow, brown and even watermelon, the characteristic feature is that they are dense have leather, which makes them easy to transport and store. It is very important for fresh greenhouse tomatoes to have a beautiful color, uniform ripening, high sugar content, vitamins and good taste.

A very important positive quality of these tomatoes is that they have a high fruit set in the characteristic high temperatures of recent years, resist cracking and shedding of fruits and remain in the brushes for a long time. They can be collected as whole brushes, as well as individual fruits. Tomato cocktail varieties are very resistant to diseases (TMV, brown leaf spot and gray rot of fruits).

However, the selection of "cocktail" varieties of tomatoes and the development of technological elements of cultivation in greenhouse conditions of the republic is an urgent problem. Therefore, it is necessary to research the development of technological elements of the cultivation of tomato cocktail-type samples in the autumn-winter cycle in greenhouses.

In this regard, PF-4947 of the President of the Republic of Uzbekistan dated February 7, 2017 "On the strategy of actions for the further development of the Republic of Uzbekistan", June 17, 2019 "On land and water resources in agriculture PF-5742 on effective use measures" and PF-5742 dated October 23, 2019 "On approval of the strategy of agricultural development of the Republic of Uzbekistan for 2020-2030" In Decree No. 5853, one of the important tasks is "...to ensure the safety of food products and improve the consumption ration, to develop and implement a food safety state policy that provides for the production of the required amount of food products" defined.

In order to provide the population with fresh fruits and vegetables year-round in Uzbekistan, tomatoes are grown in heated and unheated greenhouses in 3 seasons: autumn-winter (from the beginning of August to January of the following year), winter-spring (from January to July from the end of the month) and long-term (from August to July of the following year).

In many countries of the world, extensive scientific and research work on the introduction, selection and seeding of vegetable crops, as well as the research of cultivation technology V.F. Pivovarov, P.F. Kononkov, V.P. Nikulshin, S.S. Litvinov, V.N. Lukyanes . Such scientists as Shibutani, T.Okamura, R.Isoda, S.Kumazawa, M.Yamato (Japan), A.Bastidas (India), D.E.Cook (USA) conducted.

However, in Uzbekistan, scientific and research works on the selection of cocktail-type varieties of tomatoes suitable for greenhouse conditions and the development of some elements of the technology of cultivation have not been carried out.

Among the vegetable crops of Uzbekistan, tomato is the most popular and widespread, and it ranks first in terms of area and gross yield. Tomatoes make up 40-45% of the total area of vegetable crops. A number of scientists contributed to extensive research and development of tomato varieties and hybrids suitable for greenhouse conditions, as well as development of resource-saving agrotechnology. They are Rijk Zwaan (Netherlands), Tong (China), P. Bosland (USA), B.A. Bryzgalov, V.E. Sovetkina, G.I. Ganus, P.P. Ivanenko, A.B. Prilipka, A.G. Abdullayev, M. Kamolov and others.

For the first time in Uzbekistan, scientific research works and scientific bases are being studied for selecting cocktail-type varieties of tomatoes suitable for the soil-climatic conditions of Uzbekistan, especially for unheated greenhouses, determining the optimal planting period and schemes.

**The origin and varieties of the cocktail-type variety of tomato.** Tomatoes are native to South America. Tomatoes were first grown in Peru, Ecuador and Chile. It began to spread throughout the world only after the Spanish began to establish colonies in America. Plant species similar to the currently cultivated tomato were also found in the Galapagos Islands. It was first cultivated in Mexico. It was brought to Europe by Spanish colonizers and European merchants, first to Spain, Portugal, and later to Italy, France and other countries.

Initially, tomatoes were grown and cared for in pots as a beautiful flower in homes and yards. It was brought to Central Asia from Russia for the first time in the 19th century by the big businessmen of their time, Afzalkhojaboy, Muhammadsiddigboy and Saidazimboy.

At first, tomato was considered a poisonous plant and was cultivated by gardeners only as a decorative plant. In the middle of the 13th century, it was widely cultivated in Russia. Tomatoes entered Central Asia, including Uzbekistan, through Russia. Although it came to Europe in the 16th century, it was cultivated as an ornamental and medicinal plant for a long time.

At the end of the 18th century, tomatoes were cultivated as a food crop. In the middle of the 19th century, it spread widely to Russia and southern Europe, and from the end of the last century, it was also cultivated in Central Asia.

Currently, 4.4 million hectares of land are planted in the world, and 123.7 million tons of gross crops are grown. The main tomato growing countries are China (31.6 million tons), USA (11.0 million tons), Turkey (9.7 million tons), Italy (7.8 million tons), India (7.6 million tons), Egypt (9.6 million tons).

Although tomato is used as a tomato in scientific terminology, in Uzbekistan both the plant and the fruit are called tomato or "pamildori" among the people. In the 19th century, after tasting its taste in European countries, it gave the first positive evaluation. Italian biological scientists gave this wonderful fruit the name "tomato" - "golden apple". It was the Italians who started eating tomatoes with pepper, onion, and garlic as an addition to various dishes.

Today, tomatoes have a special place in human food, and we can see tomatoes or its products on every table. When tomatoes were first discovered, they were afraid to eat them. We know that tomatoes belong to the family of spp., and because there are many poisonous plant species in this family, tomatoes were considered as poisonous as their fellows.

J. Gerard, a famous English doctor, botanist, head of the London Botanical Garden, thought that the fruits and leaves of tomatoes were poisonous and banned their consumption in England, but J. Gerard knew that at the same time, the people of Italy and Portugal considered tomatoes to be edible. They knew. Therefore, in order to find out that tomatoes are not poisonous, Gerard grew tomatoes in his botanical garden and conducted scientific research on them. The population believed in the opinion of scientists so strongly that because of the information given by them, they did not eat tomatoes for 2 centuries and started consuming them only in the 18th century.

According to another legend, King Louis of France ordered a prisoner kept in the Bastille to be fed with tomatoes for a month. The king thinks that it will kill a person like a poisonous plant, unfortunately, the prisoner ate tomatoes for 4 weeks and survived, the prisoner who ate freshly picked tomatoes did not die, but his health improved. After such a change, the king is surprised and pardons him.

Tomato (*Solanum lycopersicum*) is an annual plant that can grow up to 2-3 meters and is a perennial plant in tropical climates. Tomatoes are divided into 4 types depending on the structure of the stem and leaves:

Shtambli - the stem is thick, less branching, standing upright even with fruits.

Stemless - the stem is thin, strongly branched, the fruit falls down under the influence of its weight.

Potato - large-leaved.

Small tomatoes - thin stems, strong branching, small fruits like cherries.

Cultivation of cocktail-type tomato varieties began in 1973. The goal of the scientists was to prevent quick ripening of cocktail-type tomatoes in hot climates. A genetic combination that promotes slow ripening has been replicated, but at the same time, a method has been found to use the resulting genes to breed small cherry tomatoes. Thus, the culture was reflected in the creation of these mini tomatoes.

Cocktail-type varieties of tomatoes also include mini cherry tomatoes. Cherry cocktail tomatoes are the fastest growing of all tomatoes.

Varieties of cherry tomatoes are widespread in the garden economy and around the city. These tomatoes have a decorative appearance. Tomatoes are vegetable fruits with the same taste and color, and at the same time, they are attractive with their compactness and decorative appearance. In addition, cocktail varieties of tomatoes are one of the vegetables that are very convenient for the winter in canned form.

Yellow varieties of cherry tomatoes are orange grapes. The taste of tomatoes is sour, they are perfectly stored. Several hundred yellow fruits grow on the bush. Turkey is characterized by a high amount of carotene - beneficial aspects that affect good eyesight.

The Kira F1 variety is distinguished by early ripening compared to other tomatoes during ripening and storage (up to 2.5 months). Fruits are 16-20 pieces per bush and are dark red in color.

Cherry pink tomatoes are grown in unheated greenhouses. The fruit is pink in color and weighs up to 23 g. Bourgeois prince is one of the best and high-yielding types of cherry tomatoes. These tomatoes are resistant to any diseases and ripen early. The fruits are red in color and are a very good variety for canning and drying. It does not lose its unique taste and aroma during processing. These tomatoes are among the varieties adapted for growing in greenhouses.

Alkaloid toxins are found in this vegetable, which belongs to the tomato family, in a small amount and is considered safe for human life. Tomatoes are also grown in botanical gardens where medicinal plants are grown in Europe and the Netherlands.

Among the vegetable crops in Uzbekistan, tomato is the most popular and widespread, and it ranks first in terms of area and gross yield. Tomatoes make up 35-38% of the total area of vegetable crops. Tomato is one of the vegetable crops with high nutritional value. Its ripe fruit is extremely tasty and nutritious, and contains various vitamins, mineral salts, organic acids and carbohydrates.

The composition of the tomato fruit is variable and depends on such factors as the variety of the crop, the degree of ripening of the fruits, the period of harvesting, the growing conditions and technology. Tomatoes are eaten fresh, salted and marinated. It is an important raw material for the canning industry.

Tomato fruits are ripe after picking and are resistant to long storage. Therefore, after harvesting, its consumption period can be extended by another 1.0-1.5 months.

The tomato root reaches a depth of 1 meter, the diameter can be up to 2.5 m, under favorable conditions, the roots can appear in any vegetative parts of the plant, so tomatoes can be planted not only with seeds, but also with branches. A new branch of tomato will form new roots after 2-3 days in water.

Tomatoes are heat-loving plants. Tomato is a self-pollinating plant, and at the same time it can be pollinated by other plants.

The soil of the experimental area is grassy gray soil. These soils contain 1.5-2 times more nutrients that are easy for agricultural crops to absorb: humus, nitrogen, phosphorus, potassium and other nutrients compared to newly developed soils.

One of the main factors determining the level of soil fertility is the mechanical composition of the soil. It helps to determine its physical and chemical properties.

The mechanical composition of the soil of the experimental field is medium sand. During tillage, the mechanical composition of the soil is not compacted, the water permeability and ion retention structure are good.

There will be no heavy rain after precipitation. The level of Sizot water is 5-6 meters. The physical properties of the soil and soil moisture play a major role in increasing the fertility of this soil.

One of the factors that increase the level of high productivity of the soil is that it is provided with agrochemicals. Such substances include humus, nitrogen, phosphorus, potassium.

Humus is a complex organic compound of a dark color that has changed as a result of the decay of the remains of plant and animal organisms in the soil. With the increase of humus in the soil, the amount of nitrogen also increases accordingly. A large amount of soil humus is the main indicator of its productivity.

Phosphorus content in the soil ranges from 0.182% to 0.295%, and total potassium ranges from 0.566% to 1.264%. It is too little. The mobile phosphorus element was determined in the range of 44-56 mg/kg, exchangeable potassium in the range of 115.5-136.6 mg/mg.

The area where the experiment was conducted belongs to the temperate mountain region in terms of climate. Due to the fact that the valley is surrounded by mountains on all sides, changes in climate indicators change gradually.

Andijan region has its own complexity. That is, the low total amount of precipitation during the growing season of plants leads to warming of the weather and soil in the summer months, and an increase in the level of evaporation of moisture in the soil.

According to long-term data, the first snow cover on the soil occurs at the end of December.

In early spring, the snow melts on the ground at the end of February and the beginning of March. The winter period is short, the annual average precipitation is 276.3 mm, 70-80% of this precipitation falls in the winter and spring months. The level of evaporation will be high. Due to the fact that there is no severe cold in the winter season throughout the year, and due to the high weather and soil temperature in the summer months, it is convenient to grow all types of crops on these farm lands.

It was noted that the average air temperature in the experimental year was slightly colder in January, February, March and April compared to many years. Therefore, the date of planting tomatoes fell on April 15. **Development of morphobiological characteristics and some elements of cultivation of cocktail-type samples of tomatoes in winter-spring rotation in unheated greenhouses.**

**To achieve this goal, the following tasks are planned:**

On the example of Andijan district of Fergana Valley, selection of tomato cocktail type varieties suitable for cultivation in soil and climate conditions, selection of cocktail type tomato varieties in unheated greenhouses, determination of optimal planting periods to ensure a higher yield than cocktail type tomato varieties.

### **RESEARCH OBJECT**

**The object of the study is the seed, plant, leaf and harvest of the tomato cocktail variety samples belonging to the foreign selection. The subject of the research is 3 planting periods (February 15, March 20, April 15), 1 planting scheme (60×30 cm) is taken in the development of some elements of cultivation of tomato cocktail-type variety samples.**

The scientific novelty of the research is as follows:

Cocktail varieties of tomatoes are separated in unheated greenhouses; the optimal planting period for the cultivation of cocktail-type varieties of tomatoes is determined; in order to obtain a high and high-quality harvest of tomato cocktail-type varieties, the most convenient planting scheme and plant nutrition area are found; planting seeds of cocktail-type tomato varieties and caring for seedlings; cocktail-type tomatoes identification of the earliest ripening and mid-ripening cultivars from cultivar samples.

Scientific and practical significance of research results. For the first time in unheated greenhouses, it can be explained by the important scientific importance of studying and selecting samples of cocktail-type varieties of tomatoes in the winter-spring rotation, determining the optimal planting period and scheme.

In the experiments, phenological observations, biometric and productivity measurements were carried out:

1. Determining the number of seedlings. After 3-4 days of planting seedlings, the number of seedlings was counted in each repetition, and the number of captured plants in each field was determined.

2. Phenological observation. Phenological observations were carried out on leafing and

branching of plants.

3. Mathematical statistical processing. Seedlings planted in an unheated greenhouse were taken from samples of the cocktail variety, and the calculated parameters were subjected to mathematical and statistical processing according to the method of B.A. Dospikhov (1985).

Optimum planting dates for the earliest and most productive production of cocktail-type varieties of tomatoes are developed and recommended for production.

### **CONCLUSION**

Based on the results of my studies on the topic of developing the technological elements of the cultivation of cocktail-type varieties of tomatoes, I came to the following conclusion that there is no unanimous opinion among researchers on the issue of the origin of the cocktail-type variety of tomatoes, because no scientific research has been done on the cocktail-type varieties of tomatoes. However, the selection of "cocktail" varieties of tomatoes and the development of technological elements of cultivation in greenhouse conditions of the republic is an urgent problem. Analysis of marketability and biochemical composition of such varieties of tomatoes in order to determine the quality, size, freshness and suitability for consumption of their fruits in order to grow samples of cocktail-type varieties of tomatoes.

To put an end to seasonality in the cultivation of cocktail-type varieties of tomatoes, to build more greenhouses, greenhouses, hothouses and unheated greenhouses, to heat them from solar energy, natural hot water, natural gas, hot water, steam, smoke gases used by enterprises. use is very important. Well-fertilized, nutrient-rich, well-drained cool soils are suitable for growing tomatoes.

As a result of studies, newly created hybrids suitable for growing in an unheated greenhouse, folk selection and introduced varieties, samples of tomato cocktail type varieties are distinguished from them with the following characteristics;

- cocktail-type varieties of tomatoes resistant to cold, heat, drought, compact bushes, large fruits, vitamins, and varieties that ripen at the same time are selected;
- cocktail-type varieties of tomatoes suitable for unheated greenhouses are selected.

It is necessary to use different substrates to grow cocktail-type samples of tomatoes in unheated greenhouses.

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## FEATURES OF SOME SMALL INTESTINE DISEASES IN CHILDREN LIVING IN THE ARAL REGION

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**Abstract.** *Malabsorption syndrome combines a large number of pathological conditions, which are based on a congenital or acquired defect in the breakdown and (or) absorption of various food ingredients. The main causes of the development of malabsorption syndrome in most cases are due to insufficiency of intestinal and pancreatic enzymes, substrate-binding proteins, disorders of intestinal digestion, gastrointestinal motility, atrophy of intestinal villi. Traditionally, malabsorption syndrome includes, first of all, conditions manifested by dyspeptic disorders (diarrhea, disturbances in the consistency and volume of stool, vomiting, flatulence, loss of appetite) with subsequent exhaustion and all diseases of the small intestine occur as SMA.*

**Keywords:** *children, small intestine, in the Aral Sea region.*

**Actuality.** One of the pressing problems in modern pediatrics is diseases accompanied by malabsorption syndrome (MAS). Currently, the differential diagnosis of diseases of the small intestine of infectious and non-infectious nature presents significant difficulties due to the common clinical masks of the disease in the acute period of the disease and the trigger role of infections in the development of chronic gastroenterological pathology. Often, the first diagnosis of SMA is made in an infectious diseases hospital, where children with enterocolitis and food toxic infections of various natures are hospitalized, which requires infectious disease doctors to have in-depth knowledge of the algorithm for differential diagnosis of diseases of the small and large intestines [1]. Progress in modern clinical gastroenterology is largely ensured by the effective use of the latest technical means and methods introduced into medicine in recent years (A A Baranov, 2002). Diseases of the small intestine have the onset of hereditary and acquired genesis and occur with malabsorption syndrome, which causes concern not only among pediatricians, but also among gastroenterologists and pediatric surgeons, due to their significant prevalence, the tendency to progression of the pathological process, especially in children of older age groups, frequent relapses due to insufficient effectiveness of ongoing rehabilitation measures (A.I. Parfenov, 2004; A.A. Baranov, 2009; C.Catassy, 2014). Only 25% of children at the onset of the disease have the classic triad - abdominal pain, diarrhea syndrome and weight loss. SMA is not only a problem of the gastrointestinal tract (GIT), but can rightly be considered a systemic disease. Malabsorption syndrome combines a large number of pathological conditions, which are based on a congenital or acquired defect in the breakdown and (or) absorption of various food ingredients [4-6].

The main causes of the development of malabsorption syndrome in most cases are due to insufficiency of intestinal and pancreatic enzymes, substrate-binding proteins, disorders of intestinal digestion, gastrointestinal motility, and atrophy of intestinal villi [1,4]. Traditionally, malabsorption syndrome includes, first of all, conditions manifested by dyspeptic disorders (diarrhea, disturbances in the consistency and volume of stool, vomiting, flatulence, loss of appetite) followed by exhaustion, and all diseases of the small intestine occur as SMA [3-6]. However, the improvement of laboratory diagnostic methods has expanded the understanding of the manifestations of SMA and confirmed the diversity of its clinical forms [6, 8]. In some cases,

malabsorption may be implicit, manifested by pathology of other organs (liver, lungs) and systems (anemia, growth retardation in atypical forms of celiac disease). Due to the disruption of the intake of macro- and micronutrients into the child's body, "deficiency" conditions develop, the clinical manifestations of which, in combination with dyspeptic symptoms typical for SNCV, create difficulties for the timely diagnosis of the pathological process, worsen the prognosis and, in some cases, contribute to long-term impairment of health and early disability of children [1.5].

**Purpose of the study.** To study the features of the clinical course of diseases of the small intestine in children accompanied by malabsorption syndrome living in the Aral Sea region.

**Materials and methods.** We examined 100 young children living in the Aral Sea region (Khorezm region and the Republic of Karakalpakstan) with diseases of the small intestine. All children underwent the following examination methods: clinical and anamnestic, laboratory and instrumental, parent interviews, analysis of data from primary medical documents.

Statistical processing of the obtained results was carried out using application programs for statistical data processing Statistica® version 6.0. The significance of differences between the compared groups was assessed using Student's tests. Differences in the compared values were considered statistically significant at  $p < 0.05$ .

**Results and discussions.** According to the results of this study, among the examined children from the Republic of Karakalpakstan there were 46 patients, and from the Khorezm region 54. By age category; from 0-1 year 52%, 1-3 years 21%, 3-7 years 19%, over 7 years 8%, of the total number of children, boys were 61%, and girls - 39%, which corresponds to the literature data on the predominance gastrointestinal pathology among males (Figure No. 1).

Among the main complaints in children, dyspeptic changes (abdominal pain, diarrhea, vomiting) were often observed. In both groups, abdominal pain was observed in 100%, in patients it was combined with dyspeptic symptoms: nausea and vomiting - in 75%, flatulence - in 62%, diarrhea - in 91%, constipation - in 9% of children.

The presence of clinical manifestations was established: in the main group up to one bowel movement per day and constipation was in 17%, and in the control group they were not observed. If it is considered normal for children to have 1-3 bowel movements per day, in the main group it was 33%, and in the control group - 92.5%.

Diarrhea up to 4-7 times a day was observed in 21% of children in the main group and in 3.7% of the control group. More than 7 times a day was observed in 4% of the main group, but this figure was not observed in the control group.

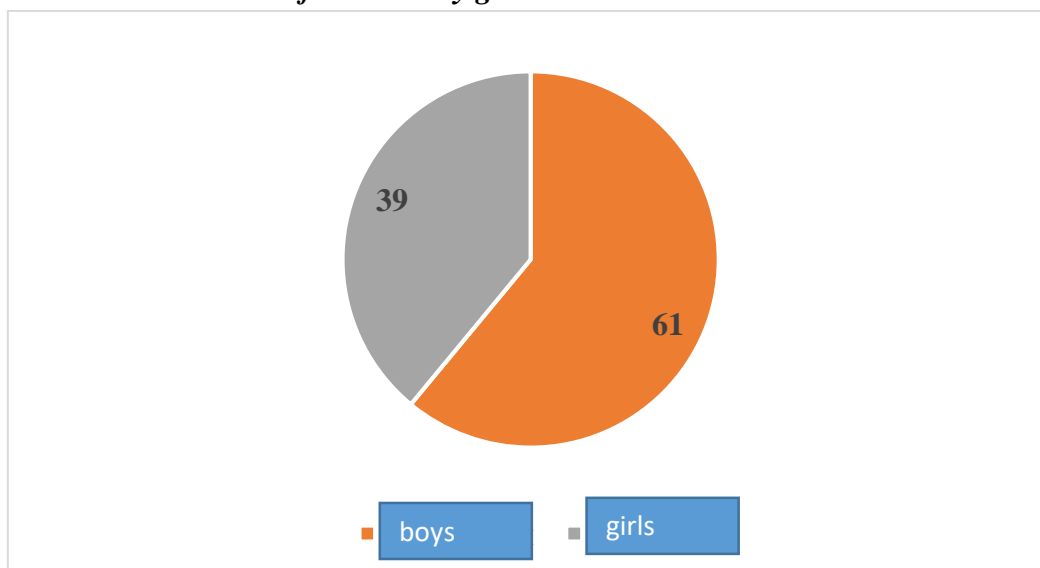
According to the consistency of stool, loose stools were observed in the main group 15%, and 96.2% in the control group, mushy stools in the main group 37%, in the control group 3.7%, with mucus in the main group 15%, in the control group 55.5%.

In the main group, the stool variable was 6%; in the control group it was not observed. In diseases of the small intestine, disturbances in physical development in children may additionally be associated with the use of restrictive diets that aggravate the deficiency of macro- and micronutrients; development of intestinal dysbiosis during treatment of the underlying disease, with subsequent disruption of the metabolic function of the intestinal microflora; malabsorption syndrome; use of medications.

The main group included children diagnosed with chronic disease. enterocolitis (11%), celiac disease (27%), allergic enterocolitis (17%), intestinal cystic fibrosis (9%), disaccharidase deficiency (2%) and celiac disease (27%), gastroenteritis (9%).

*Figure 1*

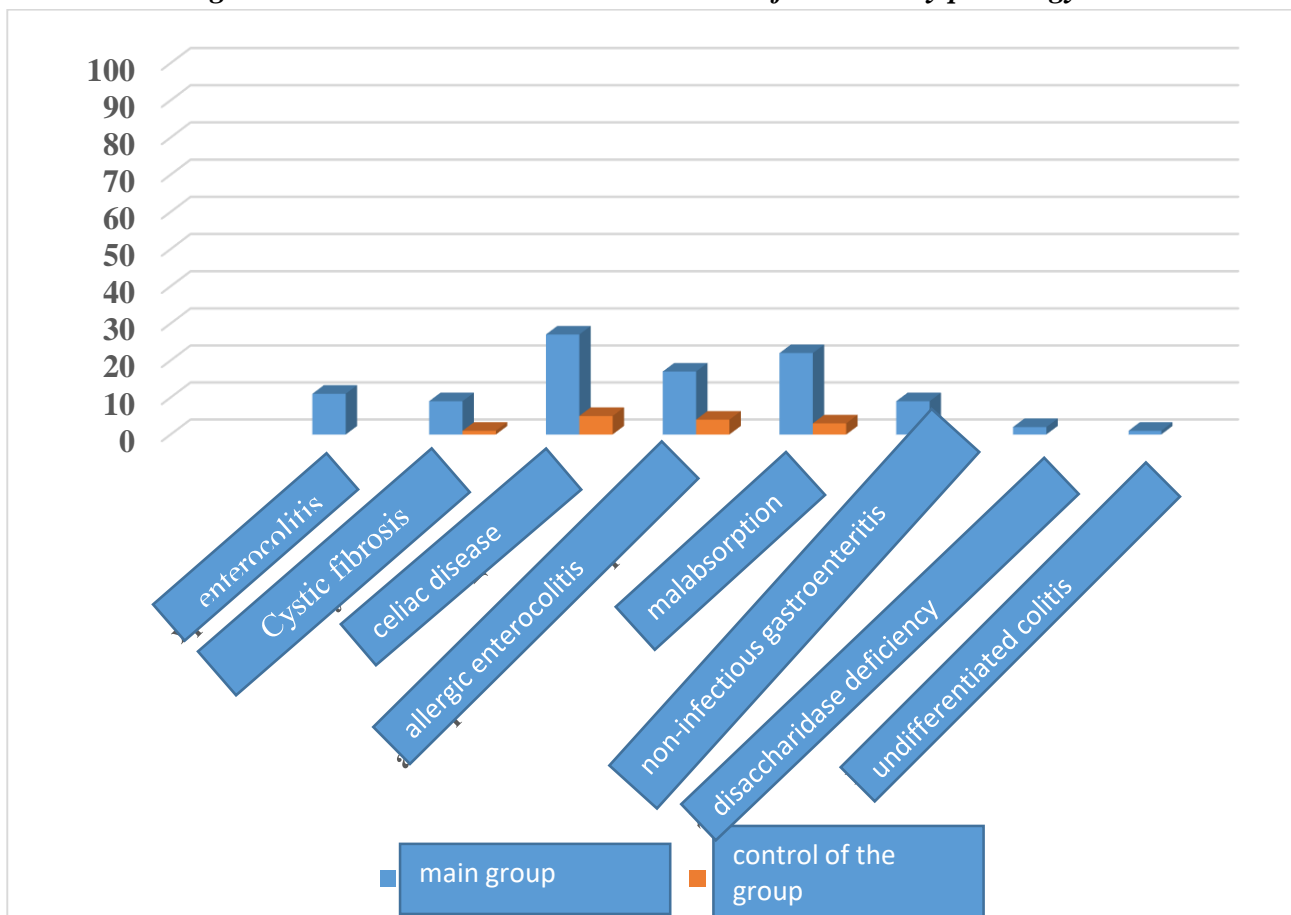
*Distribution of children by gender with small intestinal disease*



The control group consisted of children from the city of Tashkent who were treated in the gastroenterological department of the Republican Medical Research Center with a diagnosis of cystic fibrosis (3.7%), celiac disease (18.5%), malabsorption (11.1%), allergic enterocolitis (14.8%) (Figure No. 2).

*Figure 2*

*Distribution of children by pathology*



It has been established that the main factors in the development of small intestinal pathology are influenced by the mother's obstetric and somatic history - the pathological course of pregnancy and childbirth. Among the examined children, when interviewing mothers, it was revealed that the first child in the family was 32%, the 2nd child - 28%, the 3rd child - 27%, the 4th child - 8%. During the analysis, it was found that the pathological course of pregnancy was more common in mothers of children who had 1 child and the average age of the mother was  $17.2 \pm 2.5$  in the main group of mothers and in the control group  $21.2 \pm 3.5$ , and Threatened miscarriage was diagnosed in 40.0% of mothers in the main group, in contrast to 15.0% of mothers in the comparison group,  $p < 0.05$ . Anemia of mild and moderate severity was also more often diagnosed in mothers of children in the main group - in (33.3%) and (15.0%) in contrast to mothers of children in the comparison group - in (6.0%) and (2.0%).,  $p < 0.05$ ,  $p < 0.01$ . In mothers of children in the main group, extragenital pathology was more often recorded than in mothers of children in the comparison group - respectively (41.6%) and (16.6%),  $p < 0.001$ . The burden of heredity for gastroenterological and allergic pathologies in the main group was 45.6% and in the comparison group 26.7%. Of the total number of children, the high incidence of concomitant pathology was in patients of the main group, amounting to; PPCNS 14%, atopic dermatitis 34%, rickets 47%, secondary immune deficiency conditions 9% - these children belong to the group of frequently ill people.

Among the main complaints in children, dyspeptic changes (abdominal pain, diarrhea, vomiting) were often observed. In both groups, abdominal pain was observed in 100%, in patients it was combined with dyspeptic symptoms: nausea and vomiting - in 75%, flatulence - in 62%, diarrhea - in 91%, constipation - in 9% of children. The presence of clinical manifestations was established: in the main group up to one bowel movement per day and constipation was in 17%, and in the control group they were not observed. If it is considered normal for children to have 1-3 bowel movements per day, in the main group it was 33%, and in the control group - 92.5%. Diarrhea up to 4-7 times a day was observed in 21% of children in the main group and in 3.7% of the control group. More than 7 times a day was observed in 4% of the main group, but this figure was not observed in the control group. According to the consistency of stool, loose stools were observed in the main group 15%, and 96.2% in the control group, mushy stools in the main group 37%, in the control group 3.7%, with mucus in the main group 15%, in the control group 55.5%. In the main group, the stool variable was 6%; in the control group it was not observed. In diseases of the small intestine, disturbances in physical development in children may additionally be associated with the use of restrictive diets that aggravate the deficiency of macro- and micronutrients; development of intestinal dysbiosis during treatment of the underlying disease, with subsequent disruption of the metabolic function of the intestinal microflora; malabsorption syndrome; use of medications. As a result of these changes, the number of children with deviations in physical development in the form of both deficiency and excess body weight, disharmonious development against the background of diseases of the small intestine is increasing. It was found that the following deviations in physical development (z-score) were observed in children in the main and control groups: Analyzing the weight - body weight of children, the following deviations were identified in 39%: -1 SD - 12%, -2 SD - 8%, -3SD - 19%, in the remaining children 61% no deviations were identified. Changes in the values of growth indicators in children were observed in 27%; -1 SD - 6%, -2 SD - 11%, -3SD - 10%, for other children 73%. Body mass index (BMI) was 7% in -1 SD, 5% in -2 SD, 23% in -3 SD, and no abnormalities were detected in the remaining

65% of children. Conducted anthropometric studies of the physical development of children, in the main group harmonious physical development was 33%, mild degree of protein-energy deficiency - 16%, moderate degree - 21%, severe degree - 18%, overweight - first degree - 6%, excess second degree body weight was 4%, obesity - 2%, while in the control group harmonious development was not determined, the average degree of protein-energy malnutrition was 11%, overweight - 10%, obesity - 6%.

**Conclusion:** The main manifestation of malabsorption syndrome was dyspeptic syndrome of protein-energy malnutrition, which contributed to the disharmonious development of children. All children had rickets, anemia, polyhypovitaminosis, and this contributes to low immune reactivity of the body and a high incidence of acute viral respiratory and intestinal infections.

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# FEATURES OF THE CONTINUOUSLY RELAPSING COURSE OF JUVENILE RHEUMATOID ARTHRITIS IN CHILDREN IN THE AGE ASPECT

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**Abstract.** *This article will focus on main features of juvenile rheumatoid arthritis and the related arguments to discuss with medicines and types.*

**Keywords:** *rheumatoid, arthrotropic, drugs, lymphadenopathy, proteinuria.*

## INTRODUCTION

Juvenile rheumatoid arthritis is the most common inflammatory disease, which is based on a chronic progressive inflammatory process of the inner layer of the joint capsule (synovium), which leads to the destruction of cartilage and bone tissue. JRA is a fairly common disease in childhood (7,8,9).

To date, the definitive factor contributing to the development of juvenile rheumatoid arthritis has not been established. Among the causes of the development of the disease, viral infections, hereditary predisposition, and the development of immune inflammation with long-term persistence of arthrotropic types of viruses (retroviruses, parvoviruses) are still discussed (1,2,3,8)

Certain changes have been made to drug therapy for JRA.

The early threat of disability in patients with JRA, a significant decrease in the quality of life of a sick child, dictates the need to introduce drugs developed on the basis of modern technologies into treatment. These are genetically engineered biological drugs: infliximab, retuximab, plocilizumab, etc., but not in all cases the use of these drugs gives the desired effectiveness and not in all cases the use of these drugs is permissible, taking into account their side effects.

Despite great efforts in the treatment of severe systemic variants of juvenile rheumatoid arthritis, it is not possible to achieve complete control over the articular syndrome. It is especially difficult to treat a continuously relapsing course in the systemic variant of JRA. (4,5,6)

## MATERIALS AND RESEARCH METHODS

In 17 children aged 3-14 years with juvenile rheumatoid arthritis, the course of the disease was monitored over time.

The first group consisted of children aged 3-7 years (10), the second included patients 12-14 years old (7). All patients underwent a complete laboratory and instrumental examination. According to the results obtained, taking into account diagnosed with juvenile rheumatoid arthritis. All patients included in the first age group (3-7) were admitted to the hospital with a high body temperature of 39-40 C and severe joint pain (100%).

## RESULTS AND DISCUSSION

A detailed study of the children's anamnesis did not show any special abnormalities; the allergic anamnesis was also calm. From the anamnesis it was established that almost all of the children were from normal pregnancies of the second and third births at term. In 100% of cases,

the early childhood period was uneventful; preventive vaccinations were carried out according to the schedule without complications. Heredity is not burdened (100%).

The onset of the disease in 2 (20%) patients was associated with previous bacterial infections and in 3 (30%) with a virus. The disease began with increased body temperature up to 40C, soreness, swelling of the wrist and ankle joints, an increase in the size of the liver and spleen - and lymphadenopathy was observed in almost all patients. JRA, systemic form, was diagnosed.

The complex treatment of children in this group with the inclusion of non-steroidal drugs in combination with prednisone no more than 7.5 ml/day gave a positive effect. The duration of hormonal therapy with subsequent reduction was 3 months. After discontinuation of the drug, exactly one month later, an exacerbation of the disease was observed. The onset of the disease again was with an increase in temperature to 40C, which persisted at night, sometimes in the morning. The deterioration of the general condition was accompanied by increased morning stiffness and progression of the articular syndrome.

In addition to the ankle and wrist, knee, elbow and hip joints with exudative manifestations were involved in the pathological process; liver hepatosplenomegaly was noted - 3.5 cm, spleen - 1.0 cm.

The activity of the inflammatory process was high – ESR-60mm/h. Proteinuria of variable nature was detected in the urine. Taking into account the severity of the condition, non-steroidal anti-inflammatory drugs were included in the therapeutic complex with an increase in the dose of prednisolone by 2.5 mg - i.e. 10 mg/day to somewhat stabilize the condition of patients. With this therapy, there was an improvement in the general condition of the patients, an increase in activity, and morning stiffness did not disappear.

Body temperature decreased, and the severity of exudative manifestations in all joints clearly decreased. Inflammatory activity decreased to 30 mm/h, but clinical signs of Cushing's syndrome appeared more clearly.

Subsequently, a reduction in the dose of prednisolone by 2.5 mg/day caused an exacerbation of the underlying disease. This exacerbation was manifested by a serious condition, high fever, increased morning stiffness and clinical signs of Cushing's syndrome, enlargement of all groups of lymph nodes, malnutrition, aminotrophy of the muscles of the legs, hands and forearms. An increase in the size of the liver (+4 cm) and spleen (+1.5) was determined.

There was almost damage to all large and small joints, both hips groups of lymph nodes with pronounced thickening of the content. The fever took on a hectic character.

Changes in blood tests were characterized by a decrease in hemoglobin level - 65 g/l and an increase in inflammatory activity to 65-70 mm/hour.

Due to the progressive deterioration of the patients' condition, it was decided to increase the dose of prednisolone by 5 mg/day. Treatment was carried out by prescribing prednisolone up to 15 mg/day reg. At the same time, intramuscular administration of up to 45 mg/day was prescribed.

In the age group of 12-14 years (7), the exacerbation of the disease began after an acute respiratory viral infection. All observed patients initially experienced an increase in body temperature to 40C, which persisted throughout the day, general weakness and the presence of a maculopapular rash on the skin of the torso and both extremities. At altitude, fever was noted by the settling of rashes in 3 patients.



In 100% of cases, patients complained of pain in the elbow, hip, knee and ankle joints and small joints of the hand. The anamnesis of all observed children was relatively calm. 3 children were from the fourth birth and two were from the fifth. The period of early development, up to almost 3 years of age, proceeded without any special features. Preventive vaccinations were carried out on time, the result was without complications. Before the onset of the disease, allergic reactions were not observed in children.

The disease began at 7-8 years of age, the onset of the disease proceeded as an allergic septic syndrome (Wiesler-Fanconius allergosepsis). The duration of remissions was short. Without any particular reason, the absence of an acute respiratory disease, an exacerbation of the underlying disease was again noted - fever 39-40C, arthralgia, the appearance of a mild rash on the skin of the torso. Hormone therapy with prednisone at a rate of 60 mg/day contributed to the sharp development of pronounced signs of Cushing's syndrome, which necessitated the need to reduce the dose of prednisone to 10 mg/day. At the same time, an exacerbation of the clinical picture of the underlying disease was again observed.

The exacerbation was manifested by severe fever and polyarthritis. Polyarthritis appeared with limitation of movement and an exudative component. in all large and small joints, increased inflammatory activity in the blood test - ESR - 70 mm/h, decreased hemoglobin level to 35 g/l, increased proteinuria in the urine. This was the basis for increasing the dose of prednisolone by 2.5 mg and amounted to 12 mg/day in combination with intra-articular steroids. The duration of remission after this treatment was relatively short. At the next exacerbation of the underlying disease, the dose of prednisone was increased to 15 m/day in combination with local injection of hydrocortisone into the ankle and radial joints. For this exacerbation of the underlying disease, methotrexate 10 mg/kg once a week was included in the therapeutic complex. Also, during this therapy, the daily dose of prednisolone was reduced exactly 2 times to 7.5 mg/day. The blood test showed an increase in ESR - up to 55 mm/h. A biochemical blood test showed an increase in transaminase activity, probably associated with methotrexate intake.

### **CONCLUSION**

Thus, an analysis of clinical observations demonstrating a severe relapsing course of juvenile rheumatoid arthritis characterizes clear resistance to glucocorticoid therapy in all age groups.

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## THE IMPORTANCE OF NUTRITION IN VARIOUS SPORTS

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**Abstract.** *The diet of an athlete is the same as the diet of healthy children and adolescents. Providing the body with the necessary amount of energy, plastic (construction) and biologically active substances. Eating is considered as an active factor, that is, maintaining health, preventing diseases, ensuring the natural growth and development process, and expanding the limits of adaptation to constant physical loads. Inadequate supply of nutrients to the body can lead to harm to health, inability to resist harmful factors in the environment, deterioration of mental and physical capacity for work.*

**Keywords:** *protein, fats, carbohydrates, vitamins, minerals*

The demand for high achievements in modern sports makes it important for a child to play sports from the age of 3-4. Therefore, when children are given to sports sections to practice different sports, he works hard and carries excessive loads. Many parents and coaches neglect proper nutrition, taking into account age, health, type of sport, period of training and competition, and time of rest, in order to ensure proper adaptation of children and adolescents to these processes. However, not all coaches and athletes have proper nutritional information, and due to a lack of knowledge in this area, they incorrectly determine the nutritional regimen. It is not correct to eat too much of one type of food product, which does not help to achieve high sports results.

According to the oral survey, 55% of children aged 7 to 10 eat 3 times a day, children aged 11 to 13 and 14 to 16 eat 3–4 times a day; 6% of children eat 5 times a day. 95% of children and teenagers eat breakfast, and for lunch they mostly take sandwiches, buns, cakes from the buffet; high school students eat fast food and sweet black tea; in the evening, all children eat at home. According to the studies, 11% of children eat hot food once a day, 70% of children eat 2 meals a day, and 17% of participants eat hot food 3 times a day. No difference was observed between girls and boys in the comparative assessment of food intake.

When analyzing the supply of basic food products of the studied children, it was observed that some food products were in short supply due to the uncoordinated main nutrition of sports students aged 7–10, 11–13 and 14–16 years and irrationality of new food products. According to questionnaires, bread, cereal and confectionery products are mainly included in the diet. Dietary fiber was 90% when the daily diet did not meet the nutritional standards for fresh vegetables and fruits. (see tables).

### **Composition of food in the diet of 7-10-year-old chess and drafts children**

Food name	Hygiene standard , g	Actual content			
		Winter-spring season		Summer-autumn season	
		abs ., g	to % norm	abs ., g	to % norm
Bread and bakery products	259	363	140.2	336	129.7

Milk and milk products	505	361	71.5	337	66.7
Meat and meat products	125	97	77.6	89	71.2
Fish and seafood	30	9	30.0	6	20.0
Vegetable oils	15	13	86.7	11	73.3
Animal fats	15	14	93.3	10	66.7
Sugar and confectionery products	65	59	90.8	55	84.6
Potatoes	130	110	84.6	106	81.5
Vegetables	300	280	93.3	320	106.7
Fruits and berries	210	174	82.9	245	116.7
Eggs (units )	0.8	0.64	80.0	0.42	52.5

A healthy child is the main problem of the near and long future of any country, because all opportunities (both economic and creative), all social and economic development prospects, a high standard of living, science and culture - all this is the level of health of children, their ability to physical and mental work. is the effect of the

The diet of young athletes is based on the concept of coordinated and proper nutrition, with the adaptation of physical requirements. The following principles are taken into account when organizing the rational nutrition of athletes: compliance of the ration power with the average daily power consumption, depending on age, gender, type and speed of physical exertion; coordination of the diet in terms of basic nutrients (proteins, fats, carbohydrates, vitamins and minerals); depending on the specific pedagogical tasks, choosing a sufficient type of nutrition (products, nutrients and their combinations) to ensure different directions of the diet (protein, carbohydrate, protein-carbohydrate) in training aimed at individual preparation of athletes for competitions; distributing the ration throughout the day according to the type and order of training and competitions. The nutrition of children involved in sports should not only be related to the need for effective training and achieving high sports performance, but should also meet the need for nutrients and energy that ensure the growth and development of children and adolescents. Due to increased sweating and fluid flow during active physical exertion, water-salt exchange is disturbed, as a result of which microelements, primarily sodium and potassium, change the functional state of the heart-blood, nervous-muscular system. It is important to take into account the type of sport that a young athlete is engaged in, the duration of training, when organizing the procedure for drinking water. Sports drinks are recommended for those who practice long-term sports. It is considered necessary for athletes to drink fluids before, during and after training. The nutrition of children involved in sports should meet the need for nutrients and energy, which support the child's continuous growth and development, not only for the effective training process and high sports performance. Rational organization of meals helps in the process of strengthening health, improving sports ability, recovery and adaptation to physical loads.

### **CONCLUSION.**

It is important that there are more young athletes in many sports now . Physically mature adolescents often engage in daily exercise regularly during adolescence, a period of high motivational power. But in order to achieve good results in training and competitions, it is

necessary to start the activity before the period of sexual maturity. The diets of children and adolescents who play sports are often deficient in essential nutrients and vitamins for energy. When working with children, nutritionists often use the standards recommended for adults. However, due to physical loads, physiological changes and rapid growth during sports, the child's body needs additional energy. Professionals working with young athletes face great difficulties in defining the concept of "norms".

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## SPENDED IN THE MAIN TYPES OF SPORTS POWER CONSUMPTION

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**Abstract.** All sports are traditionally divided into 4 groups: low physical activity (chess, checkers); type of short-term but significant loads (acrobatics, gymnastics, equestrian sport, shooting, fencing, running up to 300 m, weightlifting); type of large volume and regular loading (running 400-3000 m, wrestling, swimming, sports games, multi-wrestling); long-load type (alpinism, 10,000 m run and marathon, bicycle race, rowing, skiing, walking sports).

**Keywords:** daily power consumption, daily ration, amount.

In the second group, energy consumption is not so high, but there are differences in the need for nutrients. For example, a weightlifter needs protein first, but also a sufficient amount of fat to provide energy to the body. Weight is important for acrobats and equestrians, so their diet is planned to avoid weight gain.

In the third group, it is necessary to provide material for muscle growth and at the same time to have a good glycogen reserve, since it has the nature of effort. In sports with a weight category, weight gain is limited.

In the fourth group, first of all, endurance is important, and the need for carbohydrates suddenly increases. Of course, it contains some fat, primarily unsaturated fats as a source of energy.

The next type of sport is period sport. This group of sports includes cycling, running at different distances, rowing. In hygiene, the term "rational nutrition" has been accepted, which means nutrition based on science, which fully meets the needs in terms of quality and quantity of food. An athlete's energy and nutrient needs depend on the type of sport and the amount of work performed, including skill level, mood and personal habits. The daily energy expenditure of athletes of different specialties is different: in the type of activity with little physical load (chess, checkers) it is 2800-3200 kcal for men and 2600-3000 kcal for women. In a short-term but high-intensity sport (acrobatics, gymnastics, jumping on a trampoline, diving, shooting, weightlifting, figure skating, etc.), energy consumption is 3500-4000 kcal for men and 3000-4000 kcal for women. Daily energy consumption in sports such as running 400 and 1500 m, boxing, wrestling, swimming, multi-sport, sports games, modern pentathlon is 4500-5500 kcal for men, 4000-5000 kcal for women. Finally, in the type of sports associated with long and sharp physical loads (alpinism, 10,000 m running, road cycling, rowing, cross-country skiing, skating, marathon, walking sports), the maximum daily energy expenditure for men is 5,500-6,500 kcal. and for women - 6000 kcal. In order to maintain high performance in sports, the body needs not only the right amount, but also optimal nutrients for digestion. The balanced nutrition formula is interconnected according to protein: fat: carbohydrates: = 14:30:56. To calculate the daily ration, it is necessary to know the energy coefficient of the main nutrients oxidized in the body: 1 g of oxidized protein gives 4.1 kcal, 1 g of fat gives 9.3 kcal, 1 g of carbohydrates gives 4.1 kcal. Now it is not difficult to calculate the amount of basic nutrients (g) for the daily diet. So, at 4000 kcal, the caloric content of the diet is 137 g due to proteins (560 kcal), 130 g due to fats (1200 kcal), and 546 g to carbohydrates (2240 kcal). (The calculation was taken for men with a body weight of 70 kg, for women with a body weight of 60 kg)., metabolic processes increase due to tension in the physical and mental level of athletes, which is called "metabolic stress". In such conditions,

the positive effect of food on the athlete's body depends not only on the amount of energy and nutrients consumed, but also on the full compliance with the rules of nutrition coordinated as a result of in-depth research, especially the differential selection of adequate forms of nutrition during intense training, preparation for competitions and during the recovery period of metabolic processes in various sports. need It is very important to use nutritional factors for specific types of metabolic processes, especially to perform certain sports loads, to increase muscle mass, to increase strength and endurance, as well as to choose adequate rates of food consumption.

The lack of protein in the diet of 7-10-year-old children is 16.3% in the winter-spring season, and 22.6% in the summer-autumn season; In most cases, the deficiency refers to proteins in animal products, which is mainly due to very low consumption of meat products, fish and dairy products.

***Nutritional value of food products of 7-10-year-old children who play chess and checkers***

Nutrient name	Hygie nik meor , g	Winter-spring season		Summer-autumn season	
		abs., g	Norm in %	abs., g	to % norm
Daily power consumption	2400	1966.6 ± 29,7	81.9	1839.4±32.4	76.6
Total proteins , g	80.5	67.4±9.7	83.7	62.3±11.4	77.4
Of this animal protein	49	33.3±4.6	68.0	29.5±4.9	60.2
fats , g	80	55.1±6.2	68.9	46.7±5.3	58.4
carbonated water , g	340	317.5±11.1	93.4	308.9±12.3	90.9
Calcium, m k g	1100	741.2±15.8	67.4	729.5±17.1	66.3
Phosphorus, m k g	1650	1109.6±20.4	67.2	1059.6±18.9	64.2
Magnesium, m k g	250	231.3±9.7	92.5	220.1±8.8	88.0
Vitamin C, mg	60	49.6±6.7	82.7	58.0±7.7	96.7
Vitamin A, mcg	700	212.6±11.7	30.4	162.1±10.4	23.2
Vitamin V <sub>1</sub> , mg	1.2	1.09±0.03	90.8	1.06±0.02	88.3
Vitamin v <sub>2</sub> , mg	1.4	1.33±0.04	95.0	1.27±0.03	90.7
Vitamin RR, mg	15	13.2±1.9	88.0	13.0±2.5	86.7

One of the important aspects of modern research in sports medicine is the study of tools and methods that contribute to the restoration of sports performance. One of the medically important aspects is the organization of rational nutrition depending on the type of sport, which helps to restore the working capacity of athletes during intense training and competitions. Distribution and assimilation of nutrients in the body is determined by factors such as rest, activity, level of fatigue, nutritional state (duration of hunger, digestive activity, effect of nutrition, post-adaptation state). The importance of nutrition in sports is very great, and the nutrition factor is



important in regulating metabolism. The rational use of food products helps to achieve effective results from training, increase muscle mass, increase body strength, and accelerate recovery.

### **CONCLUSION.**

However, not all coaches and athletes have the basic knowledge of nutrition, as a result of which athletes determine the wrong way to eat. It is wrong to put lipstick on this or that food product, and it is impossible to pay all attention to it, but the importance of the athlete's diet should not be forgotten.

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## MODERN DIAGNOSTICS AND CLINICAL CHARACTERISTICS OF BRONCHIAL ASTHMA IN CHILDREN

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**Abstract.** This article studied the clinical course of bronchial asthma in children, the consequences, the factors surrounding the emergence of the disease. Also in the 1st group of children in our study, the disease occurred only in severe form. It was found that in children of 3-group patients, bronchial asthma was diagnosed in 6 (15%) patients with chronic form.

**Keywords:** children, bronchial asthma, wheezing, cyanosis, apnea, retrospective analysis.

**Relevance of the problem:** According to the World Health Organization, more than 4-10% of the Earth's population suffers from bronchial asthma (400-500 million people). [1] Among allergic pathologies, bronchial asthma (BA) takes the leading place and remains one of the most complex problems of pediatrics. The relevance and social importance of this disease is due to the high prevalence of this disease (10-15%). [2] In patients with bronchial asthma for a long time, asthmatic status can occur spontaneously, without any reason. However, in many cases, direct contact with allergens, inflammatory processes in the respiratory tract, medications, changes in weather, sudden discontinuation of hormones can be the causes of asthmatic status. [3] Special attention is being paid to improving the social protection and healthcare system of our country, including early diagnosis, treatment and prevention of various diseases in children. In the Action Strategy for the five priority areas of the development of the Republic of Uzbekistan in 2017-2021, "Complex measures to strengthen family health, protect motherhood and childhood, expand access to quality medical services for mothers and children, provide them with specialized and high-tech medical care, reduce child mortality" more extensive implementation of activities" tasks are defined. In this regard, it is important to strengthen children's health, especially to develop modern methods of diagnosis and treatment of diseases of the respiratory system in early childhood. [4] According to the conclusions of the World Health Organization, bronchial asthma is the most common chronic disease among children (Surks M.I., 2014). A retrospective analysis of the disease shows that more than 50% of the initial symptoms of the disease are detected in early childhood, and in 15% of cases in children under one year of age. At present, researches on the prevention of bronchial asthma complications have not been carried out sufficiently in the republic. In this regard, early diagnosis of bronchial asthma, identification of various factors affecting its development, and development of treatment measures are relevant and practically important.

**The purpose of the study:** Studying the characteristics of the clinical course of bronchial asthma in children on the scale of Surhandarya region.

**Research materials and methods:** Children with bronchial asthma were treated at Surhandarya Regional Children's Multidisciplinary Medical Center. Medical histories of 40 patients who were treated in our scientific work in 2019-2020 were studied based on retrospective analysis. Anamnesis data, laboratory and instrumental examinations of the patient children in our investigation were completely conducted.

**Study results:** The children in our investigation were 1-5 years old and we divided them into 3 groups. The 1st group included 18 children under 1 year old, the 2nd group included 12 children aged 1-3 years, and the 3rd group included 10 children aged 3-5 years. There was no

significant gender difference in children. 22 (55%) boys and 18 (45%) girls. All the patients under our observation had a severe, moderate form of the disease. In the study of the clinical course of the disease in children of the 1st group, the following were observed, i.e., acceptance of the forced position during the attack 100%, noisy wheezing 100%, prolonged and difficult exhalation 100%, swelling of the chest 90% %, pale skin 88%, cyanosis of lip-nasal triangle, nose wings, finger tips, auricles 86%, refusal to suck 95%, loss of appetite 92% were observed. In group 2 patients, acceptance of forced position during an attack is 90%, noisy wheezing 88%, prolonged and difficult exhalation 90%, swelling of the chest 78%, pale skin 80%, lip-nasal triangle, nose wings, fingertips, ears cyanosis of shells was 76%, refusal to suck 60%, loss of appetite was 78%. 3rd group of children had a forced posture during an attack, 88% noisy wheezing, 88% prolonged and difficult exhalation, 70% acrocyanosis, and 70% lack of appetite. 3rd group of children had bronchial asthma in a chronic form. cases were also determined. According to the anamnesis data obtained from all patients in our investigation, the external environment (climatic features) and seasonality and environmental factors play a leading role in the pathogenesis of bronchial asthma. As a result of the analysis, we proved that the above-mentioned factors create conditions for the development of bronchial asthma.

**Conclusion:** Based on this, in the study of the clinical course of bronchial asthma, the environment, climate (hot dusty winds), environmental factors were considered to be the cause of the clinical course of the disease. Also, in the 1st group of children in our study, the disease was only severe. It was found that 6 (15%) of group 3 patients had bronchial asthma in chronic form.

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## POST TERM PREGNANCY

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**Abstract.** *Timely onset of labor is an important determinant of perinatal outcome. Although it has long been known that there is a small absolute increase in perinatal mortality as pregnancy is extended beyond the estimated due date, the optimal gestational age to begin formal fetal monitoring (eg, nonstress test, biophysical profile) and the optimal gestational age to schedule delivery, and not continuing expectant management and formal fetal monitoring is more controversial.*

**Keywords:** *post-term pregnancy, aspiration, trauma of the birth canal.*

The incidence of post-term pregnancies may vary across populations, in part due to regional differences in management of pregnancies beyond the expected due date. Accurate determination of gestational age is essential for accurate diagnosis and appropriate management of late and post-term pregnancies. Antenatal fetal care and labor induction have been evaluated as strategies to reduce the risks of perinatal morbidity and mortality associated with late and post-term pregnancies. The purpose of this document is to review the current understanding of late and post-term pregnancies and provide management recommendations that have been supported by appropriately conducted research.

The following definitions describe subgroups of postterm pregnancies:

- Post-term –  $\geq 42+0$  weeks of pregnancy (i.e.  $\geq 294$  days from the first day of the last menstrual period and  $\geq 14$  days from the expected date of birth).

- Late term – from  $41+0$  to  $41+6$  weeks of pregnancy.

In post-term pregnancy, diagnostic tests may include:

- Ultrasound

- Watching how your baby's heart rate responds to activity

- Checking the amount of amniotic fluid

- The goal of pregnancy tolerance prevention is to prevent problems and deliver a healthy baby. Postterm pregnancy is associated with increased perinatal morbidity and mortality. There is an increased risk of stillbirth and neonatal death, and an increased risk of death in the first year of life. The increased mortality is thought to be associated with factors such as uteroplacental insufficiency, meconium aspiration, and intrauterine infection.

Risk factors:

- A previous post-term pregnancy increases the risk of recurrence in subsequent pregnancies.

- Primogeniture.

- High maternal BMI is associated with longer gestations and increased rates of labor induction. Increased pre-pregnancy weight and increased maternal weight increase the risk of post-term birth.

- Genetic factors. There is an increased risk of post-term pregnancy for mothers who were themselves born post-term, and twin studies also suggest a genetic role.

- Advanced maternal age.

Symptoms of post-term pregnancy:

• In a post-term baby, the amount of subcutaneous fat and reduced soft tissue mass are below normal.

- The skin may be loose, flaky and dry.
- Fingernails and toenails may be longer than usual and yellow in color due to meconium.

Signs of post-term pregnancy:

- Before birth, fetal mobility may be reduced.
- Decreased amniotic fluid volume may cause the uterus to shrink in size.
- Meconium-stained amniotic fluid can be seen when membranes rupture.

Increasing evidence shows that labor induction policies are associated with fewer perinatal deaths and fewer caesarean sections compared with expectant management. Gynecologists recommend that women be offered induction therapy after 41 weeks between 41+0 and 42+0 weeks to avoid the risk of postpartum hemorrhage. -full-term pregnancy, primarily increased intrauterine fetal death. Before formal induction of labor, women should be offered a vaginal examination with sweeping of membranes. If a woman chooses not to have an induction, this decision should be respected and monitoring should be intensified from 42 weeks of gestation with cardiotocography at least twice weekly and ultrasound assessment of the maximum depth of the amniotic pool.

Fetal morbidity also increases with higher risks:

- Meconium aspiration.
- Macrosomia and large children lead to:
- Prolonged labor.
- Cephalo-pelvic disproportion.
- Shoulder dystocia.
- Birth trauma resulting, for example, in damage to the brachial plexus or cerebral palsy.

For diagnosis, fetal movements may be counted. This tracks your baby's kicks and movements. A change in quantity or frequency may indicate that a developing child is under stress. Non-stress testing. This test shows how your baby's heart rate increases as he moves. This is a sign of your baby's well-being. Biophysical profile. This test combines a non-stress test with ultrasound to assess your baby's well-being. Ultrasound. This test uses high-frequency sound waves and a computer to produce images of blood vessels, tissues, and organs. Ultrasound is also used to monitor the growth of your developing baby. Doppler blood flow studies. This is a type of ultrasound that uses sound waves to measure blood flow. The test is usually used if a developing child is not growing normally. If tests find that it is unhealthy for the developing baby to remain in the womb, labor can be induced to deliver the baby. Once labor begins, your baby's heart rate will need to be monitored using an electronic monitor. This is done to monitor changes in heart rate caused by low oxygen levels. You may need a caesarean section if your baby's condition changes. Amnio infusion is sometimes used during labor if there is very little amniotic fluid or if the baby is pressing on the umbilical cord. A sterile liquid is injected into the uterus through a hollow tube (catheter). The fluid helps replace amniotic fluid and softens the baby and the umbilical cord. Women with a post-term pregnancy, especially with a large baby, are more likely to have:

Longer labor

- Forceps or vacuum assisted delivery
- Vaginal rupture or trauma
- C-section
- Infection, wound complications and bleeding after birth

There are also risks to the unborn and newborn baby if the pregnancy is post-term. These include:

- Stillbirth and death of newborn
- Problems with the placenta
- Decreased amniotic fluid
- The child may stop gaining weight or even lose weight
- Birth trauma, if the child is large
- The baby inhales the fluid containing the first stool (meconium aspiration).
- Low blood sugar (hypoglycemia) because the child has too little glucose.

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# DYNAMICS OF HEART RATE VARIABILITY IN PATIENTS WITH CHRONIC KIDNEY DISEASE DURING BACKGROUND THERAPY (LITERATURE REVIEW)

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**Abstract.** *This review article examines the effect of various therapeutic interventions on autonomic dysfunction that characterizes chronic renal failure in CKD. It has been shown that drugs acting on the renin-angiotensin system, as well as central sympatholytics, improve autonomic cardiovascular control.*

**Keywords:** *autonomic nervous system, sympathetic activity, parasympathetic activity, chronic renal failure, heart rate variability.*

Chronic kidney disease (CKD) can be defined as persistent damage to the renal parenchyma resulting in chronic deterioration of renal function, which may progress gradually to terminal kidney disease (TKD). The term CKD recognizes that this condition exists on a continuum with varying degrees of renal function impairment, rather than as a separate condition of renal insult (acute kidney injury). The term CKD has replaced the previously used term "chronic renal failure".

CKD is defined as the presence of impaired renal structure or function persisting for more than 3 months [27]. This includes 1 or more of the following: 1) an FFR less than 60 mL/min/1.73 m<sup>2</sup>; 2) albuminuria (i.e., urinary albumin  $\geq 30$  mg in 24 hours or urinary albumin-to-creatinine ratio [ACR]  $\geq 30$  mg/g); 3) abnormalities in urine sediment, histology, or imaging suggestive of renal damage; 4) renal tubule abnormalities; or 5) a history of renal transplantation [9,27].

According to the literature, CKD affects 8% to 16% of the population worldwide and is often not recognized by patients and physicians [18,25]. The disease is more prevalent in low- and middle-income countries than in high-income countries [33].

CKD is most commonly associated with diabetes and/or hypertension, but there are other causes of onset such as glomerulonephritis, infections, and environmental exposures (e.g., air pollution, medicinal herbs, and pesticides) that are common in Asia, sub-Saharan Africa, and many developing countries [25]. Genetic factors may also contribute to the risk of CVD. For example, sickle cell trait and the presence of two APOL1 risk alleles, which are common in people of African but not European descent, may double the risk of developing CKD [20,25,34,36].

CKD impairs physiologic and biological mechanisms of the body, such as water-electrolyte and pH balance, blood pressure regulation, toxin and waste excretion, vitamin D metabolism, and hormonal regulation. Many patients with CPB are at risk for hyperkalemia, hyperphosphatemia, chronic metabolic acidosis, bone destruction, blood pressure abnormalities, and edema [22-24,26]. CPB often remains undiagnosed due to the lack of visible symptoms in the early stages. It is estimated by K.E. Adair et al, 94% of people with mild to moderate renal function decline and about 48% of people with severe renal dysfunction remain undiagnosed [5]. Early detection and treatment by primary care physicians is important because progression of CKD is associated with adverse clinical outcomes, including terminal kidney disease (TKD), cardiovascular disease, and

increased mortality [10,32]. For example, studies have found that the prevalence of cardiovascular disease is markedly higher among persons with CKD compared with persons without CKD. For example, in the 5% Medicare sample, 65% of 175,840 adults aged 66 years and older with CHBP had cardiovascular disease compared with 32% of 1,086,232 without CHBP. Moreover, the presence of CHBP was associated with worse cardiovascular outcomes. For example, in the same population, the presence of CBP was associated with poorer 2-year survival in people with coronary heart disease (77% vs 87%), acute myocardial infarction (69% vs 82%), heart failure (65% vs 76%), atrial fibrillation (70% vs 83%), and cerebrovascular disorder/transient ischemic attack (73% vs 83%) [43]. Thus, the main component of treatment of CKD is the reduction of cardiovascular risk. In patients aged 50 years and older with CKD, treatment with statins at low to moderate doses is recommended, regardless of low-density lipoprotein cholesterol levels [7,28,42].

In patients with CKD, drug dosage adjustments are often required. Common medications requiring dose reduction include most antibiotics, direct-acting oral anticoagulants, gabapentin and pregabalin, oral hypoglycemic agents, insulin, chemotherapeutic agents, and opiates, among others [19,27]. In general, the use of medications with a low likelihood of beneficial effects should be minimized because patients with CKD are at high risk of adverse drug effects [11,12]. In recent years, much attention has been paid to studies on the prognostic value of heart rate variability in determining the risk of sudden death and dangerous ventricular arrhythmias in patients with coronary heart disease [8,15]. At the same time, the issue of diagnostics of electrical instability of the heart in patients with CPB remains insufficiently studied.

Low level of heart rate variability (HRV) indicates monotonically regular heart rate (HR). Moreover, it is associated with impaired regulatory and homeostatic functions of the autonomic nervous system, which reduces the body's ability to cope with internal and external stressors. Thus, HRV is a noninvasive electrocardiographic method that can be used to measure the autonomic nervous system in various clinical situations [2,41]. The term "variability" means changeability. There is a change in the parameters of the heart work and rhythm - it is its reaction to certain causes. Thus, HRV serves as an indicator of the work of the CCC, as well as a mechanism for the subsequent regulation of the work of the body as a whole. Among other basic indicators of heart rate variability are the following:

- Heart rate (HR) - reflects the work of the heart in general.
- Standard deviation of the average length of the RR interval (sdRR) and the coefficient of variation (VAR) - indicates the total activity of adaptation-regulatory mechanisms.
- Difference indices (sdRR, RMSSD and pNN50) - reflect the activity of the parasympathetic nervous system (PN).
- Low frequency wave spectrum power (LF) - show the activity of the center that regulates vascular tone.
- Very Low Frequency (VLF) - show the activity of the center that regulates cardiac activity in the subcortical area of the brain.
- Mode, mode amplitude - indirectly reflect the degree of activation of sympathetic NS.
- Difference between min and max duration of intervals between contractions (MxDMn) - activity of parasympathetic NS.
- Stress index (SI) - stress level of adaptation and defense systems.



Patients with CKD are predisposed to cardiac rhythm disorders including atrial fibrillation (AF)/atrial flutter, supraventricular tachycardias, ventricular arrhythmias and sudden cardiac death (SCD). FP is the most common sustained arrhythmia [4,13]. The prevalence of FP is high, with estimates ranging from 16% to 21% in non-dialysis-dependent patients with CKD and 15% to 40% in patients on dialysis [3,6]. CKD and FP share many common risk factors, making it difficult to determine the contribution of individual factors to the condition or related outcomes.

For non-dialysis CKD, there appears to be an independent association between CKD and risk of FP [1,39]. It is bidirectional, with CKD increasing the incidence of PD and the presence of PD exacerbating renal impairment [17,31,37]. Drugs currently used in the treatment of CPB patients are aimed at providing direct and indirect (i.e., blood pressure-lowering dependent) nephroprotective effects to limit the progression of renal dysfunction and control the elevated BP values that almost always accompany progressive renal failure [30,45]. However, they also aim to have a favorable effect on autonomic function. Regarding parasympathetic changes, evidence has been provided that some drugs can improve vagal control of heart rate (HR), as assessed by spectral analysis of the heart rate signal. This includes beta-blockers, angiotensin II receptor antagonists and, although not always homogeneously, angiotensin-converting enzyme (ACE) inhibitors [38]. In contrast to the effects on the sympathetic cardiovascular system, statins have not demonstrated any potentiating effect on cardiac vagal control, assessed by heart rate variability, in patients with chronic renal failure [35]. It should be emphasized that statins may play an important role in determining this effect, since the use of these drugs has been reported to reduce elevated values of sympathetic nerve activity even when administered to patients without concomitant administration of any other sympathomodulatory drugs [40,46].

A significant reduction in cardiovascular sympathetic activity, as assessed by norepinephrine assay in venous plasma or more directly by microneurographic method, has been reported in patients with chronic renal failure when treated with central sympatholytics such as clonidine and moxonidine, the latter drug being evaluated when administered in addition to conventional treatment with pharmacological compounds acting on the renin-angiotensin system [41]. It should be emphasized that the mechanisms responsible for the sympathomodulatory properties of the above classes of drugs appear to be multiple and heterogeneous, including (1) reduction of the excitatory action of angiotensin II on peripheral and central adrenergic nerve impulses, (2) partial or complete restoration of the sympathoinhibitory properties exerted by the arterial baroreflex, and (3) direct effects of drugs (particularly but not exclusively central sympathoinhibitory drugs) on the central nervous system [21].

When discussing autonomic response to available therapeutic interventions for the treatment of CPB, several questions still remain unanswered. Three of them deserve special mention. First, neurohumoral interactions between heart and kidney may be an important target in the near future for therapeutic interventions aimed at exerting neuromodulatory effects.

Second, future studies will allow us to investigate whether previously described pharmacologic, nonpharmacologic, or device interventions can restore normal autonomic function in patients with nephropathy. Although the available data are limited, an in-depth analysis of the results obtained with the various treatments mentioned above may suggest that combination treatment with several drugs, including compounds acting on the renin-angiotensin system and central sympatholytic agents, may restore "normal" sympathetic function in patients with chronic kidney disease comparable to that described in healthy subjects. Similar conclusions were reached

when analyzing the results of a 43-month follow-up that R. Dell'oro et al. conducted in patients with congestive heart failure after baroreflex activation therapy [16].

A final question concerns the magnitude of the sympathoinhibitory effects that should result during treatment. Although there is currently no answer to this question, it should not be forgotten that excessive sympathoinhibitory effects of therapeutic interventions have a deleterious effect on morbidity and mortality. This was demonstrated in the MOXonidine in Congestive Heart Failure (MOXCON) trial in advanced heart failure using excessively high daily doses of moxonidine [14]. This was also demonstrated in hypertensive patients included in the International VERapamil SR-Trandolapril Study (INVEST) study, in which achieving clinical heart rate values below 55 heart beats per minute during treatment with beta-blockers contributed to a paradoxical increase in side effects [29]. Thus, future studies in patients with chronic renal failure are needed to clarify the unresolved issues outlined above and to gather more information on the autonomic effects of the therapeutic procedures currently used in the treatment of chronic kidney disease.

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## TECHNOLOGY OF APPLICATION OF BIOSTIMULATOR (MICROZYM-2) IN THE CULTIVATION OF PEANUT VARIETIES IN THE CONDITIONS OF UZBEKISTAN

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**Abstract.** *This study was conducted in experiment fields in the Plant Science department of Tashkent State Agrarian University in 2014-2016. The experiment was performed in split-plot design with 4 replications. Based technology for the use of biostimulator Microzym-2 under peanut cultivation, determined the economic efficiency of the studied peanut varieties depending on the agro technological elements in obtaining a high and quality yield. When using the biostimulator Microzym-2 with a rate of 30 l/t before sowing peanut seeds, the yield of pods of the "Salomat" variety was higher by 0,14 t/ha, and the "Mumtoz" variety by 0,11 t/ha compared to the control (0,12 t/ha). When using mineral fertilizers with a rate of N<sub>150</sub>P<sub>150</sub>K<sub>100</sub> kg/ha with the introduction of the biostimulator Microzym-2 before sowing seeds, as well as in the phase of flowering-pods formation, the grain yield of the Salomat variety was 2,93 t/ha, and that of the Mumtoz variety was 3,32 t/ha.*

**Keywords:** *peanut (Arachis hypogaea L.), experiment, Microzym-2 biostimulator, design, replication, statistic, flowering, maturity, seed weight, pods, yield.*

### Introduction

Arachis hypogaea L., commonly known as peanut, groundnut, monkey nut, goober, or earth nut because the seed develop underground, is in the division Papiolionaceae of the family Leguminoceae [1;3]. The peanut is only one of a few hundred species of legumes that produces flowers above ground but develops the fruit below ground. Peanuts are native to South America and were cultivated in pre-Columbian native societies of Peru as early as 3000 bc. Peanuts probably originated in the region of eastern South America, where a large number of species are found growing wild [4;5]

In 2018, world production of peanuts (reported as groundnuts in shells) was 46 million tonnes, led by China with 38% of the global total, followed by India (15%). Other significant producers were Nigeria, Sudan, and the United States [1;2;].

At present, to meet the needs of the world population with food, it is important to increase the yield and quality of oilseeds, including peanuts. Globally, peanuts are sown in 117 countries of the world on an area of 27.66 million hectares, the total yield is 43.98 million tons, and the average yield is 1.59 t / ha.

This crop on the Asian continent is cultivated on 56% of the area, in Africa on 40% of the area, where these continents account for 68 and 25% of the total production. Uzbekistan ranks 51st in the world for the cultivation of peanuts. To date, the scientific substantiation of the technology of cultivating varieties of peanuts and providing the population with food by increasing the gross yield is an urgent issue.

In the countries of the world that cultivate peanuts, special attention is paid to increasing the yield and quality of seeds due to soil conditions, varietal characteristics and advanced methods of agricultural cultivation technologies.

Proceeding from this, scientific research on the creation of new high-yielding peanut varieties with high grain quality and suitable for processing, improving the cultivation technologies inherent in agricultural technologies, increasing the yield and quality of seeds of peanut varieties by optimizing the timing of sowing seeds, irrigation regimes, norms of mineral fertilizers, accelerating growth, development, due to the use of growth stimulants, meeting the requirements of the country's population with oilseeds and confectionery products, providing livestock with nutritious feed are relevant.

For the intensive development of agriculture, an increase in the volume of cultivation of exportable products, as well as ensuring food security and preserving soil fertility, an urgent task is to conduct scientific research on the optimal timing of sowing new varieties of peanuts, the irrigation regime, on the effective use of mineral fertilizers and biostimulants in conditions of irrigated typical serozem soil.

Extensive research work on environmental testing and selection, increasing the yield and quality of seeds, as well as improving the technology of cultivation in different soil and climatic conditions of varieties of peanuts with high and high-quality yield indicators were carried out by leading international scientific centers and higher educational institutions, such as American Peanut Research and Education Society, UF-University of Florida IFAS Research (USA), International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), International Center for Agricultural Research in the Dry Areas (ICARDA), Shandong Peanut Research Institute (China), KOPIA (Korea at the Krasnodar State Agrarian University (Russia), the Research Institute of Crop Production, the Tashkent State Agrarian University (Uzbekistan).

**Materials and methods.** Field studies were carried out at the experimental station of Tashkent State Agrarian University. The experimental station is located near Tashkent, in the upper part of the Chirchik river, Kibray district of the Tashkent region, at an altitude of 481 m above sea level, 41° 11' northern latitude and 38° 31' east longitude. The terrain of the site is uneven, slightly wavy, with a general slope to the Salar canal. Irrigation water was pumped from the Bozsu channel.

***Table 1. The soil characteristics of the experimental area***

№	Depth (sm)	Gross content, %				Mobile forms, mg/kg		
		humus	nitrogen	phosphorus	potassium	N-NO <sub>3</sub>	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O
1	0-30	0,925	0,083	0,152	1,33	4,8	47,1	180,7
2	30-50	0,715	0,070	0,134	1,30	3,2	40,3	162,0

The soil of the experimental site is long-irrigated sierozem, non-saline, with a low content of humus 0,9-0,7%, nitrogen 0,082-0,066%, phosphorus 0,153-0,139%, potassium 1,33-1,30%.

Field and laboratory methods of research, developed by the Uzbek Research Institute of Plant Production, were used. Phenological observations were conducted according to the Methodology of the State Variety Testing of Agricultural Crops. Statistical processing of data was carried out according to B.Dospekhov [6]. Application of organic and mineral fertilizers and necessary agro technics on these soils, enable to obtain the high yields of field crops.

**Climatic conditions.** The climate of Tashkent region, as well as of Uzbekistan in general, has a sharply continental character. Spring comes early: at the beginning of March, the air temperature rises noticeably, although sometimes a sharp cooling occurs. During this period a significant part of the annual precipitation falls. Summer is long, hot and dry.

**Table 2. The climatic conditions during the growing season and long years mean (LEM=1960-2016)**

Month	Mean temperature (°C)				Total rainfall (mm)				
	Long years mean	2014	2015	2016	Long years mean	2014	2015	2016	
January	0,2	2,6	2,4	6,1	62,3	92,4	98,2	95,9	
February	2,4	-3,4	5,9	7,7	74,5	38,7	103,6	7,5	
March	8,0	8,9	7,6	12,9	87,8	100,4	91,4	115,4	
April	14,8	13,7	17,1	15,3	71,8	70,4	65,5	31,5	
May	20,1	23,1	22,1	20,7	39,9	15,2	85,5	54,6	
June	25,4	26,8	27,6	26,5	12,1	7	24,9	14,9	
July	27,2	26,3	29,1	27,9	4,0	0	0	1,6	
August	25,4	26,6	26,4	27,3	2,5	0	3,6	0	
September	20	20,7	20,1	23,8	4,8	1,0	4,8	5,8	
October	13,7	12,7	14,4	11,6	33,4	61,4	104,8	38,2	
November	7,4	5,2	7,4	5,7	55,2	76,4	98,3	57,3	
December	2,5	3,1	7,0	5,0	70,2	35,4	65,8	88,6	
Average	<b>13,9</b>	<b>13,9</b>	<b>15,6</b>	<b>15,9</b>	<b>518,5</b>	<b>498,3</b>	<b>746,4</b>	<b>511,3</b>	

Sometimes precipitation falls in the month of June in the form of rains, but then comes hot and dry weather, usually continuing until late autumn. The maximum air temperature reaches 43 °C in July, sometimes in August.

**Results.** It was observed that in the years of the experiment, depending on the climatic conditions, field germination period and duration of the field germination of the peanut variety seeds were different. It was established that peanuts are a thermophilic crop. The optimal temperature for the growth and development of this culture is 25-30 °C. At temperatures below 12 °C, no fruit is produced. Usually sprouting of peanuts seeds begins at a temperature of 14-15 °C.

The aim of the study is to scientifically substantiate the technology of using a biostimulant for morpho-biological characteristics, photosynthetic activity, oil content and the formation of crop elements of local varieties of peanuts.

The technology of using biostimulant in the cultivation of peanuts - the technology of using the biostimulant Microzym-2 in the cultivation of varieties of peanuts before sowing seeds, as well as in the phases of flowering and bean formation, has been analyzed, which contains data on field germination of seeds, development phase, stem height, leaf area and yield peanuts.

When treating the seeds before sowing with the biostimulator Microzym-2 (30 l/t), seedlings were obtained 3-4 days earlier and full seedlings were obtained. The field germination capacity of the Salomat variety was 90%, and that of the Mumtoz variety was 92%. The real density of the "Salomat" variety was equal to 120.0 thousand pieces / ha, and the "Mumtoz" variety was 122.8 thousand pieces / ha. The data obtained show that when processing peanut seeds before



sowing with the biostimulant Microzym-2, the germination of seeds is accelerated and an optimal plant density is ensured.

The experience revealed the following patterns of the effect of the biostimulant Microzym-2 on the phases of development of peanuts. For example, in the "Salomat" variety on the control variant without mineral fertilizers, the beginning of flowering phase was noted on June 2, when mineral fertilizers were applied at a rate of  $N_{150}P_{150}K_{100}$  kg/ha on June 6, and in the "Mumtoz" variety, these indicators fall on June 13-15, respectively. When treated with the biostimulant Microzym-2, the shoots of the Salomat variety began on June 2-4, and the "Mumtoz" variety on June 12-15, where the flowering phase also differed by 2 days.

Similar cases are observed when processing the biostimulant Microzyme-2 before sowing seeds and in the phases of flowering - the formation of beans, where the phase of bean formation and ripening differs from 1-3 days to 7-8 days, which creates optimal conditions for the full ripening of the beans due to lengthening the developmental phase.

In particular, against the background of mineral fertilizers, the period from sowing seeds to ripening was 130 days for the Salomat variety, and 147 days for the Mumtoz variety; The Salomat variety was 138 days, and the Mumtoz variety was 154 days.

The use of the biostimulant Microzym-2 together with mineral fertilizers influenced the intensive growth, development and obtaining of a bountiful harvest. The experience determined the significant influence of the studied factors on the height of the peanut stalk.

The existence of a high positive correlation between the yield of beans and the oil content of seeds of peanut varieties under the influence of the biostimulator Microzyme-2 was revealed ( $r=0.675$ ).

When processing seeds before sowing, in the phases of flowering and bean formation, the stem height of the Salomat variety was 45 sm, and that of the Mumtoz variety was 40.9 sm, which is 10.3 and 9.2 sm higher compared to the control variant. Experimentally, when treating seeds before sowing with a biostimulator Microzim-2, the leaf surface area of the Salomat variety was 27.8 thousand  $m^2$  / ha, and the Mumtoz variety was 26.9 thousand  $m^2$  / ha, which is 1.6-1.9 thousand  $m^2$  / ha is higher compared to the control.

It is necessary to note the increase in the effectiveness of the biostimulator Microzyme-2 against the background of mineral fertilizers. At an annual rate of mineral fertilizers  $N_{150}P_{150}K_{100}$  kg / ha with the use of a biostimulator Microzym-2 before sowing seeds, as well as in the phases of flowering and bean formation, the leaf surface area of peanuts of the Salomat variety was 40.3 thousand  $m^2$  / ha, and the Mumtoz variety 43.4 thousand  $m^2$  / ha.

The studies have determined the significant effect of the biostimulant Microzyme-2 on the yield of peanut beans.

**Conclusions.** When using the biostimulator Microzym-2 with a rate of 30 l/t before sowing peanut seeds, the yield of pods of the "Salomat" variety was higher by 0,14 t/ha, and the "Mumtoz" variety by 0,11 t/ha compared to the control (0,12 t/ha). When using mineral fertilizers with a rate of  $N_{150}P_{150}K_{100}$  kg/ha with the introduction of the biostimulator Microzym-2 before sowing seeds, as well as in the phase of flowering-pods formation, the grain yield of the Salomat variety was 2,93 t/ha, and that of the Mumtoz variety was 3,32 t/ha.

The economic efficiency of the use of the biostimulator Microzym-2 in the cultivation of peanuts has been determined. When processing seeds before sowing at a rate of 30 l / t, and in the flowering phase - the formation of beans at a rate of 40 l / ha with a biostimulator Microzym-2

with fertilizing with mineral fertilizers at a rate of N<sub>150</sub>P<sub>150</sub>K<sub>100</sub> kg / ha, the net income was 9236.8 thousand sum / ha, the level profitability 70.4%.

**Table 3. Influence of biostimulator Microzym-2 on the development phases of peanut varieties**

№	Experience options	Timing of application			Seed germination	The beginning of flowering	Pods formation (grains)	Ripening phase	Vegetation period
		application rate before sowing, t/ha	application rate in flowering phase	the rate of use of mineral fertilizers, kg / ha					
<b>Salomat variety</b>									
1	Control	-	-	-	6.05	2.06	11.06	2.09	119
2	Control	-	-	N <sub>150</sub> P <sub>150</sub> K <sub>100</sub>	6.05	6.06	18.06	8.09	130
3	Microzym-2	30	-	-	4.05	2.06	12.06	5.09	124
4	Microzym-2	30	40	-	4.05	4.06	15.06	10.09	129
5	Microzym-2+NPK	30	-	N <sub>150</sub> P <sub>150</sub> K <sub>100</sub>	4.05	6.06	19.06	15.09	134
6	Microzym-2+NPK	30	40	N <sub>150</sub> P <sub>150</sub> K <sub>100</sub>	4.05	6.06	21.06	19.09	138
<b>Mumtoz variety</b>									
7	Control	-	-	-	8.05	13.06	24.06	16.09	131
8	Control	-	-	N <sub>150</sub> P <sub>150</sub> K <sub>100</sub>	8.05	15.06	01.07	02.09	147
9	Microzym-2	30	-	-	6.05	12.06	25.06	21.09	138
10	Microzym-2	30	40	-	6.05	13.06	29.06	28.09	145
11	Microzym-2+NPK	30	-	N <sub>150</sub> P <sub>150</sub> K <sub>100</sub>	6.05	15.06	02.07	04.09	151
12	Microzym-2+NPK	30	40	N <sub>150</sub> P <sub>150</sub> K <sub>100</sub>	6.05	15.06	04.07	07.10	154

To obtain a high and high-quality yield of peanut grain in the conditions of irrigated typical serozem soils of the Tashkent region, it is recommended to treat with a biostimulator Microzym-2 before sowing seeds with a rate of 30 l/t, in the phases of flowering and formation of beans with a rate of 40 l/ha.

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# ANTIOXIDANT THERAPY IN PATIENTS WITH CHRONIC NEPHROTIC GLOMERULONEPHRITIS

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**Abstract.** *According to the modern concept, pathological processes are realized on cell membranes, causing a violation of the structural and functional organization, up to complete destruction. The use of glucocorticoid and cytotoxic therapy in combination with heparin does not guarantee success and lead to complications, especially in children. Consequently, the search for drugs that remove the toxic effects of immunosuppressive therapy continues to be an urgent medical and social problem. What was the reason to study the features of antioxidant therapy in order to optimize the pathogenetic treatment of chronic glomerulonephritis in children? The advantage of therapy with the inclusion of actovegin antioxidant was that parallel to the normalization of malondialdehyde and lysophosphatidylcholine, the other cell membrane fractions increased, apparently due to the ability of aktovegin to reduce the activity of phospholipases. The conducted research will allow to review the tactics of treatment of nephropathy in accordance with the obtained research results, to include in the complex therapy a step-by-step correction of membrane destabilization with Actovegin. In addition, pathogenetic therapy for glomerulonephritis is fraught with complications, ultimately associated with a violation of cellular stability and requires corrective antioxidant therapy.*

**Keywords:** *glomerulonephritis, nephrotic form, antioxidant therapy.*

## INTRODUCTION

According to surveys among children, acute glomerulonephritis is 1.1 per cent, chronic at 0.4 per cent. Glomerulonephritis in children tends to increase with the development of chronic kidney failure [1]. High temperatures of up to 41 degrees and above up to 110 days per year, with low relative humidity of up to 20% in Uzbekistan, result in adaptive shifts in the kidneys. Lipid peroxidation activity (LIPID PEROXIDATION) is increased, free radicals' concentration is increased as a result of prolonged exposure, antioxidants are depleted [7]. The achievements of modern clinical membranology make it clear that the most important mechanism for regulating the state of cell membranes during adaptation and under stress during the development of various diseases, is the peroxidation of lipids of unsaturated fatty acids and phospholipids flowing along a free radical path. According to the modern concept, pathological processes are realized on the cell membranes, causing structural and functional disruption, up to peroxidation lipid destruction. The volatile oxidation of lipidoformation by glucocorticoid and cytotoxic therapy combined with heparinotheapia do not guarantee success and lead to complications, especially in childhood [2]. Consequently, the search for drugs that relieve the toxic effects of immunosuppressant therapy continues to be a pressing medical and social problem. [3].

The purpose of this work was to determine the effectiveness and indications for the prescription of antioxidant therapy in children with chronic glomerulonephritis nephrotic form.

## Research materials and methods

Studies were conducted on 125 patients with chronic glomerulonephritis. The Monitoring Group served 31 practically healthy children of the same age who were not affected by nephropathy. The content of general lipids, cholesterol, concentration of phospholipids by the dencytometer «Byan» by M.H.Turakulov, fraction of phospholipids by E.Stahl method in

modification of V.I.Krylov and non-esterified fatty acids, the activity of peroxidation of lipids, determined by the indicator of malonon dialdehyde, the activity of phospholipase A<sup>2</sup> method. A study of healthy children has been conducted to determine the impact of climate on membrane health. As a result, a higher content of lysophosphatidylcholin, the most toxic fraction of phospholipids, was found in the membrane in summer. Compensatorively, in the summer increases the content of phosphatidylethanolamine, osfatidil ethanolamine, sphingomyelin. In healthy children, lipid peroxidation has been found in small dialdehyde and sphingomyelin (0.55); sphingomyelin and phosphatidylethanolamine (0.6); phosphatidylcholine and lysophosphatidylcholine (0.53). In the active stage of chronic glomerulonephritis in the summer, the highest content of Malon dialdehyde was found as an indicator of high lipid peroxidation activity and was accompanied by an increase in lysophosphatidilcholine content in cell mebranes.

The increase in lipid peroxidation activity in summer was also accompanied by high blood phospholipase activity in patients with a nephrotic form of chronic glomerulonephritis compared to winter. Lipid peroxidation correlated with lysophosphatidylcholine and phosphatidyl ethanolamine (0.82), lysophosphosphatidilcholine with phosphatidylcholine (0.74), lysophosphosphatidilcholine with phosphatidylserine (0.8). phosphatidylserine with phosphatidylcholine (0.8) is active in patients with glomerulonephritis. In the remission phase, the association of lysophosphathydilcholine with other phospholipid fractions disappears. In this regard, Aktovegin is included in our complex therapy. The drug is selected as an antioxidant, due to the content of superoxide-dismutase, (72.8 7.1 ml) is characterized by high antioxidant activity compared to other antioxidants. In addition, aktovegin contains macro and trace elements that are part of the enzymes involved in oxidative processes. During the activity of glomerulonephritis intravenously injected 600 - 2000 mg/day in/in drip 10 - 14 days, then transferred to a drage of 200 - 400 mg 2 times per day per os - 1-2 months Dosing of the drug was carried out depending on the age The course was repeated 3-4 times a year if necessary without a break during the year depending on the dynamics of the process. The advantage of Aktovegin antioxidant therapy was that in parallel with the normalization of the indices of Malon dialdehyde and Lysophosphatidilcholine, other cell membrane fractions increased, obviously related to the aktovegin's ability to reduce phospholipase activity. In contrast to the patients, peroxidation lipid oxidation only heparin or in combination with prednisolone, the group of patients with the introduction of aktovegin in a shorter period (10 3 days) normalized the clinic, biochemical parameters, including coagulogram. The heparin dose did not exceed 150ed/kg per day.

This effect of activating aktovegin appears to be due to the elimination of the synergistic effect of heparin with phosphate-yl ethanolamine, which inhibits the interaction of factor 12 with prothrombin, phosphatidylserine inhibiting protrobing activity and autoimmune lipidovimerization of monomeric fibrin. within 30 days, which helps to reduce the dose of heparin to 100 units per 1kg of weight per day and reduce the duration of its use from 30 to 20 days. In parallel with the increased activity of LIPID PEROXIDATION, the total phospholipid content is reduced and the LF value in the membrane is increased, which leads to its destabilization. In remission, the structure of the membrane is restored, as the reduction of the small dialdehyde is accompanied by a decrease in LF levels in the erythrocyte membrane. Thus, in remission of glomerulonephritis membrane peroxidation lipid does not restore the structure of the membrane of healthy children, and cellular membrane phospholipids in patients with acute nephrotic syndrome are in a state, dynamically influencing cellular preservation under peroxidation conditions.

### **Research results.**

Thus, against the background of pronounced clinical manifestations and urinary syndrome in patients with chronic glomerulonephritis in the nephrotic form increases the intensity of lipid peroxidation. In peroxidation lipidovyse lipid oxidation of such pre-oxidation lipid oxidation also says the identified lipid lipid oxidation bond of the malone dialdehyde and LF during the aggravation period ( $h=0.476, p < 0.05$ ). And in remission, his activity decreases. The dynamics of the spectrum of phospholipids with the predominant accumulation of unsaturated phospholipids in lipid bislu indicates the absence of lipid peroxidation in the cytomembrane state in patients with chronic nephrotic glomerulonephritis. Lipid peroxidation correlated with lysophosphatidylcholine ( $h=0.465; p < 0.01$ ), negative correlation of total phospholipids and sphingomyelin ( $h=0.661; p < 0.01$ ), indicating that when lipid peroxidation activity increases, lysophosphatidyllin and sphingomyelin increase, while total phospholipids decrease.

In remission of glomerulonephritis membrane peroxidation lipid does not restore the structure of the membrane of healthy children, and the phospholipids of cell membranes are in a condition that dynamically determines cellular preservation under peroxidation conditions... In remission, LF,FS,oddnako in parallel increases phosphatidyl ethanolamine to 0.34 0.02,  $p < 0.05$  and remains elevated FH(0.34 0.03 mmol/l).

Clinical and laboratory remission of patients with chronic glomerulonephritis increased the level of small dialdehyde and lysophosphatidylcholine and reduced the number of total phospholipids, which may indicate the activity of the disease. We associate these changes with the fact that as a result of reduced activity, lipid peroxidation during remission produces phospholipid synthesis, while reducing the amount of total phospholipids in plasma, negative correlation of total phospholipids with lysophosphatidylcholine ( $h=0.401, p < 0.05$ ), phosphatidylserine ( $h=0.491, p < 0.05$ ), sphingomyelin ( $h=-0.481, p < 0.05$ ) during the remission period, that is, the inflammatory oxidation of the lipid-free defect of the oxidized fractions leads to a decrease in the total phospholipids.

### **CONCLUSIONS**

1. State analysis of lipid peroxidation and spectrum of erythrocyte membrane phospholipids found high lipid peroxidation activity during the exacerbation period with increased lysophosphatidylcholine fraction, reduction of total plasma phospholipids, during the remission-absence of cell membrane stabilization against the background of reduced lipid peroxidation intensity and a decrease in the malone dialdehyde, in patients with chronic nephrotic glomerulonephritis.

2. The ratios we've discovered in the spectrum of phospholipids are explained by the change in their oxidation rate, which allows the cell metabolism to be restructured in the membrane in response to various effects, the phospholipid mobility to be lost, significant in the chronology of glomerulonephritis and renal deficiency.

3. The conducted studies allowed to revise the treatment tactics of nephropathy in accordance with peroxidation lipid-induced results of research, to include in complex therapy stage correction of destabilization of the membranes by actovegin.

As a result of the conducted studies, seasonal features of meteorotropic reactions at the cellular level have been established, taking into account the role of periacidic oxidation of cell membrane lipids, hemostasis factors in climatic conditions in Uzbekistan, as determinants of meteorological sensitivity, occurrence and current of glomerulonephritis. In this regard, the study of mechanisms for membrane adaptation can make significant adjustments and offer practical recommendations for the development of principles for the prevention of glomerulonephritis in hot climates. In addition, pathogenetic therapy in glomerulonephritis is fraught with complications related ultimately to the breakdown of cellular stability and requires corrective antioxidant therapy

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## CLINICAL-LABORATORY FEATURES OF INTERSTITIAL NEPHRITIS IN CHILDREN WITH PURINE DYSMETABOLISM

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**Abstract.** *Purpose of the study.* To study the clinical-laboratory features of the current interstitial nephritis in children developed against the background of hyperuricosuria and hyperuricosuria.

**Materials and methods.** Examined 82 patients with a diagnosis interstitial nephritis of dysmetabolic genesis against uricosuria background of more than 1mg of uric acids per 1ml of urine. The metabolic status of patients was evaluated according to a special program, including genealogical analysis, screening tests and quantitative biochemical Studies. Urichemy was defined as the main biochemical marker ( $>320\text{mcmol/l}$ ) and uricosuria.

**Results.** The comparative analysis showed that the existing diagnostic difficulties can be overcome by careful comparison of anamnetic, clinical and laboratory data and timely diagnosis of uricosuric genesis of nephropathy. It has been found that in dysmetabolic interstitial nephritis as opposed to glomerulonephritis in the debut of the disease no extrarenal signs, does not suffer Glomerular filtration, nitrogenous function of the kidneys. Diagnosis confirmed by the presence of the characteristic spectrum of extrarenal pathology in the genealogy, the presence of hyperuricemia ( $>0.310\text{mmol/l}$ ) and uricosuria ( $>1.0\text{mg}$  of uric acid in 1ml of urine). The most informative for this disease is debut at an early age, no extrarenal signs in the presence of isolated urinary syndrome.

**Keywords:** children, hyperuricemia, hyperuricosuria, interstitial nephritis.

Relevance. Scientific progress and technological improvements have led to the emergence of new fields of paediatric science and practice such as metabolic paediatrics and environmental paediatrics. Frequency of kidney pathology in children has increased in recent years [4]. A peculiarity of the nosological structure of kidney diseases over the last decades is a significant increase in the frequency of dysmetabolic nephropathy [4], the proportion of which among diseases of the urinary system (AMD) is between 29 and 40% [1], according to various authors. Peculiarities of current and corrective therapy of pyelonephritis developed against the background of metabolic disturbances [5] are studied. The most studied among dysmetabolic nephropathy is the so-called dysmetabolic nephropathy with oxalathic-calcium crystallium, which turned out to be polygonally inherited polyorgan membranopathy with familial cytomembrane instability [1]. Ecologically conditioned lesions of tubulointestinal kidney tissue are also manifested in the form of dysmetabolic nephropathies [6], due to detection of mutant effect by a number of enzymes, in particular those responsible for purine exchange [8].

In recent years, dismetabolic chronic interstitial nephrites have attracted the attention of researchers, among which the peritoneal nephropathy has a special place [5]. The incidence of ural nephropathies in the total child population is 4.2%, and among the recorded kidney pathology is 9.9% [10]. Age peculiarities of manifestation and current of urate nephropathy are under study [9].



Due to the intensity of purine metabolism in the growing body, pathological syndromes caused by uric acid hyperproduction (MK) in children are more frequent than diagnosed. The purpose of this work is to study the clinical and laboratory features of the flow of interstitial nephritis developed in children against the background of hyperuricemia with hyperuricosure.

**Research materials and methods.** Under supervision were 82 patients with interstitial jade against the background of uraturia in the age of 2 to 14 years. The metabolic status of patients was assessed on the basis of repeated studies carried out under a multi-stage special program that included genealogical analysis, screening tests and quantitative biochemical studies. As the main biochemical marker of disturbed exchange of purins the level of uricosuria and uricosuria by Mueller-Seifert, daily excretion with urine of urates by method Hopkins [12], oxalates by N.V. Dmitrova [2]. Due to the lack of work covering the functional condition of kidneys in children with nephropathy of the exchange genesis in climatic conditions in Uzbekistan, we used a set of indicators quantifying partial kidney functions: glomerular function was estimated by Van Slayke, Zimnitsky tubular function, Osmolarity of urine by cryoscopic method on OMK-I C-0I apparatus, ammonia and titanium acids as described by I.Todorov [12]. In addition to special studies, the data of general clinical studies and X-rays of excretory urograms were taken into account. Hyperuricemia was considered to be the level of uric acid in the blood serum more than 320mkmol/l, hyperuricosuria-if excreting with urine more than 1mg per 1ml of urine [11].

**Research results.**

Comparative retrospective analysis of the conditions of manifestation of interstitial nephritis (IN) against the background of the uratury shows that the complexity of clinical diagnosis of the disease is due to insufficient study at the early stages of development of the disease. Of the 82 children, 37 were diagnosed with acute and chronic glomerulonephritis (45.1%), 24 acute pyelonephritis (29.3%) and 21 recurrent urinary tract infections (25.6%)80% of patients from 1 month to 2 years of age received conventional treatment according to established diagnoses without lasting effect. Long-term treatment in these cases involves an unjustified risk of various side effects in the absence of positive results. Meanwhile, the comparative analysis shows that with the correct interpretation of clinical and generally accepted laboratory data, it is possible to timely diagnose kidney lesions of the metabolic genesis. Interstitial nephritis on the background of the uraturia is characterized by early manifestation in the form of isolated urinary syndrome (table.1), absence of extrarenal signs (edema, hypertension) at early stages.

*Table №1*

*Clinical-laboratory comparison data*

Groups Indicators	healthy (n=47)	sick glomerulonephritis (32)	sick interstitial nephritis (n=82)
Urinary syndrome detected against the background of infectious diseases	-	5 (4,2%)	62 (75,6%)
Occurrence of at least one week after the disease	-	112 (93,9%)	12 (14,6%)
Accidental detection			

	-	-	20 (24,4 %)
Swelling	-	120 (100%)	7 (8,5%)
Hypertension	-	57 (69,5%)	17(20,7%)
Hypotension	-		
Pallor	-	120 (100%)	17 (20,7%)
Abdominal syndrome	-	7 (8,5%)	21 (25,6%)
ESR	7,1±2,3	26,4±3,7 P<0,005	14,2±1,1 P<0,05
Antistreptolysin-O	0,2±0,02	0,62±0,05 P<0,001	0,209±0,03 P>0,05
residual nitrogen (mmol/ L)	15,7±1,4	30,6±2,1 P<0,005	19,4±1,4 P>0,05
cholesterin (mmol/ L)	4,84±0,4	8,44±0,91 P<0,005	6,43±0,85 P<0,005
total protein (g/l)	72,0±2,5	61,0±1,5 P<0,05	67,7±3,0 P>0,05
creatinine clearance (ml/min 1,73 m <sup>2</sup> )	98,6±4,8	64,2±7,4 P<0,05	71,0±5,7 P<0,05

Urinary syndrome was detected for the first time in 42 children under 3 years of age (51.2%), 27 (32.9%) 4-7 years of age and 13 children after 8 years of age (15.8%) against the background of acute respiratory virus infections, pneumonia and gastrointestinal diseases in 62 cases (75.6%) And the rest were discovered by accident during an examination for another reason. Eight children had enuresis (9.8 per cent) and abdominal syndrome in 21 (25.6 per cent). Children in physical development did not lag behind their peers, the health of sick children remained satisfactory, children are active. In all children, hematuria predominated over leukocytaria, and 12 children had transient macrochemistry. A moderate herding of the face, mainly in the morning, occurred in 18 children (20.5 per cent).

The interval after the transmitted infectious pathology is not characteristic here (14.6%), the values of DFA, ASLO, residual nitrogen, endogenous creatinine clearance (P>0.05) have not been changed. There is a «family portrait» of extrarenal pathology of children with uraturia: high frequency among adults (parents and other relatives) of such diseases as urea and bile disease, gout, hypertension, obesity, diabetes mellitus, and among siblings neuroArthritic diathesis, biliary pathology. Thus, in dysmetabolic interstitial nephritis unlike GN do not suffer in the disease debut globular filtration, nitrogen-dividing kidney function, non-specific inflammatory process performance, which has an undeniable diagnostic value. Interesting data on partial kidney function in patients with ID against the background of the uraturia (Table. 2).

**Table № 2**

***Partial kidney function in patients with horizontal nephropathy, depending on the activity of the renal process (M±m)\****

Groups Indicators	healthy kids (n=14)	Uraturia without nephropathy (n=19)	Interstitial nephritis against the
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			background of the uraturia (n=21)
Diurez (ml/day)	1080±17,0	676,0±14,0 P<0,005	907,0±20,0 P<0,005 P <sub>1</sub> <0,005
Creatinine clearance (ml/min 1,73 m <sup>2</sup> )	115,8 ±7,1	98,3±4,7 P<0,005	109,1±8,8 P<0,005 P <sub>1</sub> >0,05
Ammonia (mol/day)	53,3±1,18	33,6±1,76 P<0,001	24,7±1,76 P<0,001 P <sub>1</sub> <0,05
Titre. k-you (Mmol/day)	0,43±0,07	0,74±0,08 P<0,05	0,96±0,14 P<0,005 P <sub>1</sub> >0,05
Urats (mol/day)	2,94±0,27	5,17±0,56 P<0,05	6,34±0,49 P<0,005 P <sub>1</sub> <0,05
Urates/creatinine	0,85±0,08	1,6±0,14 P<0,05	1,92±0,38 P<0,001 P <sub>1</sub> >0,05
Oxalates (Mmol/day)	0,38±0,06	0,66±0,05 P<0,05	0,87±0,07 P<0,001 P <sub>1</sub> <0,05
Oxalates/creatinine	0,053±0,005	0,17±0,02 P<0,001	0,19±0,02 P<0,001 P <sub>1</sub> >0,05
Calcium (Mcmol/kg/day)	51,5±2,75	62,5±4,0 P<0,05	73,0±85 P<0,005 P <sub>1</sub> <0,05
Nephrotic Phosphorus Mmol/day	15,5±1,13	22,9±152 P<0,05	28,8±4,05 P<0,001 P <sub>1</sub> <0,05

\* - Note:P-reliability of difference compared to healthy.

P<sub>1</sub> is the validity of the difference between the basic groups.

As you can see from the scoreboard. 2 in patients with horizontal nephropathy without signs of activity of the nephritic process, the filtering and settling function of the kidneys is not changed ( $P>0.5$ ). At the same time, there is a reliable decrease in excretion with urine ammonia (33.6 1.76 mmol/day.,  $P<0.001$ ) and an increase in the level of titable acids (0.74 0.08 mmol/kg/day.,  $P<0.05$ ). In patients with Ural nephropathy there is a simultaneous increase in the level of oxaluria (0.66 0.05 mmol/day, at the norm of 0.38 0.06 mmol/day.,  $P<0.05$ ) ratio of oxalates to excreted creatinine ( $P<0.001$ ), level of phosphaturia calciuria ( $<0.05$ ). Aggravation of interstitial nephritis and layering of pyelonephritis leads to significant aggravation of partial kidney function disorders. For example, significant (92.0 10.4 and 60.4 5.6 ml/min 1.73m<sup>2</sup>) reductions were noted in the filtering function of the kidneys ( $P<0.005$ ), the osmolarity of urine ( $P<0.05$ ) and the ammoniogenic function of the kidneys (respectively 33.6 1.76 and 24.7.76 mmol, 0.05/p). The level of titable acids increases slightly, reliably exceed the level of uricosuria, oxal-, calcium-, phosphaturia ( $P<0.05$ ). The ratio of urates to creatinine is 1.92 0.38 at the norm of 0.85 0.08, ( $P<0.05$ ). Therefore, in patients with ural nephropathy, unlike patients with glomerulonephritis at the early stages of development, there is a violation of homeostatic functions of kidney canals, regulatory and ammonioacidal gene function. Thus, despite the paucity of clinical manifestations of interstitial nephritis, careful assessment of family history, features of partial kidney function allows early diagnosis and differential therapy.

### **CONCLUSIONS.**

Interstitial dysmetabolic nephritis is characterized by manifestation at an early age, the absence of extrarenal symptoms in the debut with isolated urinary syndrome. Interstitial nephritis is characterized by an early disruption of homeostatic functions of the tubular kidney system.

The most informative condition for diagnosing dysmetabolic interstitial nephritis is the state of osorvating and ammonio-acidogenic kidney function.

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## EFFECT OF PLANTING DATE ON PRODUCTIVITY NO-TILL MAIZE IN SOUTH KAZAKHSTAN PROVINCE OF KAZAKHSTAN

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**Abstract.** Traditionally, agriculture in south Kazakhstan (SK) is dominated by mid-size and small farms. Agricultural production is based on irrigated farming. A significant part of the cropping area is suffering from water scarcity. Therefore, improving agricultural production in irrigated areas through water-saving technologies is critical for achieving sustainable economic development of the region. Maize grain production is amounted to 462.000 tonnes while total area is 95600 hectares in Kazakhstan (FAO, 2010). The national average maize yield is about 4.6 tons ha<sup>-1</sup>, while potential exists for increasing the yield to over 8 tons ha<sup>-1</sup> through increased use of improved hybrids or varieties, fertilizers and good crop husbandry including optimum planting date. Planting date, seeding rates, hybrid selection, tillage, fertilization, and pest control all influence corn yield in the irrigated conditions. The main objective of this study is to determine optimum planting date in the irrigated conditions of South Kazakhstan province under no-till technology.

**Keywords:** fertilizers, potential, maize biomass, grain yield.

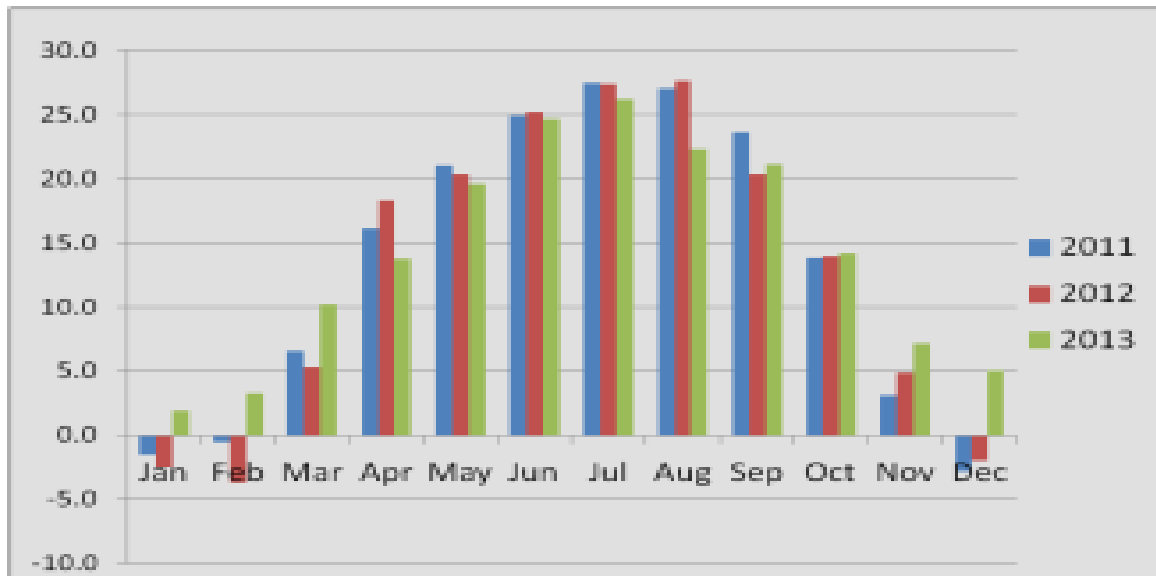
### Materials and methods

Availability of earlier hybrids with shorter plants, lower leaf number, upright leaves, smaller tassels and reduced anthesis silking interval has enhanced the ability of maize to withstand high plant populations without showing excessive barrenness (Sangoi, 2001). Experiments were conducted under irrigated conditions in 2012 and 2013 to determine the optimum combination of planting date to maximize the yield of maize. A randomized complete block design with four replications was established to study yield potential and economics of improved fodder production. Four planting dates (April 15, repeated every 15 days until May 30) were evaluated for maize biomass yield with its agronomic traits. Seed was placed with 6 cm of soil cover in all treatments. Considering the importance of nitrogen (N), phosphorus (P), and potassium (K), recommended fertilizer rate was held constant for all treatments each year and the fertilizer rate was N<sub>180</sub>P<sub>90</sub>K<sub>60</sub>. The maize field was irrigated three times during the vegetation period at the rates 600 m<sup>3</sup>. Field data for both experiments were collected on seed germination, plant density, plant height, days to maturity, grain and biomass yield. We determined number of plants per m<sup>-2</sup> at the stage of plant maturity. The experimental data analysis was performed using GenStat program 11<sup>th</sup> edition.

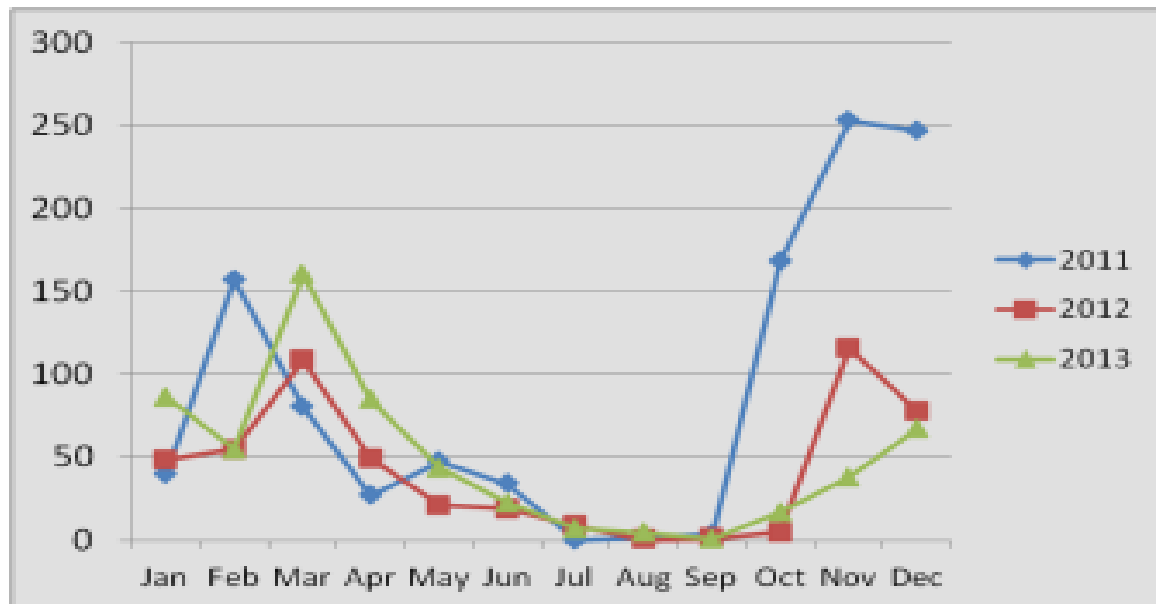
### Climate

Climatic conditions of SK are very diverse, comprising steppes, hot and dry semi-deserts, and mountains. The climate is continental, with hot temperatures and low air humidity in summer time and cold and quiet unstable winter with low snow fall. Average frost-free period lasts for about 225 days. Average daily temperature is 16.9°C. June through August is the hottest months

sometimes temperature can go up to 40°C while lowest temperature is observed in January and February months when lowest temperature can go down to -35°C (Figure ). A long-term annual precipitation level is around 350 mm. However, rainfall varies strongly over the year for example in 2011 average rainfall high up more 1000 mm per (Figure ). Precipitation starts at the end of September and early October. The highest precipitation is observed in winter and spring seasons (78%) followed by autumn (18%) and summer (4%). Low precipitation level permits only irrigated crop production.



*Figure 1: Average air temperature in Chimkent, Kazakhstan*



*Figure 2: Mean annual precipitation in Chimkent, Kazakhstan*

**Results**

Corn seed begins germination when the seed contains at least 25-30% moisture. Adequate soil moisture is most important feature to get rapid, uniform germination and emergence of maize and help set the stage for maximum grain yield at the end of the season. The data in Table 1 indicated that seed germination of maize was significantly (<.001) affected by years with highest seed germination of 82.6% obtained in farmer 2, when the crop was sown on May 30 in 2009.

Lowest seed germination of 64.9 % was noted, in farmer 1, with planting on 15 April in 2008. In our experiment four planting dates showed a relatively small trend of seed germination. The seed germination ranged from 64.9 to 82.6 % across treatments, farms and years. At planting date on 30 May, the seed germination increased up to 27% during the vegetation period. Farms not differed significantly (0.004) for seed germination.

Number of plants per m<sup>2</sup> is the most important agronomic trait to determine maize biomass and grain yield. Number of plants was significantly affected by treatment (i.e. planting dates). The highest number of plants per m<sup>2</sup> was 9.35 in farm 1 in the treatment where maize was sown on April 30, 2008. The lowest number of plants was recorded (6.55) also in farm 2 where maize was planted on 30 May, 2009. Number of plants per m<sup>2</sup> ranged from 6.55 to 9.35 across the years and treatments.

On the basis of our experiment it was found that the maize crop grew the tallest (291 cm) and a high biomass yield when the plant is planted on May 15 (Table ). The results revealed that plant height is an important variety trait and late sowing date reduced plant height. ANOVA statistics show that there were significant differences in maize plant height within years, treatments and farms (P<0.001). There was also close interaction between year and treatment on maize plant height while there was not interaction between year and farm, farm and treatment.

**Table 1: Seed germination, plant density and height of maize at the experimental in South Kazakhstan**

Farm	Treatment	Seed germination, %			Number of plants, m <sup>2</sup>			Plant height, cm		
		2012	2013	Average	2012	2013	Average	2012	2013	Average
F1	15-Aprl	77.8	64.9	71.3	8.60	7.58	8.09	230.0	283.8	257
	30-Aprl	72.8	69.5	71.2	9.35	8.25	8.80	238.5	284.2	261
	15-May	74.3	66.6	70.5	8.75	7.72	8.24	257.1	325.5	291
	30-May	78.5	65.5	72.0	7.07	7.08	7.08	242.5	237.8	240
F2	15-Aprl	74.8	74.8	74.8	8.19	8.20	8.20	210.7	260.5	236
	30-Aprl	70.0	78.6	74.3	8.90	8.92	8.91	218.4	269.8	244
	15-May	71.5	71.7	71.6	8.33	8.34	8.34	235.4	311.3	273
	30-May	75.5	82.6	79.1	7.43	6.55	6.99	222.1	244.5	233
ANOVA	Year	<.001			0.083			<.001		
	Farm	0.004			0.715			<.001		
	Treatment	0.229			<.001			<.001		

Grain yield is obviously one of the most important factors to determine total production of maize. Results on grain yield (Table ) revealed that planting date April 30 in farm 1 and farm 2 gave highest grain yield at a density of 8.80 and 8.91 m<sup>-2</sup>, respectively. The 2012 and 2013 growing conditions for maize in South Kazakhstan were, in general, very favorable with near (2012) and above average (2013) rainfall. Low climatic and disease pressure resulting in higher grain yields in 2012 compared to 2013. Thomson et al. (2009) reported that excessive rainfall may cause serious injury to a corn crop depending on its stage of development and decrease productivity. Grain yield was lowest for planting date 30 May at a density of 7.08 plants m<sup>-2</sup>. Grain yield was highest with April 30 planting. Yield reduction was associated with planting dates. High



yields can thus be obtained by planting date. The results revealed that grain yield was decreased by 2.0 and 0.7 t ha<sup>-1</sup>, with early and late planting.

**Table 1: Grain yield of maize (2012-2013)**

Farms	Treatment	Grain Yield, t ha <sup>-1</sup>		
		2012	2013	Mean
Farm 1	15-Aprl	4.4	3.9	4.2
	30-Aprl	7.4	4.9	6.2
	15-May	6.0	5.0	5.5
	30-May	5.7	4.8	5.2
Farm 2	15-Aprl	4.7	3.6	4.1
	30-Aprl	6.8	4.6	5.7
	15-May	5.1	4.7	4.9
	30-May	4.1	3.3	3.7
ANOVA	Farm	<.001		
	Year	<.001		
	T	<.001		

Decrease of 8 and 40% in grain yield under early and late sowing, respectively might be due to lower nutrient uptake and reduced photosynthetic translocation in the developing grain. It is therefore, evident that April 30 is optimum planting time for maize grain production in South Kazakhstan province. These results are in line with Fakorede (1985) who also reported a decrease of 30-38 kg ha<sup>-1</sup> in maize grain yield for each day of delayed sowing. Ahmad *et al.* (2001) concluded that delayed sowing decreased shelling percentage, which ultimately resulted in lower grain yield. Highest grain yield with optimum planting time has been reported by Martiniello (1985) and Albus *et al.*(1990). McWilliams (1999) reported positive effect of planting date on maize yield. This is in line with our results. The planting date analysis showed that the best sowing date was April 30, and grain yields of other three dates were relatively lower.

### **Conclusion**

On the basis of our experiment it was found that the maize crop grew the tallest (291 cm) and a high biomass yield when the plant is planted on May 15. There were significant differences in maize plant height within years, treatments and farms.

There was also close interaction between year and treatment on maize plant height. It should be mentioned here that the higher seeding rates gave almost similar yields while the low seeding rate frequently reduced grain yield of bed planted maize. In our experiment four planting dates showed a relatively small trend of seed germination.

The seed germination ranged from 64.9 to 82.6 % across treatments, farms and years. Number of plants was significantly affected by treatment i.e. planting dates while year and farm were not significant. Effect of planting date on maize grain yield was significant.

Analysis of variance showed that grain yield had significant difference within treatments (<.001) while number of plants within farms was unrelated to biomass yield.

The planting date analysis showed that the best sowing date was April 30, and grain yields of other three dates were relatively lower.

The results of this study proves that planting dates have significant effects on number of plants and grain yield in maize.

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## REGIONAL DISTRIBUTION OF PRIMARY OPEN-ANGLE GLAUCOMA

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**Abstract.** Among the eye diseases that are currently of great medical and social importance, glaucoma is the most important. Its prevalence in the world among people over 30 years of age is 1.7%, in Russia 1.1-5.8 per 1000 adults. In the world, the number of young people with glaucoma is only constantly growing. So, in 1996 it was 66.8 million people, in 2002 - 105 million people, while, according to forecasts, by 2010 it will reach 150 million people. In the nosological structure of primary vision, glaucoma occupies one of the first places in the world. Currently, glaucoma has developed into heredity, live mucositis, and iklim karabmok. Primary open-angle glaucoma is the most common of all forms of primary glaucoma. There are many studies on the problem of primary glaucoma, but information about the climatic, racial characteristics of glaucoma is mainly limited to a small number of studies conducted by foreign authors

**Keywords:** BOBG, glaucoma, heredity, race.

### Relevance of the study

Primary open-angle glaucoma is the most common form of primary glaucoma. BOBG is one of the main causes of low vision and blindness around the world. There are many studies on the problem of primary glaucoma, but the information about the hereditary, racial climatic characteristics of glaucoma is limited to a small number of studies conducted by foreign authors. A study of the ethnic characteristics of glaucoma among the rural population is being carried out. Many authors emphasize that the distribution of various forms of glaucoma has ethnic characteristics. Thus, the open-angle form of glaucoma is diagnosed more often among Caucasians and Negroids, and the closed-angle form of glaucoma among Mongoloids. In addition, there are ethnic characteristics of the course of glaucoma in people of different races. In Negroids and Indians, the disease begins earlier than in Caucasians, on average 10 years, and develops faster. One of the most numerous races in the world is the Mongols. Based on the anatomical and physiological characteristics of the eye organ, angle-closure glaucoma is more common in Mongoloids. The prevalence of open-angle glaucoma in Mongolians is different, for example, in Mongolia, BOBG is very rare - 0.5%, and in Bangladesh, it has the highest prevalence of all forms of primary glaucoma (75%). At the same time, the information of different authors is very contradictory.

However, despite the undoubted importance of studying the problem of the spread of primary open-angle glaucoma among the rural and urban population, this issue has not been sufficiently studied both in the whole world and in our country. It accounts for 80.3% of all glaucoma cases. Thus, the problem of glaucoma in the Republic of Uzbekistan is as acute as in other regions.

### Research purpose:

- To study the problem and to determine the ethnic characteristics of primary open-angle glaucoma among the rural population and the reasons for the increase of the disease.
- Establishing the relationship between the incidence of various forms of primary glaucoma and regional differences between rural and urban populations.

-Determining the ethnic characteristics of the structure of the eyes of healthy and sick rural residents with primary open-angle glaucoma.

- Determining the clinical appearance of primary open-angle glaucoma in the rural population.

**Materials and methods.** The object of this study is the population of rural areas diagnosed with glaucoma. In order to evaluate the epidemiological features of the spread of glaucoma and to evaluate the organization of primary specialized medical care for patients suffering from this pathology, it is necessary to calculate the following indicators according to the federal statistical report forms (forms No. 12, No. 30): the main level of glaucoma in the general rural population; share of glaucoma patients registered in ophthalmologists; providing the population with an ophthalmologist (individuals) per 100,000 people; regarding patients diagnosed with glaucoma during preventive examinations; the total number of registered patients with blind and impaired vision. To determine the correlation between quantitative variables, the Spearman rank correlation method is used.

Clinical characteristics of primary open-angle glaucoma depending on the region of residence: for example, at the age of 40-50, 1 person out of 1000 (0.1%) is affected, at the age of 50-55, the incidence is 1%, at the age of 60. age - 4%, age 70 - 8%, age 80 - 15%. Some authors emphasize the existence of genetic features of the glaucomatous process.

The rural population with a small population is distinguished by the diversity of a number of anthropometric and dermatoglyphic indicators determined as a result of anthropological research. In order to study the ratio of primary glaucoma forms in regional groups, we decided to analyze outpatient charts of rural population of Uzbekistan suffering from primary glaucoma.

Primary open-angle glaucoma is 3.8 per 1000 population, BOBG - 0.7, and mixed form of glaucoma - 0.6.

According to the iceberg rule, the actual incidence of glaucoma is significantly higher than the reported incidence.

Conclusion. Thus, the distribution of the main forms of primary glaucoma differs between rural and urban local populations. According to the American Glaucoma Society, 85% of patients with BOBG can be treated with drugs without resorting to surgical treatment, but for this, the doctor must make sure that the patient strictly adheres to the instillation regimen.

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## EMPLOYEES' HYGIENIC ANALYSIS OF DISEASES IN SHERABAD CEMENT PRODUCTION

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**Abstract.** *In this article, a hygienic analysis of morbidity rates was made depending on the age and length of service of the workers of the Sherabadenterprise for the production of cement in the Surkhandarya region.*

**Keywords:** *harmful factors, morbidity, personal protective equipment, occupational diseases, cement, dust, prevention.*

Relevance of the topic: Currently, in the modern developing era, the place of harmful substances, dust, waste from gas plants, cement plants, polluting the air and affecting public health is undeniable [1].

Among the diseases of the digestive system, cement dust causes the following diseases: peptic ulcer, duodenal ulcer [10], fibrosis and cirrhosis of the liver [11].

From the class of oncological diseases, cement dust causes the following neoplasms: malignant neoplasms of the nose and ear, sinuses, tendons, trachea, bronchi, malignant neoplasms of the lungs and other unspecified diseases of the respiratory system. [12]

We studied the influence of cement dust on the lives of children and adolescents living near cement factories. In particular, allergic rhinitis turned out to be 2.2 times higher in children 6-9 years old, 2.7 times higher in children 15-17 years old, chronic rhinitis, nasopharyngitis - 4.8 times higher, gastric ulcer - 6.1 times higher. times, gastric and duodenal ulcers are 4.6 times higher. [13]

A number of scientific studies conducted over many years confirm that changes in working conditions at manufacturing enterprises, the introduction of modern technologies, the widespread use of various protective equipment by workers, etc. do not allow the human body to completely protect itself from chemical, physical and biological environmental factors. environment. Therefore, it was necessary to continue to conduct more thorough research into the importance of various branches of production, industry and the influence of environmental factors on the human body. Therefore, the problem of improving the assessment of food safety and dietary research, as well as the development of therapeutic and preventive nutrition for workers in various fields of activity is very relevant.

Object and methods of research: The Sherabad Cement Plant, located in the industrial zone of the Surkhandarya region, was built for the first time in 2017 and has been operating for 5 years. Today it consists of the following workshops: 1st workshop for the production of raw materials; 2-firing shop, 3-grinding shop, 4-process control system, 5-power supply shop, 6-data center, 7-product control laboratory, 8-fire safety department, 9-administration department.

Today the company produces construction cement products. Today, the company employs 846 employees, of which 827 (97.7%) are men and 19 (2.3%) are women. Data on the average working hours, average age and length of service of workers are presented in Table 2.

The morbidity level of workers was analyzed based on the international classification of diseases (ICD-1993.10) and days of temporary disability.

Statistical processing of the research results was carried out using the application package for a personal computer “Statistica for Windows 7.0”.

Analysis of the obtained data. The Sherabad Cement enterprise, built in 2017, has been operating in our country for 5 years and consists of the following workshops: a workshop for the production of raw materials; annealing shop, grinding shop 4-ASUTP, power supply shop, railway shop, product control laboratory, fire safety department, administration.

Construction cement is produced at the enterprise through various processing of rocks. The company operates in 2 shifts. At the same time, cement dust, noise, vibration, unfavorable microclimate and various chemicals deviate from established hygienic requirements and negatively affect the working conditions of the enterprise, its microclimate indicators, as well as the health and morbidity levels of workers.

The table shows the average age and length of service of workers at the Sherabad Cement Plant production enterprise.

**Table**

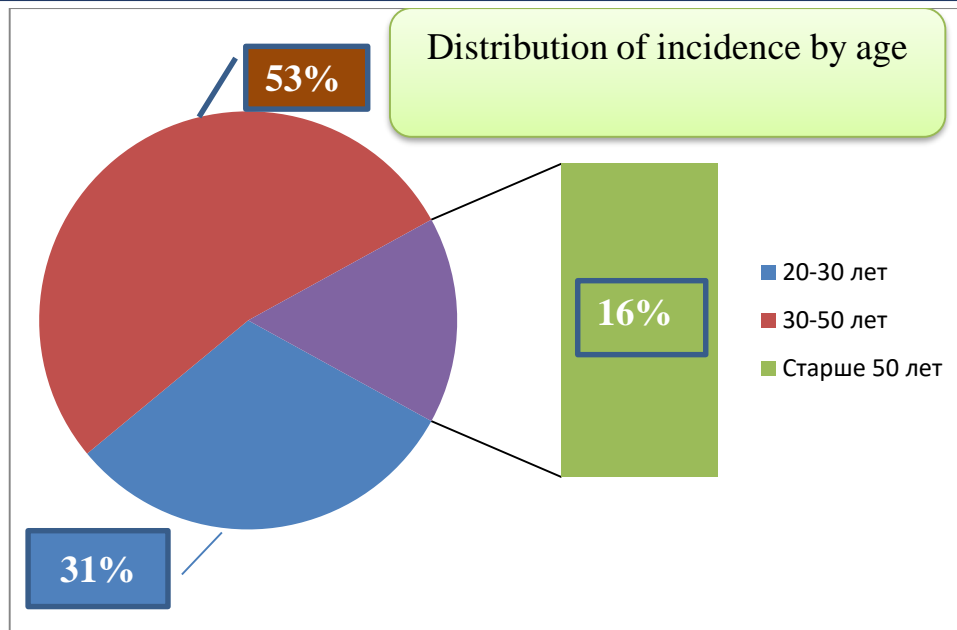
***Information about the age and length of service of employees of the Sherabad Cement enterprise***

Indicators	Total number of employees 846	Male 827	Female 19
Average age of employees	28,1	28	36
Youngest age indicator	20	20	24
Oldest age indicator	69	69	51
Average length of work experience	27,4±0,66	27,6±0,74	22,5±0,4
Work experience (lowest indicator of the month)	1 month	3 month	1 month
Work experience (highest indicator of the month)	55	55	31

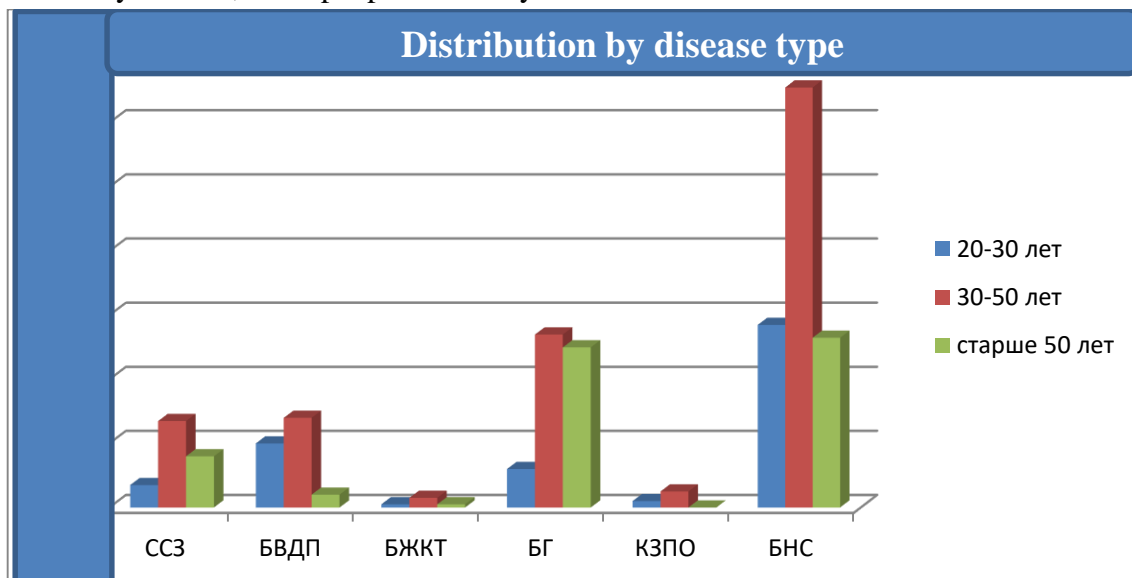
The average age of employees of the production joint-stock company "Sherabad Cement Plant" is 28.1 years, while the average age of men is 28 years, women - 36 years. The average age of the youngest workers was 20 years, men - 20 years, women - 24 years, and the average age of the oldest workers was 69 years, men - 69 years, women - 51 years.

The average length of service of workers was 27.4±0.66 years, for men - 27.6±0.74 years, for women - 22.5±0.4 years. The maximum work experience was 55 months in total, 55 months for men and 31 months for women, which is 0.7 times longer for men than for women. The minimum duration of work was 3 months for men and 1 month for women.

The results of a medical examination of 368 workers in workshops selected to study the painful condition of workers at the Sherabad cement production plant were analyzed. Of the 368 workers selected for comparison, 47 were administrative workers. The 368 workers were divided by age as follows: 115 (31%) aged 20-30 years, 196 (53%) aged 30-50 years and 57 (15%) over 50 years old.



When analyzing the morbidity rates of workers based on the results of a medical examination, 471 diseases were identified among workers. These diseases were distributed among workers by age as follows: 99 (21%) diseases among workers 20-30 years old, 248 (53%) among workers 30-50 years old and 124 (26%) among workers over 50 years old. Distribution by type of disease: cardiovascular diseases were detected in 7 people aged 20-30 years, in 27 people under 30-50 years old and in 16 people over 50 years old. Upper respiratory tract diseases were detected in 20 people aged 20-30 years, in 28 people under 30-50 years old, in 4 people over 50 years old. Diseases of the gastrointestinal tract were detected in 1 person aged 20-30 years, 3 people aged up to 30-50 years and 1 person over 50 years old. Eye diseases were detected in 12 people aged 20-30 years, in 54 people under 30-50 years old, in 50 people over 50 years old. Skin and genital diseases were detected in 2 people aged 20-30 years, in 5 people under 30-50 years old, in 0 people over 50 years old. Nervous diseases were identified in 57 people aged 20-30 years, in 131 people under 30-50 years old, in 53 people over 50 years old.



*Indicators of the distribution of diseases among workers by type: CVD-Cardiovascular diseases, URTD-Upper respiratory tract diseases, Gastrointestinal tract-Diseases of the*

*gastrointestinal tract, ED-Eye diseases, SDGO-Skin diseases of the genital organs, DNS-Diseases of the nervous system.*

Conclusion:

1. The average length of service of workers is  $27.4 \pm 0.66$  years, men  $27.6 \pm 0.74$  years, women  $22.5 \pm 0.4$  years, maximum work experience 55 years, men 55 years, women 55 years and 31 year. men are 0.7 times older than women. The minimum duration of work was 3 months for men and 1 month for women.

2. When analyzing the morbidity rates of workers based on the results of a medical examination, the highest morbidity was found among people aged 30 to 50 years (53%). By type of disease, the lowest incidence was found for diseases of the gastrointestinal tract and the skin-genital area, and the highest for diseases of the nervous system. The types of diseases by age of workers are as follows: cardiovascular diseases and eye diseases are most common in people over 50 years old, least common in the age group of 20-30 years. Diseases of the upper respiratory tract and nervous diseases are least detected in people over 50 years of age, and most often in the age range of 20-30 years.

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## VITAMIN D DEFICIENCY IN POSTMENOPAUSAL WOMEN

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**Abstract.** *These words evoke a storm of conflicting emotions in every woman. On the one hand, we understand that this is an inevitable but natural process. On the other hand, during this period of life, chronic diseases can become active in women, and mental depression, nervous disorders, insomnia, hot flashes, feeling of heat, excessive sweating, can appear suddenly, which is called menopause syndrome. mood swings, obesity, etc.*

**Keywords:** *menopause, premenopause, perimenopause and postmenopause.*

### SYMPTOMS OF MENOPAUSE

According to statistics, menopause syndrome occurs in four out of five women. At the same time, severe and moderate course occurs in the majority of patients, and only 16% of women have a mild course. Realizing that menopausal women are on the threshold of new opportunities (children are already grown, grandchildren are grown, professional and social life is well established), it is at this time that they have the opportunity to pay more attention to themselves. First, let's look at the classification of menopause periods. To know this, it is necessary to know that everything starts long before the onset of menopause, sometimes even 10-15 years, and continues almost for our entire future life.

Therefore, we distinguish the following stages:

premenopause - the period of transition to menopause;

menopause;

perimenopause and postmenopause.

Premenopause begins at the age of 40-45 and ends with the onset of menopause. Menstrual cycles may be irregular during this period.

Menopause is the last independent menstruation in a woman's life. Menopause can be natural or artificial. The average age of natural menopause for women in Ukraine is 52.5 years. During menopause, in women, against the background of the decrease in the hormonal function of the ovaries, there is a general decrease in the level of all female sex hormones, but the rate of their decrease is different, that is, the level of progesterone decreases twice as fast. estrogen levels. Therefore, during this period, women experience the so-called relative increase in estrogen levels, which can lead to the development of hyperplastic (or oncological) processes of any localization.

There is also a classification according to the age of onset of menopause:

Early ovarian failure before the age of 40;

early menopause at the age of 40-45;

Timely menopause at the age of 46-54;

Late menopause after 55 years.

According to statistics, only one percent of women experience early menopause, and only one percent of women continue to menstruate until the age of 60. The onset of menopause is accelerated: removal of the uterus, smoking, stress, surgical interventions on the organs of the

reproductive system, lack of fertility, low level of education, living at an altitude of more than two thousand meters above sea level, loneliness and other negative factors.

### **MENOPAUSE SYNDROME**

Let's see what climacteric syndrome is. These are various pathological conditions that occur in women against the background of a decrease in the hormonal function of the ovaries and the general age-related involution of the body; they are caused by genetic factors, previous somatic diseases, parity, environmental conditions and social factors. Therefore, let's look at the main symptoms (disorders, symptoms) of menopause syndrome, which differ in the time of onset and can be early, long and late. They are also distinguished by types of systemic diseases. Therefore, the initial symptoms include: vasomotor and psycho-emotional.

The most popular vasomotor symptoms:

hot flashes;  
increased sweating;  
Headache; lability of blood pressure;  
trembling;  
tachycardia;  
extrasystoles;  
dizziness.

A group of psycho-emotional symptoms:

increased fatigue;  
nervousness;  
mood swings;  
sleep disorder;  
weakness;  
anxiety;  
depression;  
neglect;  
decreased libido.

The group of long-term symptoms includes urogenital diseases, changes in the skin and its appendages. During this period, women often suffer from: atrophic vaginitis, vaginal dryness, itching and burning in the external genitalia or vagina, pain during intercourse, urinary incontinence, dysuria, cystitis. In the initial stages, these diseases are completely cured. Of course, we women do not like dry and brittle nails and hair, dry skin and hair loss. Here it is necessary to consider which vitamins should be chosen for a woman during menopause. In addition, it should be taken into account that the exacerbation of menopause syndrome occurs in the winter-spring and autumn periods. The diagnosis of perimenopause and menopause does not require additional laboratory hormonal tests for most healthy women after the age of forty-five if the following symptoms are present: Vasomotor symptoms due to irregular menstruation during perimenopause and the absence of menstruation in the last twelve months (without the use of hormonal contraceptives) or the appearance of menopausal symptoms after hysterectomy - in postmenopause.

Note that there are many reasons for the appearance of pathological conditions similar to menopause syndrome. Therefore, doctors make a differential diagnosis, taking into account the age of the patient. In young women, first of all, pregnancy should be excluded.

## **NUTRITION DURING MENOPAUSE**

Many women are afraid of the onset of menopause, worried about changes in appearance, weight gain and hot flashes. In fact, everything turns out to be much easier, and in cases where symptoms appear, it is corrected with medication. Accept menopause as a natural physiological process and transition to a new phase of life. Eat a balanced diet to get all the vitamins your body needs during menopause, including vitamin D and minerals. It reduces the risk of osteoporosis and weight gain during menopause. Maintain a healthy weight with a balanced, low-sugar diet. Fill your food with vitamins and minerals. Exercise regularly. Even moderate exercise, such as walking for half an hour 3 times a week, is beneficial. If you are considering hormone replacement therapy, discuss the risks and benefits with your doctor first. Smoking is a major risk factor for heart disease. Control high blood pressure with medication or lifestyle changes. It helps reduce the risk of heart disease. Reduce stress in your life through relaxation techniques or regular exercise. We recommend discussing all changes in the body during this period with a gynecologist. Learning reliable information can help reduce stress and prevent mood swings, depression, and sleep problems.

## **THE ROLE OF VITAMINS IN WOMEN'S BODY**

It's no secret that healthy lifestyle habits, including adequate exercise and nutrition, and menopause vitamins are important at all stages of life. This includes making sure you're getting enough vitamins and minerals, especially those that may require more conscious effort to get. Vitamin D is one of the nutrients we hear about the most, and it's especially important in middle age.

Vitamin D performs many functions in the body:

stimulates the absorption of calcium;

supports bone health;

it supports the immune system;

reduces inflammation;

helps improve mood and sleep;

It helps to overcome depression, which is especially noticeable at this age. A question often arises: what are the best vitamins for menopause or those over 50? Getting enough vitamin D to support these functions is certainly necessary throughout life, but may be especially important during menopause. Because of the natural, progressive loss of skeletal integrity after menopause, additional skeletal deterioration associated with vitamin D deficiency should be avoided. Furthermore, epidemiologic studies suggest that increased vitamin D intake and the risk of vitamin D deficiency is lower. from early menopause. Vitamin D has been studied for its potential association with some menopausal symptoms. Because calcium absorption and storage (which requires adequate vitamin D) decreases after menopause, it has been hypothesized that vitamin D levels may influence other hormone-related symptoms during this stage of life. However, vitamin D is still needed in middle age for many other reasons.

## **EFFECTIVE METHODS OF ELIMINATING MENOPAUSE SYMPTOMS**

Lifestyle changes can also be an effective step in managing menopause symptoms. Because menopause can affect women differently, treatment should be sought based on symptoms.

**Hot Flashes:** If you have hot flashes, keep your room cool and dress in layers to regulate your body temperature by removing or wearing extra clothing. Avoid alcohol and spicy foods as they can aggravate hot flash symptoms.

**Weight and Cholesterol Gain:** During menopause, women are more likely to gain weight, especially in the middle section. Menopausal changes can also make it harder to control cholesterol levels. Counteract this by eating a clean diet that includes fruits, vegetables, and organic, low-fat proteins like chicken or fish. Drink plenty of water and avoid processed foods.

**Bone loss:** Decreased levels of the hormone estrogen can accelerate bone loss. Weight-bearing exercises such as walking, jogging, and strength training help maintain bone strength.

### **COMPLEX OF VITAMINS AND MINERALS FOR MENOPAUSE**

Hormonal changes during menopause cause many side effects, including an increased risk of certain diseases and conditions. As estrogen declines, the risk of osteoporosis and heart disease increases, as does the tendency to suffer from symptoms such as hot flashes, mood swings, and vaginal dryness. To combat this, menopause vitamins and supplements can be a key component of a woman's care during and after menopause, but the process of deciding which ones to take can be overwhelming. When it comes to menopause supplements, there is no single pill.

### **WHAT ARE THE BEST VITAMINS FOR MENOPAUSE, HOW TO CHOOSE THE RIGHT VITAMINS FOR THE OVER 50S**

When choosing a complex or a single drug, consider the presence of necessary vitamins in the composition and the appropriate dose depending on your age. For example, daily maintenance doses of 2,000 to 4,800 IU per day are recommended to correct vitamin D deficiency. Taking vitamin D supplements is a modern, safe and reliable alternative to traditional ways of getting this vitamin into our bodies. It also reduces hair loss due to vitamin D deficiency. During this period of life, vitamin D has a positive effect on a woman's nervous system, helps reduce stress and improves emotional well-being. Scientists have proven that vitamin D receptors are located in the areas of the brain where serotonin and dopamine are produced, which are called "hormones of happiness" or "hormones of good mood". They are responsible for forming positive emotions and memories. People with low mood and depression usually have low levels of vitamin D in their bodies. A sufficient amount of vitamin D in the female body contributes to weight loss by normalizing metabolism and increasing the overall tone of the body.

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## ISSUES OF PROFESSIONAL ETHICS IN THE TREATMENT AND MANAGEMENT OF PATIENTS WITH LATE DEMENTIA

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**Abstract.** *The ethical problems of late dementia cover a wide range of issues related to the positions and attitudes of medical professionals, as well as the behavior of caregivers. This report is devoted to the professional problems of Biomedical Ethics in working with elderly and elderly patients with dementia. The ethical aspects of late dementia are becoming increasingly important with increased public attention to this pathology, which is becoming more and more common among the population of older age groups.*

**Keywords:** *dementia, late life, treatment, Alzheimer's.*

**Introduction.** According to Josephstiglitz, Nobel laureate in economics, "there is no more important topic than population aging and social protection of the elderly. This affects the nature of our society and applies not only to the elderly, but also to all segments of the population. Protecting the rights of people with dementia is recognized as a health priority [1]. The United Nations Convention on the rights of persons with disabilities obliges states to ensure that all human rights and fundamental freedoms of all persons with disabilities are fully implemented and that their human dignity is respected. By the middle of the century, the number of people with dementia is expected to increase significantly and the global burden of Alzheimer's disease (AD) is expected in the World [2]. Consideration of the ethical aspects of dementia often focuses on "major" problems such as refusing treatment and deciding to end life. Although these issues are very important, there are other ambiguous situations that constantly arise in applied medicine as a product of the development of Biological Sciences and medical knowledge, requiring constant discussion both in the medical community and among the general public. At the same time, an analysis of 12 national guidelines for clinical practice in the treatment of dementia [3] showed that only 49,5% of deontological norms are taken into account, and 11 of the 12 guidelines do not address issues such as giving the other person the right to make important medical decisions at all, legal incompetence, the use of surveillance methods, control of suicidal behavior. The solution of these issues is relevant both for doctors and for the patients themselves, their relatives and the general public [4]. Moral problems arise during the life of a person with dementia, from the moment of diagnosis. The development of Neurology in understanding the individual branches of dementia pathogenesis, the idea of neuropathological changes in brain structures long before the appearance of symptoms of the disease, the development and attempt to introduce drug treatment methods of cognitive decline serve as the basis for considering ethical problems, preclinical stage [5]. The ethical aspects of the preclinical stage of AD pose the greatest challenge to consider, while the importance of not only early diagnosis but also the assessment of the risk of disease in healthy people gradually increases explains the increasing focus on discussing these problems. Alzheimer's is a clinical diagnosis. However, Alzheimer's pathology begins long before clinical

manifestations, and the number of studies is increasing to assume that biomarkers such as positron emission tomography and fluid tests directly prove this pathology [6]. It is assumed that the diagnosis can be distinguished from the clinical expression of Alzheimer's disease [6]. Preclinical AD is being discussed as changing the boundaries between "normal cognitive aging" or "healthy brain aging" and disease, which should change the notion that AD is the most feared aging disease among late age-specific diseases, fear of getting sick. New diagnostic criteria proposed using biomarkers to confirm and improve the accuracy of the diagnosis of mild cognitive decline (MCI), as well as to assess the risk in asymptomatic people [7] remain a topic of debate, as they are only of research significance and cannot be made available to the public at this time. The scientific community refers to the concept of preclinical AD as a risk condition identified by biomarkers and the separation from other risk factors and clinical signs of the disease. The ethical aspects of determining risk factors are considered for their commonality and for individual groups of biomarkers, among which structural and biochemical characters, as well as genotypes, stand out [8]. Neuroimaging (MRI, functional positron emission tomography, amyloid imaging) is used to early confirm a specific diagnosis in people with mild or unclear symptoms (MCI) and to identify Alzheimer's pathology in asymptomatic people. It is believed that the combination of neuroimaging methods will be most effective in predicting a diagnosis [9]. Putting them into practice is not without difficulties, but because cultures and values have changed within the scope that determines benefits and risks, planning the moral and social impact of predicting aging brain disease is very important and benefits leading researchers, patients and families in the field, health organizers and politicians [10]. Biochemical signs that are most likely to detect the presence of Alzheimer's pathology in the brain include indicators of beta-amyloid, Tau protein, and phosphorylated Tau in the cerebrospinal fluid. Ethical problems with biomarkers still apply to the volume of diagnostic and predictive data presented about the results of the unreliable study [11]. In the field of genetic testing or genotyping of AD, ethical problems lead to a balance between a person's desire to know the risk of developing dementia and the clinician's desire to mitigate the possible harm of this information. Genetic problems are important in very rare cases of familial AD that began early (up to 65 years of age) due to the presence of certain mutations. Genotyping, the main risk gene for Apo E – sporadic AD, is widely debated, which may be necessary in the context of creating new nozomodizing drugs [12]. Information on the presence of the APOE E4 genotype in asymptomatic patients has been shown to reduce anxiety in undamaged and even negative carriers. The impact of APOE E4 + carrier knowledge has been less than expected. This is due to the inclusion of individuals who initially took their risks in the study. Knowing the APOE genotype, it was also important for individuals to change their insurance orders, lifestyle and eating patterns, resort to vitamins, exercises, training, even knowing that these methods were not proven [13]. Revision of laws and guidelines can effectively monitor patients with preclinical AD, monitor the dynamics of their ability to perform high levels of activity, and at the same time minimize stigma, help patients maintain personal immunity and maximize independence. Another ethical dilemma is the position of a doctor or researcher who requires a genetic examination of a patient or relative with dementia [14]. Although preventive treatment is not available, moral consensus is achieved in providing the possibility of genotyping, as it is a manifestation of respect for the individual and this information can be useful in planning the future. However, genetic testing for AD is fundamentally different from this procedure in other hereditary diseases (such as Huntington's chorea), and the difference is that in AD this marker is only a statement of predisposition. Until recently, it was not considered



necessary to report the results of genotyping in the absence of symptoms of the disease, which is usually alerted during scientific research [15]. This paternalistic approach exaggerates the moral significance of protecting patients from traumatic information. An acceptable model for explaining non-disclosure of findings to participants, family members, and physicians is that these findings are not critical to treatment [16]. But many patients want to know the results, even positive ones, although they can exaggerate the importance of the initial scientific evidence. The doctor or researcher requires careful explanation of genetic information, keeping in mind that providing it can improve compatibility and affect the search for previous help [17]. The safety and effectiveness of reporting a preclinical AD diagnosis presents the most difficult problem in terms of biomedical ethics. One of the first questions involves examining the preclinical AD and considering whom to nominate for diagnosis. The ethical problem is that the results of the Alzheimer's-gob-marker test are potentially traumatic information, and anxiety, depression, or even suicidal thoughts can develop. Surveys have shown that fear of AD prevails over fear among Americans [18]. In people with heart, diabetes, vascular disease, and over 55 years of age, fear of AD is stronger, such as fear of cancer, which reflects the popular phrase: "senior Alzheimer replaced Senior R(AK)". Nevertheless, it is morally correct to report the results of the study to the "biomarker positive". The "evidence-based medicine" answer to the question of how patients with preclinic AD should be treated cannot be obtained at the moment, since it is envisaged to prescribe treatment if the benefit of this treatment is indicated, but there are still no "golden standards" about the benefit of this intervention [19]. When treatment in clinical studies is shown to reduce the risk of progression from the preclinical stage to clinical manifestations of ad or intermediate states such as ISS, the clinical decision-making process and the development of diagnostic and treatment facilities change radically. The logic of this approach is based on the interrelationship of two different arguments: the argument predicting that biomarker reliably implies the risk of a clinical event, and the goal of therapeutic intervention is to reduce the risk of dementia [20]. To date, there are constant contradictions about how widely treatment for diseases with risk factors should be used. To mitigate these contradictions, scientists, clinicians, and health policy makers must develop national education programs on Alzheimer's disease. These programs should focus on how to transfer the preclinical phase of AD research findings to clinical practice, including adapting professional practice, social policy, and laws to preclinical AD diagnosis [21]. The value of the Alzheimer's label is expected to change as the preclinical AD diagnosis is put into practice. Relevant laws must be revised to prevent Stigma and discrimination. The discovery of preclinical AD may indicate how ready society is for the "tsunami" of Alzheimer's dementia. The emergence of new drugs that can delay the transition from the Prodromal stage to dementia requires rules of caution for their use [22]. Because the operational research criteria of preclinical AD are not focused on clinical diagnostics, and the predictive benefits of these biomarkers for individuals remain unclear, information press targeting for early detection of high-risk groups for AD development has been shown. In particular, it is recommended to perform an amyloid brain test every 5 years from the age of 50 [23]. The ethical aspects of informing adults and children with dementia about the risk of AD for them, although first of all there is concern about the condition of a sick relative, in second place there is a risk of getting sick. It is known that in the case of one sick relative (parents or sibs), the risk increases by 2-4 times. Usually, doctors report an increase in risk, but note that age-related risk exists for everyone both when there is a family history and without them. It is very important to explain that at the age of 65-70, the total risk is 2.5%, in the

absence of a family history - about 1.5%, and in the case of a family history - from 3 to 6%. Thus, although the relative risk is increasing, the overall risk is still low enough [24]. There is no clear answer to the second frequently asked question of what can be done to prevent the disease, but attention should be paid to the recommendations of active activity, the benefits of which have been repeatedly confirmed. Being active, engaging in social and cognitive stimulating activities, and exercising are thought in many cases to slow down memory impairment and stabilize disease progression [25]. Therefore, the recommendation will have to change the lifestyle in favor of active activities. Vitamin deficiency should be replenished, but there is no reliable evidence of increased adherence to vitamins, food additives, herbal preparations and diet. Ethical problems in early dementia diagnosis include strict adherence to accepted diagnostic criteria and conscious interpretation of the entire dataset of clinical and neuropsychological examination, as well as neuroimaging results [26]. The transmission (disclosure) of the diagnosis to both the patient himself and his relatives requires adherence to biomedical ethical relationships. The implementation of the patient's right to know the diagnosis involves explaining the potential benefits of this knowledge, the guarantees of confidentiality, while maintaining the possibility of informing family members [27]. Correct information about the diagnosis can be sensitive to the patient, but this allows the patient with the initial stage of the disease not to be removed from participating in the planning of various measures – from participating in treatment programs to solving legal issues that allow maintaining the patient's quality of life. In the case of the patient, delay in diagnosis is considered acceptable in the presence of depression or anxiety disorders, or in the absence of support in the family [28]. The right to not know the patient's diagnosis is maintained if he announces it directly. However, this should not affect the possibility of treatment and gradually provide more complete information about the disease [29]. The role of the family is determined by cultural characteristics and a specific family situation. It is advisable to inform the Alzheimer's Association about its activities in society, its goals and the specific possibilities in helping and supporting patients and their families. Since the diagnosis of dementia, clinicians, patients, family members, caregivers and researchers have faced many ethical questions that vary depending on the stage of the disease and the severity of the manifestation [30]. Some nuclear ethical issues are addressed in the order in which they occur during illness. In the early stages, these are the limits for recognizing the independence of patients (referral for more accurate diagnostic tests, actions of a psychiatrist when patients require genetic testing, limits for discussing severe results with the patient when executing pre-issued commands) [31]. In the middle and late stage of the disease, a main conflict arises between paternalistic attempts to maximally maintain the independence of patients and protect them. This includes behaviors and actions against the will of patients, the transmission of intolerable information, especially in the later stages, when it is necessary to lie in order to avoid psychological stress. As death approaches, the problem of life-saving boundaries arises [32]. That is, the main tendency to maintain independence simultaneously determines the moral validity of the intervention for the most complete and as long as possible, and remains opposite when the situation worsens [33]. The psychiatrist then uses his moral concepts. When faced with these or other moral problems, it is important to understand that with the spread of the disease, relationships with relatives of patients become increasingly important, and not a loss of their cognitive abilities [34]. Recognition of not only moral, but also legal responsibility for the diagnosis of dementia is justified by the fact that medicine and health in modern society exist in a new legal space [35]. In the context of the transition from medical

deontology to medical law and civil liability (for actions and inaction), the ethical aspect of long-term therapy is discussed. Certain moral contradictions concern the professional activities of a doctor who is currently engaged in the treatment of an incurable disease using ineffective therapeutic intervention methods. Certain moral problems arise as a result of contacting various specialists, first of all, neurologists, receiving incompatible medical recommendations [36]. Excluding the stigmatizing effects of diagnostic disclosure involves combining efforts by neurologists and psychiatrists in managing patients with dementia. It is known that the diagnosis of AD is clearly established after death, but in the future it may change. Neuroimaging allows you to see amyloid plates throughout life, but plaque accumulation occurs only at an advanced stage [37]. The moral imperative of the clinical diagnostic procedure is recognized as the patient's right to clarify the diagnosis as much as possible [38]. Initially, other cases with similar symptoms, often reversible, are excluded, while it is equally important to seek to reduce the risk of false positive and false negative results. The first and most important clinical and moral duty of a psychiatrist or physician is to exclude the possibility that it is a manifestation of normal aging, or of dealing with relatively good and treatable diseases [39]. When the patient complains of memory for the first time, the psychiatrist should be careful about AD. It is believed that cognitive tests of young individuals over 65 years of age and with family weights should be carried out almost every year. One of the main ethical problems is the degree of completeness of information about the probability of AD [40]. Recently, medicine has not been able to offer much to patients with AD. There are concerns that the patient may find out about a possible AD and take his own life. Psychiatrists believe that avoiding suicide is more important than maintaining independence. In fact, a balance between these approaches is required [41]. Although suicidal reactions are very rare, the risk of suicide is still present today and should be considered, especially in people who are highly educated, maintain criticism and recognize that there is no improvement in therapy, even when depression and other risk factors are not present. In contrast to these views, two arguments speak in favor of continuing the test [42]. The first is associated with the use of medications and psychological intervention in the past. Although early intervention does not change the final outcome of the disease, it can slow down the process [43]. The latter is a rare occurrence of depressive reactions to the diagnostic message. This makes it possible to solve other ethical issues – the discussion of genetic tests and pre-issued orders [44]. Only one moral exception is recognized-if patients do not want to know this information and continue in it. The psychiatrist should take this position by respecting the patient's independence and even realizing that the lack of information for the patient can be harmful, but should warn about the risk of insufficient Examination, given the possibility of patients returning to the doctor later [45]. Another ethical problem of diagnostics, according to the researcher, is the decision to give everyone or only those who wish the opportunity to take tests [46]. It is believed that following the principle of equal opportunities, the right to choose is supported by self-esteem. Thus, the psychiatrist paradoxically not only more broadly supports patients ' self-esteem, but also improves the quality of care at the same time [47]. Currently, there are various methods of diagnosis by specialists, taking into account the ability to understand and/or hold information, psychological impact and therapeutic nihilism [48]. The moral process of reporting a diagnosis should take into account the level of understanding, biography, belief, psychological state and desire to know the diagnosis, take into account the composition of the family and the degree of its involvement in care, be aimed at clarifying the diagnosis, provide the opportunity to discuss the possibility of treatment and support

[49]. Planning the future, including financial and legal issues, care problems, the ability to observe, including psychological support when necessary [50]. The ethical problem of conveying his diagnosis to the patient has two aspects – the disclosure of the diagnosis or the accuracy of the data and the experience of the person diagnosed with dementia. Dementia is not always a patient-oriented problem when disclosing a diagnosis [51]. Doctors do not always accurately and directly reveal the diagnosis and the relatives of patients. It is believed that the negative consequences of revealing the diagnosis (depression, suicidal tendencies) are not characteristic in these cases. Positive thoughts are discussed, such as visualizing cognitive disorders as symptoms of the disease, planning treatment, and later life, rather than the result of age-related changes [52]. The diagnosis should be discussed many times, not only to facilitate adaptation (coping) strategies, but also to address practical issues. The results of a specially conducted study showed that [53] of 233 caring family members, all participants wanted to know the diagnosis, but 58% did not want the doctor to deliver the diagnosis to a sick relative. At the same time, 96% want to know the diagnosis if they have developed dementia, and 66% want to know the diagnosis from the very beginning in order to have time to develop a life situation management strategy [54]. Disclosure of the diagnosis should be carried out in a supportive environment when there is enough time to answer questions and correct emotional reactions [55]. It is recognized that it is necessary to comprehensively discuss various problems: treatment, the course of the disease, the nature of the disease and the presence of various forms of support that will be needed in the future, and even to discuss orders for maintaining life at the terminal stage [56]. Reporting a specific diagnosis and its consequences can cause great discomfort for both the patient and the family, and these issues should be gradually raised on subsequent visits or discussed only with the family member responsible for the patient [57].

**Conclusion.** Great importance is attached to the choice of phrases when disclosing a diagnosis, both in the oral message and in the written form. The use of clear phrases, respectful tone, involvement in a joint discussion will allow patients with dementia to avoid condemning discrimination. The ethical aspects of diagnosing dementia and opening it are closely related to the stigma problem. According to WHO research, stigma, as a result of ignorance of the nature of dementia, prevails in most countries and is valid both for the whole society and for the patients themselves, their family members and even for health and social care workers. Not understanding the nature of the disease leads to fear of developing dementia. The idea that nothing can be done leads to a feeling of frustration that can affect people's well-being. Stigma and discrimination refer to caring family members and causes avoidance of communication. This health fear is second only to the fear of cancer.

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## STRATEGY FOR EARLY DIAGNOSIS WITH CARDIOVASCULAR DISEASESOMATIZED MENTAL DISORDERS

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**Abstract.** According to the WHO (2014) definition, public mental health is an important medico-social resource, the potential of society, helping to ensure an optimal level of the quality of life of the population and national security. In recent years, the chances of preventing mental and behavioral disorders among the population have expanded significantly. In addition, the fact of the need to identify a limited mental pathology in the early stages of the disease for timely effective treatment is recognized by many researchers, since it has the potential for self-prevention and rehabilitation, reduces stigma.

**Keywords:** diagnosis, somatized mental disorders, cardiovascular manifestations.

**Introduction.** In everyday clinical practice, general practitioners, cardiologists often face various manifestations of neurotic, affective, and other psychopathological disorders observed in patients with cardiovascular disease (KVH) [1-3]. The greatest difficulties arise in the recognition of depressive disorders, the symptoms of which are masked by somatic symptoms. Various somato-vegetative symptom complexes, characteristic of both affective pathology and somatic disease, characterized by polymorphism of symptoms, have independent dynamics or are layered with a CVD course, which, in particular, makes it difficult to diagnose coronary artery disease (CAD) early, its clinical picture "coincides" with the symptoms of mental disorders. The difficulty of determining the initial, deleted, masked, subclinical forms of psychopathology for general practitioners in the special literature of recent years is characteristic of half of patients who resort to primary care [4-10] the latter often have no experience in differential diagnosis, treatment and rehabilitation of such maternity hospitals. The problem of detecting mental disorders is inherent not only to Internist doctors, but also to specialists in the field of mental health. This is due to the lack of opinions of specialists specializing in clinical manifestations of Mental Disorders at the initial stage of the development of the disease. Of particular importance are issues related to the secondary prevention of prescribed conditions, since borderline mental disorders, including somatized mental disorders, the imperfection of the organization of psychiatric care for such patients, stigmatization in psychiatry are common among the population. [11-16] secondary prophylaxis should be understood to mean a decrease in cases of a known disorder or disease in the population through early detection and treatment [17-22] Pletnev first described the common somatic symptoms of cyclothymia in his paper "somatic to the question of cyclothymia", in which "somatic "and mental symptoms are related and complementary, due to the common etiological moment... and the simultaneous expression of the pathological dynamics of the organism", which called the phase manifestations "diagnostic contours of psychogenic disorders." in the clinic of internal diseases [23-27]. A lot in the field of the clinical direction of Psychosomatic Medicine, completely forgotten, remains relevant even now. After 50 years (in the 70s and 80s of the 20th century), psychiatrists introduced the concept of "somatic cyclothymia" as "masked depression"

(Kielholz P.,1973) or "latent", "larval", "alexithymic" depression, or "thymopathic (depressive) equivalents" (J. J. Lopez Ibor), 1973). The leading place in the clinical picture is occupied by symptom complexes that go beyond affective register disorders. Patients with symptoms of masked depression may be unaware of depressive disorder, make sure that there is a rare, difficult-to-diagnose somatic disease, and require numerous examinations in non-psychiatric medical facilities. But with active interrogation, the pathological effect, which is often subjected to daily fluctuations, can be detected in the form of unusual morning sadness, depression, anxiety or apathy, environmental protection with excessive fixation in body sensations [28-32]. In the conditions of the primary branch of medical care, problems of the differential diagnostic procedure often arise when contacting the therapist or cardiologist of the clinic, since somatic symptoms, which are part of a mental illness, lead to an overdiagnosis of somatic disease or misinterpretation of existing diseases. Despite the huge achievements in the field of Cardiology and the large volume of accumulated scientific practical materials, the issues of comorbidity (bowing) of cardiovascular pathology of psychic diseases are a multifaceted, ambiguous problem in methodological and practical aspects. Currently, the role of psychological factors in the increase in mortality in coronary artery disease has been identified, the relationship between stressful events and the prevalence of anxiety and depressive disorders in patients with CVD has been proven. Thus, the published data of a generalized meta-analysis for many years, the effect of depression on cardiovascular diseases [33-37], as well as the results of multicenter clinical and epidemiological studies of the well-known Russian software for the study of depression, high risk of fatal and non-fatal cardiovascular complications and high prevalence of anxiety and depressive disorders in KVH in acute or chronic conditions psycho-emotional stress [38-41]. The vnok1 expert committee focuses on the importance of studying psychosocial stress in recent Russian recommendations (2008) as one of the risk factors for CAD development and its complications. Because of the high prevalence in the population of anxiety-prone depressive disorders, it is revealed that community mental health problems are inextricably linked with cardiovascular disease [42-46].

The purpose of the study: was to develop algorithms for the early diagnosis of somatized mental disorders with cardiovascular manifestations in patients of the city Polyclinic.

**Materials and methods.** In the process of work, the following tasks were formed: the designation of types of somatized mental disorders with cardiovascular manifestations in the Polyclinic; analysis of clinical features at the initial stage of the disease; description of algorithms for the early diagnosis of these conditions for specialists of the city Polyclinic (local therapist, cardiologist, neurologist, medical psychologist, psychotherapist, etc.). From 2019 to 2022 patients with mental disorders somatized by cardiovascular symptoms were examined with different severity of the disease. Taking into account the diagnostic criteria of ICD-10, as well as the peculiarities of the clinical picture of the disease, such groups of somatized mental disorders were identified in patients of the city Polyclinic: polysymptomatic hysteria (somatized disorder), somatized depression and panic disorder. The distribution of patients to the main and control groups occurred taking into account the severity of the clinical manifestations of the disease. The core group (100 people) consisted of patients with mental disorders whose initial clinical manifestations of the disease, incomplete clinical presentation, did not comply with the guidelines of modern taxonomists, somatized by cardiovascular manifestations with a duration of the disease of up to 1 year. These patients turned to Polyclinic doctors for medical care (therapist, neurologist, cardiologist, endocrinologist). They were identified in city polyclinics No. 1, No. 5. Initially, the sample also included 11 patients with hypochondria with cardiovascular manifestations and 6 patients with somatoform autonomic dysfunction of the heart, but due to their low number, they did not form the final group. The control group (118 people) consisted of patients with an extended



clinical picture of the disease, the duration of which was from 1 to 5 years. These patients were in the psychosomatic Department of the regional Narcological hospital, in the 1st day hospitals, in the clinical psychoneurological dispensary, in inpatient treatment by a psychiatrist. To fully objectively assess the condition of patients, it was subjected to a somatic and neurological examination with the participation of specialists (therapist, cardiologist, neurologist, endocrinologist). Patients in both groups were dominated by functional signs of the cardiovascular system, which allowed us to identify somatized mental disorders with cardiovascular manifestations. To solve the assigned tasks, clinical-psychopathological (assessment of symptoms and syndromes), clinical-dynamic (assessment of the dynamics of clinical manifestations of the disease), experimental psychological (qualitative and quantitative assessment of emotional and personal characteristics) were used as the main methods of research., statistical method. As an initial manifestation of the disease, a number of clinical and psychological parameters were considered, which reflect the state of the emotional, personal sphere, the stressful load option, the level of stress resistance, which can be checked not only by psychotherapists and medico-psychological doctors, but also in the clinic. Internist doctors. This position is a. Y. Related to the problems of patomorphosis of the psychopathology of the body sphere, considered by Berezantsev (2001). We used a complex of psychodiagnostic methods: 1) personal and reactive anxiety scale. Spielberger-yu. L. Hanina (the questionnaire is designed to measure anxiety as an individual trait of an individual and as a state in response to a stressful situation); 2) T. I. in adapting to V. Method of differential diagnosis of depressive states of the Tsung. Balashova (questionnaire for screening diagnostics of depressive states for the purpose of initial, initial medical diagnosis); 3) differentiated self – assessment test of functional State-san (aimed at studying the three main components of emotional state – well-being, activity and mood); 4) Holmes and Rae's method of determining stress resistance and social adaptation (for independent assessment using a measure of stress levels and stress resistance)., in which each important life event corresponds to a certain number of points, depending on the level of stress).

**Results and their discussion.** Features of the clinic at the initial stage of somatized mental disorders with cardiovascular manifestations include: in patients with polysymptomatic hysteria (somatized disease)-more than 6 symptoms of four diagnostic groups (disorders of the heart and respiratory system, pseudoneurological, gastrointestinal, pain symptoms), the duration of the disease is up to 1 year; with somatized depression (within the framework of adaptation disorders) - mild severity of the disease (the set of symptoms for diagnosis is no more than three), has a senestopathic tone in the clinical picture of somatovegetative functional symptoms from the cardiovascular system, a short (up to six months) course; in patients with panic disorder – in the panic attack clinic, a small number of symptoms (no more than three), psychological symptoms recorded in individual cases, interstitial period without prior warning, obsessive hypochondria, hypochondria hypochondria, low frequency of panic attacks (less than 1 time per week), duration of the disease up to 1 year. For the first time, a simultaneous study of premorbid-personal, excitatory, clinical and psychological parameters was carried out in the hospital, which became the basis for the development of dynamic diagnostics of somatized cardiovascular diseases in patients. Syndromic and nosological aspects of somatized cardiovascular disease have been identified. For the first time, the leading symptom complexes characteristic of each of the nosological groups (cardialgic, vascular-dystonic and cardiodyrhythmic syndromes) were identified, which makes it possible to develop more specific criteria for diagnosing this pathology. Differential assessment of the effect of therapy on the rate of cessation of Affective, functional and cardiovascular diseases in patients with somatized depression, anxiety-depressive and anxiety-phobic disorders, taking into account the features of the psychological mechanisms of protection

and studying their mental state. Somatized cardiovascular diseases are a complex comorbid complex formed on the basis of primary emotional disorders, the development of which is determined by the presence of predictors of a biological and psychosocial nature; the clinical version of somatized cardiovascular diseases is largely determined by the form of nosological pathology associated with certain premorbid - personal characteristics of patients;-each variant of the somatized cardiovascular system is characterized by specific changes in the patient's mental state and features of psychological defense mechanisms that can be determined using questionnaires and scales;- treatment of diseases of the somatized cardiovascular system should be carried out taking into account their nosological type with the introduction into the treatment regimen of not only antidepressants, but also tranquilizers and antipsychotics.- programs for diagnosing somatized diseases should include an assessment of the patient's mental state, which is an important predictor of the dynamics of clinical manifestations of somatoform autonomic dysfunction of the cardiovascular system, as well as a factor affecting the choice of therapy. This method can also be used to assess the effectiveness of treatment. Strong psychotraumatic life events were more important for women: factors of the production plan, medical problems (for 50% of men and 37% of women, respectively). The main life events, family-household and negative interpersonal relationships have become relevant for 61,8% of women and 49,1% of men. The results of studies of the pathogenetic state of psychosomatic diseases associated with the lability of regulatory systems to the action of psychostressors show an important role of psychosocial factors in mechanisms that disrupt the adaptive capabilities of patients and enhance the development of somatic diseases that occur. According to the results of the study, in 40,8% of the total sample of patients, the motive for contacting a psychiatrist for hospitalization was subjective dissatisfaction with its condition, which was more important for women than for men. Regardless of the nature of the disease, patients who identified themselves as "seriously ill" initially consulted an Internist, citing General poor health, but without receiving a full explanation from the attending physician about their condition, sought help from other specialists or resorted to unconventional treatments, including psychicalar<sup>2</sup>. In more than half of the cases, these patients were given recommendations to consult a psychiatrist or psychotherapist, but patients refused the recommendations recommended by therapists, not recognizing mental health issues. High-level social stigmatization of Psychiatry in society. Patients who require constant attention have become "difficult sick" for the Attending Physician 3.Z. J. Lipowski (1986, 1988), Lyubanplozza V. and others according to their observations. (1996), after a long "marathon" in search of the "best" specialists for various medical institutions, the so-called "difficult sick" is not accepted for a long time in the field of vision. Later, patients were admitted to the border conditions Department and contacted the CPSU independently or on the advice of relatives and friends. A comparative analysis of motivational factors has shown that it is more important for women to maintain psychotraumatic situational 2) Women who found themselves seriously ill experienced fear, anxiety, depressed mood of different composition, noted anhedonia, loss of body weight and lack of appetite, suicide, mental discomfort, tears, general weakness. The most important psychostressors for women were the main life events, negative interpersonal relationships and family and family factors. These conditions are characterized by psychopathological incompleteness of depressive syndrome ("subsyndromal depressions"), weak violence, or lack of major manifestations of depression (hypothymia, psychomotor disorders, guilt ideation, etc. By identifying themselves as "nervous" or "somatic" sick, men found a greater general dissatisfaction with their condition, or they completely rejected the disease. They were characterized by emotional instability, irritability, conflict, the presence of cephalgia, fear of death, anxiety, loss of interest in life, work (anhedonia without additional signs of depression), to a greater extent self-deprecation

and a tendency to self-blame ideas. The most important psychotraumatic factors were medical problems (related to the fact of the disease) and production problems. Mental health problems became a reason to bypass the general somatic treatment facility and turn men into psychiatrists. The patient's "lack of self-identification as sick" to somatic disease causes a denial of the disease (anozognostic reaction), in particular, low adherence to the examination and treatment of Cardiological patients, which is confirmed by epidemiological studies of a specific male part of the population. In the group of women, a predominance of depressive, anxiety-depressive, hysterical, phobic syndromes was observed. Dominant thymic, irritating, hypochondriacal, asthenic symptomatology in men ( $p=0,001$ ). Hysterical circle syndromes dominated 16,4 percent of patients and dysthymic dominated 23,1 percent of men. Depressive disorders in women were found at 34,4%, in men at 25,0%. Symptoms of anxiety and phobias are more common in women, while hypochondria and asthenic conditions in men are diagnosed 3 times more often. In patients with internal organ disorders, the psychopathological picture of the current mental disorder is somatic "masks" or masked, filled with somatic, somatovegetative symptoms indicated as somatized symptoms, "decorated". In the composition of psychopathological diseases, the most frequent "masks" are 4 vegetative, somatized and endocrine diseases, in the form of Algie symptomatology, not typical of the classic clinical signs of a specific pathology of internal organs. It is likely that only 40-50% of all patients with angina know myocardial disease and receive appropriate treatment, in 50-60% of cases the disease is not recognized.

**Conclusions.** The main conditions of the differential diagnostic approach to the examination of a psychosomatic patient are compliance with the requirements for careful collection of Anamnesis, proper exercise of complaints presented and active in a detailed analysis of the observed symptoms and syndromes, comprehensive clinical structural examination of the patient and close cooperation of the therapist (cardiologist) and psychiatrist. A study conducted found the presence of various somatovegetatives, Psychovegetative ipsychological manifestations in patients with comorbid heart and mental pathology. Symptoms that "block" the clinical signs of somatic disease and psychopathological syndrome, on the one hand, reflect the likelihood of their pathogenetic community with psychopathological diseases, on the other hand, with a certain somatic disease. In this case, the disease of the internal organs, against the background of an extended psychopathological picture, remains symptomatic, but the complex of objective somatic symptoms is exacerbated or altered by non-characteristic and non-specific manifestations, which are clinical equivalents that are difficult to diagnose in the early stages of KVH. Psychopathological diseases in cardiovascular diseases are the subject of debate about diagnostic and therapeutic difficulties in general medical and psychiatric practice, posing a major problem for the patient himself. A significant increase in Mental Disorders at the neurotic and affective levels among patients in general medical institutions indicates the relevance of the organization of specialized (medical counseling, rehabilitation) integrated care for these patients and the need to improve the training of Internist doctors in the field of Psychosomatic Medicine.

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## THE POSSIBILITY OF PREDICTING THE TIME OF FORMATION AND DEVELOPMENT OF ALCOHOL DEPENDENCE: THE ROLE OF GENETIC RISK, FAMILY WEIGHT AND ITS LEVEL

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**Abstract.** *In 40-70% of cases of Alcohol Dependence, the contribution of genetic factors to the etiopathogenesis of this disease is significant. Research on the effect of family weight on drug disorders in a group of patients of different sexes using evidence-based quantitative approaches as a genetic factor in the formation, development and course of alcohol dependence is of great interest. Among the blood relatives of the patient, not only the fact of the disease is important, but also the degree of severity as a measure of the number of such cases or "genetic load" pressure.*

**Keywords:** *formation, alcohol dependence, genetic factors, family weight.*

**Introduction.** Alcohol addiction, like other drug disorders, belongs to the class of diseases with a hereditary predisposition in modern medical genetics [1-3]. The genetic contribution to the etiology and pathogenesis of alcohol dependence is significant, accounting for 40-70% [4-7]. The predisposition to alcohol dependence is a set of distinctive features of brain neurochemical systems that are genetically determined and secretly present in the population, ensuring the rapid and detailed development of addiction in alcohol consumption [8-11]. The most obvious and clinically present sign that allows us to predict the presence of a significant genetic predisposition in an individual is familial severity — the presence of the same disease conditions among the patient's blood relatives [12-15] and determining its amount — the level or density of familial severity [9]. Several adequate levels of quantitative data suitable for analysis of rigorous evidence can be achieved by evaluating the severity level as the number of sick relatives in the patient's family [16-19]. As you know, the likelihood of alcoholism is determined by genetic and external factors. Among non-genetic factors, characteristic features can also play a role, including those closely related to the emotional sphere [20-22]. From them, the risk of developing alcohol dependence with accentuations of character can be expected to increase [23-24]. With alcoholism, the frequency of this pathology in the same country for two or three generations is significantly different. In any case, the frequency of alcoholic psychoses in 1940 and at the end of the last century is significantly different [25]. This means that external (non-genetic) factors can have a significant impact. Among non-genetic factors, the following can be listed: religious prohibitions, culturally conditioned sober lifestyle traditions [26-30]. Genetically, the Old Believers are practically no different from the rest of the Slavs, but they do not drink, do not smoke, do not use psychoactive substances (surfactants). In the conditions of free alcohol sales and constant traditions of alcohol consumption, the frequency of the emergence of alcoholism increases sharply

[31-33]. It is natural to assume that some characteristic features can contribute to the frequent consumption of alcohol and, therefore, the formation of addiction. With character accents, this can even happen more often. Nevertheless, despite attempts to conduct research in this area, the complexity of the problem is associated with two cases: 1) the fact that no particular role of personal pathology in the development and process of Alcoholism has been proven [34]. If for some types of personal pathology (predisposition to depressive or anxious States, increased suggestion, infantilism), perhaps for others (paranoia, isolation, anankastic characteristics), this remains unproven; 2) the assumption that rather than characteristic, biological characteristics are more pronounced is quite acceptable the possibility of relatively rapid formation of alcohol dependence and the peculiarities of the course of alcoholism [35-36]. The study of the formation and direction of Alcohol Dependence in people who do not identify psychopathy (RL), accentuates and characteristic features (or abnormalities) is assumed to help answer the question of the role of genetic and non-genetic factors in the formation and process of alcoholism. The genetic predisposition to alcohol addiction is hereditary and genetically fortified [37]. Genetic risk is the possibility of disease only for genetic reasons. Risk level-categorical (level) assessment, reflects the genetically determined individual likelihood of the development of the disease [38]. Genetic factors have a significant impact on both the risk of alcohol dependence and the clinical manifestations of the disease [39], but so far a comparative analysis of various aspects of this effect has not been carried out. For proper research, genetic influence on the formation, development and course of alcohol dependence should be assessed using evidence-based quantitative approaches from several sides: through analysis of family alcohol dependence, as a clinical picture of genetic influence, and through analysis of the level of genetic risk for the development of Alcohol Dependence, by identifying signs of genetic risk (DNA Diagnostics) [40-42].

The purpose of the study. to identify possible differences in the formation and course of Alcohol Dependence in patients of different sexes with different levels of family weight and different genetic risks.

**Materials and methods.** The study was diagnosed with "alcohol addiction 464 inpatient patients of the clinic of the Research Institute of Narcology (F10.2 on ICD-10), of whom 109 (23%) women (CF. age (Me±SD) 41±13.33 years) and 355 (77%) males (42±13.37 years). The study did not include patients diagnosed with "organic, including symptomatic, mental disorders "(f00-f09)," schizophrenia, schizotypal and delusional disorders "(F20-F29)," mood disorders "(F30-F39). We studied the data on the development and course of the disease (age of the first alcohol sample, age of the first hospitalization, age of onset of Alcohol Abuse, age of formation of alcohol withdrawal syndrome (COA)). Family weight data on Narcological diseases was obtained through a clinical interview with the patient and close relative (often the mother), assessing the fact of the presence of family weight, as well as its level (average level – one blood relative with alcohol dependence, high – two or more relatives alcohol addiction). Also, the level of individual genetic risk for the development of substance dependence diseases (surfactants) was assessed by genoprophylation. DNA samples from venous blood were genotyped by the polymerase chain reaction (PCR) method, followed by restrictive analysis. Based on the results of genotyping, the final (resulting) level of genetic risk in each patient was assessed in scores ranging from low (0.5 points) to very high (3 or more points). This study used a basic version of genoprophil: 5 polymorphic locus ha systems of 3 main genes: 1) general genetic risk assessment: basic universal genetic markers for Category 2 dopamine receptors and tyrosine hydroxylase

enzyme genes, when a genetic marker was detected, 1 point was given in assessing the final level of risk; 2) specific risk assessment: markers for an additional Type 4 dopamine receptor gene, when a genetic marker The scores reflect the likelihood of statistically reliable development of the disease in carriers of genetic signs. Comparisons of different levels of family weight and non-weight groups have been made.

**Research results.** In our sample, 392 patients (84,5%) reported Family weight, with an average weight level of 235 patients (50,6%), and a high level of 157 patients (33,8%). Comparison groups did not differ in the proportion of male women ( $p=0,528$ ). Patients with total family weight ( $Me\pm SD$ ,  $25\pm 10,61$  years old,  $p=0.011$ ), average weight level ( $25\pm 10,38$  years old,  $P=0,075$ , trend), and high weight level ( $23\pm 10,91$  g,  $p=0,001$  years old) reported regular alcohol abuse by non-family weight patients ( $28,5\pm 9,27$  years old). It should be noted that the age of onset of alcohol abuse ( $p=0,013$ ) and the age of the first alcohol sample ( $16\pm 13,92$  vs  $16\pm 15,82$  years of age,  $p=0,04$ ) with differences between high and moderate weight patients. The proportion of patients with early onset of Alcohol Abuse (up to 22 years of age) close to a reliable level is higher in the group of patients with high family weights (36,95%) than in the group with an average family weight (28,09%,  $p=0,06$ ). In general, patients with familial severity develop COA ( $30\pm 16,11$  l,  $p=0,013$ ), moderate ( $34\pm 14,46$  g,  $p=0.063$ ), and high severity ( $28\pm 17,30$  l,  $p=0,003$ ). compared to patients with no family weight ( $34\pm 14,46$  g). There are differences between patients with high to moderate weight depending on the age of the Osa ( $p=0,055$ ). As a result, the first hospitalization in high-weight patients occurs much earlier ( $36\pm 15,03$  years) than in moderate-weight patients ( $40\pm 17,45$  years old,  $p=0,002$ ) and patients with no family weight ( $41\pm 16,04$ ,  $p=0,008$ ). Early formation of alcohol withdrawal syndrome (up to 30 years of age) is more frequent in a group of patients with family severity ( $p=0,012$ ), especially in the group of patients with high family severity. Among the variety of personal manifestations combined with alcohol dependence and dominant in this sample were stagnation, including hyperthymic manifestations (16,5%). The large share belongs to cycloids (12,3%), anankasts (11,6%), sensitive (11,3%), schizoids (10,6%), epileptoids (9,4%) and dysthymics (9,0%). Other prototype variants of individual accentuations, including primitives (8,0%), conformals (5,8%), hysteroids (5,5%), are presented in smaller quantities. The character traits of the patients examined were already identified in childhood, in adulthood, in most cases, significantly increased (70,3%), new ones appeared – 13,2%. In the Postpubertal period, character traits remained unchanged in 67,4% of patients, in 23% of those examined – flattened, in 9,6% of patients – increased, and new ones appeared. Pathological reactions of malfunctions associated with character traits were not recorded in most cases (94,8%). In 13,3% of patients, the elimination of the parental family (up to the patient's puberty) and the upbringing of one mother were recorded. In families with a stepfather in place of their father, this occurs in 6.7% of patients, the rest were brought up in full families. In 26,5% of observations, incorrect education (hyperopec, hypopec, "Hedgehog gloves", conditions for increasing spiritual responsibility, conditions of rigid relationships) was noted. Statistically significant differences in the redistribution of these violations among patient groups have not been identified. An additional control group for the purpose of registering the characteristics of clinical manifestations of the underlying disease, confirming the diagnosis of accentuations and conducting individual comparative studies, including psychological tests patients. The research group includes 76 patients between the ages of 24 and 45, diagnosed with moderate levels of alcohol dependence (according to the ICD-10 criteria), in combination with various pathocharacterological



characteristics (F60.1-61.0). The average age of patients is  $34,4 \pm 3,7$  years. The systematics of personality and behavioral disorders are primarily based on the clinical picture of existing personality traits and are derived from the criteria defined in ICD-10, which corresponds to the F60 headers specific personality disorders (F60.0-F60.9) and f61.0 mixed diseases. To determine the relationship between the main features of the formation of alcoholism in people with different characteristic features, components of alcohol attraction, as well as simultaneous Affective Disorders (those that do not reach the level of endogenous disorders, but are nevertheless determined by the SCL90-R scale), a factor analysis was carried out according to the data of clinical maps. the manifestation and dynamics of attraction to alcohol at the stage is a relapse of alcohol. The first factor included the age and temporal characteristics of the process of formation and development of alcoholism in people with different characteristic accentuations (table. 4). Perhaps the most important of them are the signs that determine the speed and severity of the formation of alcoholism. These include: the age of onset of alcohol abuse (the onset of the disease), the age of occurrence of AAS, the age of change in the nature of intoxication. These properties are closely related and, perhaps, the rate at which they appear determines the intensity of alcohol dependence. None of the signs characterizing personality traits, Affective Disorders, education, environmental conditions, social status, etc. are included in the first factor. This suggests a slight dependence of the progredience of the disease on these indicators. The second factor (table. 6) combined the manifestation of various affective disorders (depression, anxiety, irritability) and the manifestation of pathological attraction to alcohol destroyed by alcohol, as well as determining their close relationship. Thus, the analysis of factors identified the main signs that determine the speed and severity of the formation of alcoholism. It should be noted that the formation of addiction to alcoholism in patients with alcoholism is determined by factors that are not associated with characteristic and personal characteristics. The information presented on specific positions is A. S. Similar to the results of the analysis of factors obtained during the study as part of the candidate thesis devoted to the study of the recurrence of chronic alcoholism by Meliksetyan (2011). Patients were compared in terms of genetic risk levels. The average genetic risk was ( $<2$ ) in 245 patients (52,8%), and high ( $>2$ ) in 219 patients (47,2%). An assessment of alcohol consumption levels close to reliable levels when taken through the visual-analog scale (vash) showed an appetite for alcohol in patients at higher genetic risk than in patients with moderate genetic risk ( $p=0,060$ ), which requires further investigation. Also, alcohol withdrawal syndrome in patients with a higher genetic risk is formed faster than in patients with moderate genetic risk ( $p=0,029$ ). At the same time, patients with moderate severity ( $2 \pm 0,9$ ) have higher genetic risk levels for developing surfactant dependence disorders than those with higher severity ( $15 \pm 0,86$ ,  $p=0,024$ ), which requires further investigation and may be due to incomplete patient weight data. Conclusions. The presence of family weight and its high level accelerate the development and formation of alcohol dependence and are a risk factor for the development of this disease, regardless of gender. In the early stages of the disease, it is possible to predict the formation, development and severity of Alcohol Dependence by quantitative analysis of family weight and the genetic risk of the patient. Thus, when comparing patients with moderate to high levels of genetic risk, a significant difference in the age of COA formation was found: alcohol craving in patients with previously high genetic risk and in patients with high genetic risk. Thus, in the analysis of age and quality clinical indicators that characterize the formation and development of alcohol dependence, differences between patients with different levels of family severity in drug

disorders and different levels of genetic risk were identified. Weightless patients are drastically different from high-weight patients, and average-weight patients occupy an intermediate position between these groups. The data obtained in this study provides further evidence that, regardless of gender, the presence of family weight and its high levels accelerate the development and formation of alcohol dependence and are a risk factor for the development of this disease. In the early stages of the disease, it is possible to predict the formation, development and severity of Alcohol Dependence by quantitative analysis of the patient's family severity and genetic risk.

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# MODERN METHODS OF THERAPEUTIC FASTING AS A WAY TO OVERCOME THE PHARMACORESISTANCE OF MENTAL PATHOLOGY

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**Abstract.** *In recent decades, pharmacotherapy has gained a dominant position in the treatment of any pathology, including mental disorders. The achievements of psychopharmacotherapy have pushed traditional biological treatments into the background, even in many countries their use has been completely rejected. However, in addition to positive results, psychopharmacotherapy in many cases leads to a pronounced negative pathomorphosis of mental disorders, in many cases pharmacoresistance is formed.*

**Keywords:** *psychopharmacotherapy, pharmacoresistance, treatment, mental pathology.*

**Introduction.** In recent decades, pharmacotherapy has gained a dominant position in the treatment of any pathology, including mental disorders [1]. Therefore, in their modern modifications, the greater use of traditional biological therapy methods is justified. The history of the use of hunger as a remedy is as old as the world itself. A great deal of experience in the use of RDT has been accumulated in Psychiatric Practice [2, 3]. According to clinical observations and special studies, it was found that the use of this treatment in psychiatric practice is primarily limited to patients who are able to voluntarily refuse to eat for a long time on their mental state and express a desire to be treated with this method [4, 5]. These conditions are satisfied by patients with non-psychotic conditions and borderline mental disorders. The therapeutic effect of dosed fasting is based on the stimulation of reparative processes in the body, low loss and death of "sick" cells, the active elimination of the final products of metabolism ("slags" and endotoxins), including metabolites of medicinal chemical preparations, the elimination of antigenic food load [6]. With long-term fasting, protective inhibition of the central nervous system develops as a protective reaction of the body to the effects of excessive stress [7]. Short periods of therapeutic fasting have a psychostimulating effect, while with longer fasting, a sedative effect is achieved, which is replaced by a stimulating effect again during the recovery (dietary) feeding period. What should be the duration of the RDT unloading period? Naturopaths follow the so-called completed fasting signs when the appearance of a feeling of hunger in this matter indicates the need to stop it [8]. Doctors With an orthodox medical education who use the RDT method in their practice are usually completely satisfied with the clinical remission of pathology and do not strive for a state of "completed fasting" [9]. In this case, the duration of the discharge period is determined individually and largely depends on the clinical characteristics of the disease, the age of the patient, obesity, the nature and amount of comorbid pathology and some other reasons [10]. In the general complex of RDT, the recovery period is undoubtedly the most important stage of the entire

treatment process, since it actually determines its final effect [11]. The main task during the recovery period is the gradual transition of the patient from endogenous ("internal") to exogenous ("external") nutrition using a special diet [12]. The criterion for the correct passage of the recovery period after fasting will be the restoration of independent feces on the 3-4th day of recovery nutrition. This time period should be controlled by the most responsible and treating doctor [13]. Complete elimination of food and water (absolute fasting) has begun to be used in clinical practice in our country in recent years. Currently, there are two methods in clinical practice — hard and soft "dry" fasting [14]. In the first case, contact with water with strict "dry" fasting is completely excluded, i.e. the patient does not drink water, does not wash, does not rinse his mouth with water, does not take any water procedures, does not cleanse the intestines with enemas. In the latter case, toilet and "cleaning" procedures are carried out with gentle "dry" fasting, but the patient does not drink water [15]. Strict "dry" fasting has limited indicators, for example, a pronounced exudative reaction of an allergic nature, pronounced edema syndrome, and in a short time — up to two days. In clinical practice, short-term absolute fasting is usually used for 3-5 days, rarely more than [16]. With absolute fasting, the fasting period goes through the same stages as full fasting, but the time of their onset decreases, especially with severe "dry" fasting. Thus, the stage of "food agitation" lasts for several hours (very individual); the stage of "exacerbation of ketoacidosis" lasts from 1 to 3 days [17]. On the first day of absolute fasting, with its strict method, a ketoacidotic crisis usually occurs, after which the patient's well-being improves significantly (stage of "compensated ketoacidosis") [18]. With absolute fasting, the recovery period is practically no different from complete fasting. During the unloading period, complete ("wet") fasting from absolute ("dry") to the first days (2 to 4) is limited to drinking water up to 10-12 ml/kg of body weight per day; in the next period, the patient should be guided by a feeling of thirst [19]. The recovery period is carried out in the same way as complete fasting. The use of a combination of absolute and complete therapeutic fasting in therapeutic practice allows for a faster transition to endogenous nutrition, i.e. ketoacidotic crisis and ketoacidosis compensation. Using this technique, the unloading period is reduced without harming the therapeutic effect achieved [20]. Among the methods of RdT described above, full (wet) fasting is most often used, this method can even be considered a classic, since it is often used both in our country and abroad; it is therefore very well studied in terms of pathophysiological shifts in the starving body [21]. During full fasting, the duration of the unloading period depends on the presence and nature, as well as the amount of joint pathology (polymorbism), which usually extends the unloading period to 3 weeks or more [22]. Increasing the final effect of RDT is achieved by combining it with non-drug therapy methods, primarily exercise therapy. In many patients, especially in older groups, exercise therapy decreases to possible physical activity during the day [23]. This is a daily walk in the fresh air for hours, accompanied by optional exercises such as "scattered muscle load". Complications with methodically correct execution of RDT are rare. They are not life-threatening, in most cases they can be avoided and, if they occur, are quickly eliminated [24]. Complications can occur not only during the unloading period, but also during the recovery period of RDT. In this case, they can be associated with a violation of the diet regime or a reassessment of physical capabilities [25]. During the RDT course in chronic pathology, the patient must be reliably told that medical recommendations must be strictly followed in order to maintain and adequately maintain his health and quality of life continuously [26]. If the patient has undergone a course of RdT at a satisfactory level and has a sufficiently good effect, then the duration of clinical remission and/or the possibility

of a complete treatment of chronic pathology is fully dependent on him, i.e. from how purposefully and timely he uses the knowledge and skills he acquired while taking the RDT course. Conclusions. RDT can be considered pathogenetically justified, safe and effective as a treatment for mental and somatic pathology, which can be used spontaneously or in combination with other approaches (pharmacotherapy, psychotherapy, etc.), and can also be used to overcome pharmacoresistance in mental and somatic disorders [27]. It is known that fasting is a pathological process that develops due to a lack of nutrients that enter the internal environment of the body in the process of emptying, membrane hydrolysis and absorption of nutrients from the intestinal lumen [28]. Well-known Russian pathophysiologicals of the late XIX-early XX centuries S. M. Lukyanov and his pupil E. S. With the efforts of London, it was found that changes in homeostatic processes in the body of hunger are associated with the need to switch to endogenous nutrition, which constitutes the essence of this process [29-30]. Fasting exoidan can be caused by endogenous causes. Endogenous fasting is caused by altered assimilation of nutrients, for example in severe patients; it is often accompanied by a violation of the processes of simultaneous absorption, emptiness, changes in the digestion of membranes, intestinal dyskinesia, etc. [31]. Endogenous fasting is associated with a sharp increase in the body's need for energoplastic substrates due to a stress response, activation of the neuroendocrine catabolic system, and reaction of body systems associated with stress and acute phase response [32]. Many pathological processes are stimulated to activate the central part of the neuroendocrine catabolic system (ventromedial nucleus of the hypothalamus): hypoxia, hypovolemia, pain, sadness [33]. Often substrate-energy deficits are the result of the following diseases and pathological processes [34]:

- \* digestive disorders;
- \* chronic and recurrent processes, including infections, fever, cancer and some autoimmune diseases;
- \* diseases associated with loss of protein and other nutrients, including nephrotic syndrome, chronic obstructive pulmonary diseases, intestinal fistulas, plasmorrhhea for burn disease, exudative enteropathy, desquamative dermatitis, etc.;
- \* endocrine diseases with impaired anabolism and increased catabolism (hyperthyroidism, diabetes);
- \* psychoneuroendocrine diseases with appetite suppression and eating appetite disorders (anorexia nervosa, psychoses);
- \* cases with increased nutritional needs (pregnancy, lactation, childhood and adolescence, injuries, surgical interventions, recovery period after acute infections);
- \* alcoholism and associated temporary hypercortisism;
- \* drug poisoning;
- \* parenteral nutrition extended and not adequately adjusted [35-37]. In most cases, both in the past and in the present, fasting is exogenous in nature and has social foundations, for example, during the blockade of Leningrad, the population fasted for a long time: the city developed specific diseases as a result of fasting [38]. Exogenous fasting is the result of a discrepancy between the intake of nutrients into the internal environment and the need for them, such fasting occurs as a result of a complete lack of food or insufficient intake of it, including the ingestion of some of its components into the body (partial fasting, malnutrition) [39]. Nutritional deficiencies can be associated with a small amount of one or more basic nutrients (proteins, fats, carbohydrates), a pronounced lack of vitamins and minerals, a change in the ratio between food substances, for

example, the predominance of carbohydrates with a sufficient amount of proteins, etc. for example, the diet of the majority of the city's population in blocked Leningrad was characterized by a general lack of nutrients (proteins), fats, carbohydrates, vitamins, macro - and microelements) and their uneven depletion [40-41]. Exogenous fasting may be absolute, complete, and incomplete. Absolute "dry" fasting involves exogenous fasting in the complete absence of food and water [42]. Complete exogenous fasting is observed in the absence of absolutely no food, but with drinking water. Incomplete fasting or malnutrition occurs with adequate nutrition that cannot meet the nutritional needs of the body. Quantitative fasting is called Absolute and complete fasting. Qualitative fasting is consistent with partial or incomplete fasting [43-44]. Partial fasting, despite the fact that the body's energy needs are replenished, occurs in people on an unbalanced diet, which is completely excluded from the diet of one of the nutrients or nutrients; this type of fasting includes hypo - and vitamin deficiency. High-quality fasting is also considered accelerated fasting, which occurs in people with limited dietary energy capacity, against the background of the high energy demand of the body observed during mental and physical overload, stresses [45]. The gradual change in metabolism during fasting occurs with a characteristic phase endocrine-metabolic changes and changes in the main energy substrates (table). Complete fasting is divided into periods: emergency adaptation, long-term stable adaptation, decompensation [46]. Each of these periods has its own endocrine-metabolic characteristics. The initial period of emergency adaptation (fig. 1) activation of glycogenolysis, full use of its reserves, stimulation of gluconeogenesis, and fasting for blood glucose levels of 12 to 24 hours is provided by glycogen reserves in the liver. 24 hours after the start of fasting, the liver runs out of glycogen reserves, so in gluconeogenesis, glucose levels in the blood are maintained due to the formation of glycerin, glucogenic amino acids and free fatty acids [47]. 24 hours after the onset of complete exogenous starvation, the body begins to use proteins as a source of energy, enhancing the processes of gluconeogenesis. The first-line Energy Reserve is still the energy accumulated in the liver as glycogen and triglycerides in adipose tissue: in healthy people, triglycerides can be up to 80% of energy reserves, and in obese people, triglycerides of adipose tissue can be up to 95% of the total energy reserve [48]. The lack of glucose in the body that occurs with long-term fasting is complemented by other energy substrates such as ketone bodies. The main role for long-term adaptation of the starving brain is the ability to initiate the absorption of b-oxymasutyric acid. This is characteristic of the fetal brain, but the corresponding mechanisms during fasting only wake up again after 10 days, which leads to a decrease in the need for gluconeogenesis and a slight decrease in the release of nitrogen with urine on 10-14 days of complete fasting. The formation of ketone bodies has two stages: extra-hepatic and hepatic. The extra-hepatic stage leads to an increase in the level of free fatty acids in circulating blood, which leads to their counter insular and arrhythmogenic effect [49-50]; the liver stage is characterized by increased oxidation of free fatty acids in the liver, which are converted into carbon dioxide and ketone bodies [51], part of the lipid material that enters the hepatocytes is excreted by them in the form of lipoprotein of very low density and goes to the needs of other organs, but the lack of important lipotropic substances hepatic steatosis, which is unable to release lipoproteins of very low density [53]. In response to a decrease in glucose, amino acids and free fatty acids in the blood plasma, with a lack of inhibitory impulses from the stomach and other organs of the gastrointestinal tract, the Food Center is excited, which activates the sympathetic part of the autonomic nervous system: the secretion of insulin antagonist hormones (glucagon, glucocorticoids) increases, and the secretion of insulin itself is

inhibited, which leads With intense stress and accelerated fasting, insulin secretion may remain high, but the effect of counter-principles prevails [54-56]. Fasting requires the body to save energy and plastic materials in general. But as with insulin-dependent Diabetes mellitus or severe long-term stress, complete fasting creates a metabolic state of resource redistribution in favor of insulin-independent organs and tissues [57]. Insulin-dependent structures are in the most deprived state. Although Insulin production has decreased, it does not stop. At the same time, the hormonal-metabolic form of fasting is formed under the sign of a sharp predominance of the complex of counter insular regulators [58]. Like the response of the acute stage of physiological stress in injury and inflammation, in fasting conditions, the energy resources of the body's somatic components – skeletal muscle and adipose tissue-are mobilized. But in the acute phase, the immune system and bone marrow interests protect cytokines that redistribute resources for the benefit of these consumers. Without infection, this does not happen with complete fasting. Hematopoiesis is impaired and immunosuppression develops [59]. Amino acids and lipolysis products are used by the liver to synthesize glucose again and to store visceral organ protein to form ketone bodies and to provide the brain's energy needs and a number of vital energy consumers listed above [60]. Sometimes such a counter insulin compensatory redistribution reaction of the body against fasting can be impaired. This is facilitated by the replacement of proteins with low-nutrient carbohydrate foods in a small diet. When taking carbohydrates, it is impossible to adequately suppress insulin production, even if it is not enough to eat. Because of this, resource redistribution is disrupted, which leads to long-term adaptation disorders, early onset of severe complications such as liver function disorders [61]. Without proper allocation of resources from mesenchymal derivatives to visceral organs, the body cannot support the protein-synthesizing potential of the liver, hypoproteinemia accelerates, decreased oncotic pressure in the blood and hungry edema appear [62]. Instead of glucocorticoid, the adrenal cortex mainly gives a mineralocorticoid reaction. This will not help maintain appetite. Such a complex form of Protein-energy deficiency is known as "kvashiorkor" or a swollen form of fasting [63, 64]. Treatment and obesity of such patients is much more difficult than the irreversible (marantic) form of complete fasting, where neither proteins nor carbohydrates are present, and the counter insular response ensures more efficient maintenance of a number of liver functions, glucocorticoids support appetite [65].

**Conclusion:** as you know today, long-term fasting is a factor that determines deep metabolic and pathophysiological changes aimed at compensating for the lack of nutrients in the body. Understanding metabolic and pathological diseases in a person's long-term hunger is still relevant today, since in many countries the number of hungry people is increasing in the context of natural and social disasters and conflicts, and 1/3 of all financial costs in the world are associated with the development of alimony-related diseases.

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## PSYCHOGENETIC PROPERTIES OF DRUG PATIENTS AS RISK FACTORS FOR THE FORMATION OF ADDICTION

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**Abstract.** *Many studies in recent years show that a number of individual psychological characteristics of an individual (anxiety level, aggression, impulsiveness, socialization ability, stress resistance) are important predictors of the risk of developing addiction disorders. It has a surfactant and a significant degree of genetic control. However, the relationship between genetic and personal risk levels in addiction patients is still not well understood.*

**Keywords:** *formation, addiction, personality, addiction, psychogenetic properties.*

**Introduction.** Sociological studies conducted show that in recent years, the average age of drug addicts has sharply decreased from 18 to 13 years. Cases of drug use by children aged 5-7 years have been reported (this is facilitated by their addicted parents). Statistics show that over 60% of addicts are young people between the ages of 17 and 35, 20% are children, schoolchildren, and only 15% are people over the age of 35 [1-4]. The role of heredity in the formation of addiction, first of all, has been studied in alcoholism, and not much is known about its importance in the development of addiction. A study of 867 pairs of women found that most twins (cocaine and marijuana) had higher levels of addiction in identical twins (cocaine and marijuana) than twins. Similar results were obtained in a study of Twin males. Today, scientists are trying to find the gene that is responsible for the predisposition to addiction [5-9].

Advances in neurobiology have identified drug pathogenesis and found that increased pleasure and strength, which play a reinforcing role in alcohol and drug use, are related to their effect on the central nervous system's dopaminergic pathway from the ventral region of the midbrain to the prefrontal cortex (limbic system structure) [10-14]. With the reuse of drugs, this effect is enhanced, which contributes to the formation of addiction. One of the most serious congenital risk factors for the development of addiction is the use of psychoactive substances (surfactants) by the mother during pregnancy. The first risk factors for drug development are genetic. There are two main factors that are genetically related [15-18]. The first is a high level of genetically predetermined dopamine hormone, which encourages a person to constantly look for new emotions, dissatisfaction with peace, search for dangerous situations. The second is a low level of the hormone serotonin, which leads to a very deepening of depression in stressful situations. Some factors that increase the risk of dependent behavior of the unborn child can also occur during childbirth [19-23].

Heredity is characteristic of almost all drug addicts, 85% of young people treated for addiction identify alcoholic heredity. Many who began to abuse at an early age consciously preferred alcohol, because the intake of alcohol made them disgusting due to memories of alcohol [24-28]. However, based on biological characteristics, the likelihood of addiction is unpredictable,

it is impossible to determine in advance whether a person is addicted to drugs and drugs, or, conversely, opposites. According to the results of family and twin studies, the contribution of genetic factors to the etiology and pathogenesis of substance dependence (surfactant) diseases in general 40-70% [29-33], the type of surfactants affects only the variability of the genetic contribution: cocaine-72%, alcohol-56%, sedatives-51%, cannabinoids-48%, psychostimulants-40% [34].

Genetic studies of surfactant-dependent diseases have found that they belong to a broad class of diseases with a multifactorial nature and hereditary predisposition of a polygenic nature. For most such diseases (bronchial asthma, diabetes mellitus, etc.), hereditary forms with a specific clinical profile or phenotype have been identified: a set of clinical features associated with a hereditary factor and under genetic control. A mandatory sign of hereditary forms is family severity: the presence of the same disease states among the blood relatives of the patient, a specific "genetic load", a clinical picture of predisposition [35-39].

Hereditary forms of disease diseases are the most severe, rapidly developing and "dangerous", requiring early differential diagnosis for effective, specific and personalized therapy. For patients with hereditary forms of diseases and a high genetic risk of their development, within the framework of the biopsychosocial model, there are serious restrictions aimed at limiting the influence of predisposition: diet, lifestyle, climate and ecology, career choice and social activity in general. The combination of these restrictions allows you to limit or delay the manifestation of the disease and achieve a satisfactory quality of life [40-44].

It is clear that such an approach to the group of specific genetic risks of the development of Narcological diseases is necessary: children and adolescents in heavy families. Limiting the manifestation of predisposition, the pressure of the "genetic load", for example, in the form of conscious independent avoidance from the consumption of surfactants, can become the best solution to reduce the incidence of Narcological diseases [45-47].

The purpose of the study. The study of the characteristics of individual psychological characteristics in patients dependent on surfactants with varying degrees of genetic risk. this review is an analysis of genetic, biological, and clinical features on Narcological diseases to clarify the etiopathogenetic role of family weight. To determine the elements of clinical phenotypes of surfactant addiction diseases, it seems important to justify the need, possibility and effectiveness of the correct quantitative analysis of family severity, which allows the formation of evidence-based approaches to the diagnosis of their hereditary forms.

**Research materials and methods.** 50 men were examined (30 people - patients addicted to various surfactants, and 20-a control group of healthy volunteers). Psychometric tools: 1) K. Cloninger's "Temperament and Character Inventory" Survey, 2) scale (Barrat Impulsivity Score (BIS)). All patients are genotyped. Based on its results, genoprophylation was performed and evaluated in scores ranging from low genetic risk (0,5 points) to extremely high (3 or more points) in each patient. A basic version of the genoprophil was used: 3 main genes and 5 polymorphic loci of the system.

Results and their discussion. In most measures of Barrat impulsivity, reliable differences ( $p < 0,05$ ) were found between patients and healthy individuals. The information obtained reflects psychological characteristics that depend on the pav, such as difficulty concentrating, restlessness, anxiety, thoughtless decision-making, impulsive actions under the influence of the moment, the absence of plans for the near future and the randomness of one's own life, lack of self-control,

inability to solve complex cognitive problems. Patients with higher levels of genetic risk were found to have significantly greater attention instability (focusing on tasks at hand, thoughtless decision making) and movement inconsistency (life randomness) than patients with lower levels of genetic risk ( $p < 0,05$ ). Reliable correlations of genetic risk levels were found with a small measure of attention ( $R = 0,415$ ) and a persistence scale ( $R = 0,528$ ). According to TCI-125 Klonigerau, patients with higher genetic risk levels recorded higher scores on the "novelty seeking" scale and lower scores on the "harm avoidance" scale than those with lower genetic risk levels, indicating a conscious willingness to take damage in the process of seeking new emotions. There is an inverse correlation between genetic risk levels and "harm avoidance" scale scores ( $r = -0,513$ ). In a review of the history of the disease in selected groups, it is noted that patients without severe heredity began to use drugs a little later.

At the same time, the first acquaintance with the drug in both groups began with the use of cannabis, but it should be noted that cannabis was more preferred in a group without severe heredity. A similar ratio applies to the use of heroin. Separately, it should be noted that the ratio of the use of raw Poppy, where the group of heavy heredity is significantly distinguished, also patients in this group consumed 5 times more of this drug. At the same time, the use of plant hallucinogens in a group of patients with severe heredity is not recorded.

Analyzing the history of the disease in selected groups, it is noted that there are no significant differences in the duration of the disease, frequency and dosage of drug use, tolerance. A significant advantage of the analyzed indicators-drug supplements, overdose and alcohol consumption — is noted in the group with severe heredity. At the same time, in a severe non-hereditary group, patients occasionally consumed more alcohol, since alcohol dependence was significantly dominant in a group with severe heredity in a primary disease clinic (which is known by itself).

When considering the level of social adaptation and stress tolerance from Holmes and rage's test of the same name, the level of social adaptation in the groups under consideration is slightly different, which is slightly more significant in a group with severe heredity (78,6 %) than in patients without severe heredity (77,1 %). At the same time, the number of socially adapted patients in the group without severe heredity significantly prevailed (10,4% and 3,6%). The proportion of the adult population suffering from the abuse or dependence of surfactants is large: according to medical statistics and taking into account hidden conditions – 8-12%, according to population studies—at least 10% for alcohol and another 15% for other surfactants (except tobacco), that is, at least 20% in general – the maximum indicator for mental disorders. The proportion of patients with Narcological diseases in the population is stable and practically does not depend on socio-economic, cultural and natural factors, although the level of consumption of surfactants can be significantly socially regulated. Surfactant addiction disorders are genetic in nature and present in the Permian population, with patients identified in each new generation and "recruited" primarily from families with addiction.

Alcoholism is the most studied form of a disease that does not depend on surfactants in clinical, biological and genetic aspects. The population burden of family weight for alcoholism is significant: 10-20% for the general population, 50-85% for patients with alcoholism in the United States and 60-70% for inpatient patients with alcoholism and opium addiction in the Russian Federation, which is ten times higher (7-8%) than for healthy people. Such a strong "genetic pressure" naturally leads to an increase in the level of genetic risk for people in heavy families

only as a possibility of developing drug disorders for genetic reasons. Predisposition has the character of a population " spectrum "and is present in all individuals to varying degrees, from minimum to maximum, and the degree of genetic risk is proportional to the predisposition or severity of the "genetic load".

Genetic risk is an innate probability characteristic and its implementation (the transfer of probability to the fact of disease) occurs with the combined effect of personal and social factors as a "trigger" or "modifier" of risk within the multifactorial model of etiopathogenesis. The higher the level of genetic risk, the easier and faster the disease develops with a minimum additional effect, the higher the level of" biological "readiness of the future patient, the more the disease begins to develop in conditions that are absolutely" safe "for other individuals. On the contrary, with a low level of genetic risk, a serious joint effect of "triggers" and "modifiers" is required, the development of the disease slows down, and the clinical picture can be so late and delicate that such patients do not come to the attention of specialists. Numerous studies have shown the leading role of genetic factors in the additive, modifying role of" environmental " influence: the heredity of alcoholism is close to the upper limit in low cultural transmission (transmission), conformity for alcoholism is 58% for monozygote and 28% for dizygotic twins, and close results for opiate and cocaine addiction.

First – degree relatives of patients with pav addiction (opiates, cocaine, cannabis, alcohol) increase the risk of these diseases by 8 times, relatives of patients with alcoholism increase the risk of developing addiction to alcohol (28,8% and 14,4% under control) and any other PAV-cocaine, marijuana by 2 times, opiates, sedatives and stimulants (20,9% and 9,7%). Obviously, all diseases of surfactant dependence are genetically the only disease, and the hereditary mechanisms of transmitting the risk of their development are devoid of specificity. Thus, in 25-50% of patients with alcoholism and 34% of patients with cocaine addiction, first-degree relatives (father, mother, brother or sister), patients with alcoholism, inpatient patients with alcoholism and heroin addiction are the same in terms of family severity: 67,1% of patients and 59,1% of patients have weights (mainly 2% of patients with addiction to – maternal alcoholism occurs at the same frequency: father-46,3% and 44,7%, mother-4,8% and 7,1%.

Importantly, genetic factors are reliably associated with pav addiction diseases (alcohol, heroin, cocaine and marijuana), have a high specific risk rate (55%) and an inheritance ratio of 62-79%, and social and environmental factors are associated only with the consumption of surfactants and can change the level of risk of developing the disease, but develop it. However, the degree of such modification can be significant until the Prevention of the development of the disease, especially in the conscious control of the individual himself.

**Conclusions.** Thus, a number of individual psychological characteristics that contribute to the conversion of drug patients to surfactants are associated with the polymorphism of genes that determine the dopaminergic system. The examination carried out showed that for patients with a severe history of alcoholism, this is more characteristic, early onset of drug use, pronounced social disorder, frequent criminal prosecution, frequent detection of HIV infection, the presence of psychotic episodes, preference for the use of raw Poppy, the use of plant hallucinogens, frequent additions to drugs and excessive drug use, alcohol dependence. Thus, taking into account the data obtained, it can be assumed that if adolescents have a heredity aggravated by alcoholism, they use drugs, then in the future the above anamnestic features of the development of the syndrome will be noted addiction to drugs.

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## ELDERLY EPILEPSY: NEUROPHYSIOLOGICAL ASPECTS OF NON-PSYCHOTIC MENTAL DISORDERS

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**Abstract.** *In recent decades, rates of epilepsy incidence and prevalence have increased in older age groups. In the recommended material, when examining 181 patients, materials were obtained to draw conclusions about certain characteristics bioelectric activity of the brain, vegetative state in patients with elderly epilepsy, in comparison with groups of elderly patients without pathology. The coherent analysis method and the strategy for analyzing the spatial-temporal organization of the activity of the cerebral cortex using VRS allow a new look at the results of neurophysiological examination for elderly epilepsy.*

**Keywords:** *epilepsy, old age, bioelectric activity, neurophysiological aspects.*

**Introduction.** The relevance of research on various aspects of late-age pathology depends on many factors, but primarily on the increase in the proportion of the elderly in the total population of many countries of the world [1-3]. In this regard, the problem of the occurrence of epileptic seizures in adults and the elderly is of particular importance [4-6]. The proportion of patients with "late epilepsy" among all patients with epilepsy is 11% [7-10]. Despite the active study of elderly epilepsy (EPV), currently the study of the Epilepsy neurophysiology of this group occupies a modest place in assessing brain activity in this pathology, both at the beginning of the disease and in the dynamics of the rehabilitation process [11-15].

The current state of Neurophysiology problems is the consideration of bioelectric activity of the brain and the new concepts of solving the problem of epilepsy, including the inverse of EEG belgilaydi.va in old age. In addition to evaluating the usual visual picture Data, great importance is currently attached to the methods of mathematical processing and localization of sources of pathological activity of the cerebral cortex and underlying structures as one of the directions for analyzing the pathophysiology of neural networks their relationship with the clinical picture of epilepsy, the degree of psychopathological manifestation of the disease [16-20]. The topical, descriptive system of local and interhemispheric manifestations of activity of different frequency ranges is replaced by a methodology for the spatial-temporal organization of pathological states of the brain and its components, including in the analysis of non-psychotic mental disorders in epilepsy [21-24].

Research results from various authors prove that the incidence of epilepsy forms with non-psychotic Affective Disorders, borderline anxiety, and epilepsy with affective disorders ranges from 11% to 66% [25-27]. A catamnestic examination of 1,283 EPV patients (over 60 years of age) registered in urban Epileptology allowed 98,13% of patients to determine whether comorbid psychopathological symptomatology contained various sensory-Affective Disorders [28-31]. We want to add to this the interaction of these factors with the higher mental functions of the

individual, taking into account the concept of synergistic analysis of the processes of alteration of somatic, neurophysiological, neurochemical processes and the "transverse" cross section of the psychological characteristics of the patient with epilepsy. One method of interest to EEG analysis is consistent channel data analysis, average consistency, and average spectral power assessment [32-36].

The consistency of the electrical signals of the brain (kog) is a quantitative indicator of the synchronicity of participation in the functional interaction of various cortical zones, which ensures the integral activity of the brain [37-39]. The values of the cog coefficients vary from 0 to 1: the higher the cog value, the more activity of a given area is normal and consistent with other activities chosen for measurement in pathology. Many researchers cite consistent analysis data in non-psychotic and psychotic psychiatric disorders, sometimes with polar inferences and inferences [40-43]. The authors note that in patients with right brain asymmetry (PPA) with hypersensitivity of paroxysmal syndrome, the functions of the frontal parts of the brain are affected, in this regard, cognitive disorders and a decrease in executive functions are observed. Conversely, in patients with left hemisphere asymmetry (LPA), the progredience of seizures is associated with impaired affective circle and other psychopathological signs [44-47].

This means involving more temporal structures in the process, in particular the limbic system responsible for the affective sphere. Other authors argue that left and symmetrical types are associated with high levels of introversion, anxiety, hypochondriac complaints, fear, low levels of self-control [48-50]. Studies dedicated to assessing the spatial temporal organization of brain biopotentials in patients with elderly epilepsy have not been found in the literature we have, which assumes the timely execution of such observations [51].

The purpose of the study: according to the spectral analysis of coherence and potency in patients with elderly epilepsy, determine the most common and specific EEG characteristics, identify possible correlational relationships with the frequency and degree of manifestation of emotional affective disorders affecting the quality of life of patients. Assess the condition of the autonomic nervous system and its relationship with the degree of clinical manifestation of epilepsy.

**Materials and research methods.** Three groups of patients (181 people) were examined, of which patients (141 people), who have experienced ischemic-type acute cerebrovascular accident (ONMC) in various arterial basins of the brain over the past 3-5 years, in 101 patients the course of the disease was complicated by symptomatic local epilepsy. In the first control group of observations (40 people: 20 men, 20 women) without gross neurological disorders. In Group 2 (101 patients), the underlying etiological disease (stroke, brain damage, brain tumor, neuroinfection) was complicated by the development of symptomatic, localized epilepsy. In Group 3 of patients with stroke consequences (40 people: 21 men, 19 women), paroxysmal cases of an epileptic nature were not recorded. The median age of Group 1 patients was 63,00 years (60,06 years), Group 2: 62,5 years (61,5 years), Group 3 was 62,5 years (61,5 years). Standard neurological, neuroimaging, psychological, and neurophysiological examinations were performed on all patients. During the studies, EEG indicators were analyzed in mean compliance (SRCOG), spectral power (sm), channel compliance (cog), while cog processing took into account the average (0,45-0,649) and strong (0,65-1,00) compliance indices.

Results and their discussion. The following results were obtained when analyzing EEG neurophysiological data in 3 groups of patients by the method of cross-correlation comparison. A

study of EEG spectral power (sm) found significant statistical differences between norm Indicators, Group 1 (N=40 patients), Group 2 (n=101, patients with symptomatic epilepsy). An increase in spectral power in the Delta and theta ranges, especially in the frontal and temporal regions, the retention of these indicators in the beta range in the frontal and central regions, with a relatively homogeneous image of this indicator in the alpha range. The same exact spectral power difference is observed when comparing groups 2 and 3 of patients. Thus, we observe the image of increased slow wave bioelectric activity of the cerebral cortex in patients with elderly epilepsy, in which local activity is focused on the frontal, central and temporal regions of the cerebral cortex. Comparative studies on EEG using channel consistency assessment have yielded the following results: in control group 1 (N=40) we observe strong CI coherent indices (greater than 0.65) only in the alpha range, localization in frontal areas (Fp1, Fp2, F3, F4, F7, f8) and right occipital-parietal (O2, P4). The number of strong coherent connections dominates all ranges in Group 3, especially alpha, in the anteroposterior, temporal, and occipital-temporal regions (Fp1, Fp2, T3, T5, P3, O2), with activity moving to the left hemisphere, the surface of interhemispheric asymmetry.

In all ranges, the “newest” pathological connections are observed in Group 2 of patients: with the formation of interhemispheric bonds (T6-P3, T4-T3, P4-O1), significant differences in the Delta and theta ranges, which are later increased in the number of bonds. areas in the posterior temporal region, anterior frontal right, parietal left (T6, T5, F8, P3). The leading place in the composition of non-psychotic mental disorders (NPDS) in the patients we examined was occupied by depressive and anxiety disorders, but the proportion of these NPDS found in The compared groups was different: depression was found in 68,96% and 21,4% of patients with epilepsy. only% of patients with onmc have anxiety disorders in 21,4% and 64,3% respectively. In comparable groups, the BDI depression averages were  $34,81 \pm 2,73$  and  $28,57 \pm 3,07$  points, respectively, and HRDS was  $21,84 \pm 1,50$  and  $13,79 \pm 1,36$  ( $p \leq 0,01$ ), respectively. In the study of symptomatic psychopathology under the SCL-90-R methodology, the following results were obtained: the general severity index of GSI symptoms (symptom severity general index) scored 1,21 in the second group and 0,70 in the third group. There is a clear correlation between the overall severity index of depression, anxiety, and symptoms in Group 2 patients, as well as a number of other psychopathological factors. In Group 3, weak correlational correlations between anxiety and overall symptom severity index (GSI) were found, which did not significantly affect other factors of psychopathological symptoms. Analysis of intermediate coherent indices (0,45-0,65) also shows heterogeneity of the BEA cortex in all three groups of patients examined. The smallest, characterized by cortical formations and uniform distribution by relative symmetry, was found to have an average number of bonds in control group 1, which is typical of older patients and has their age norm, characterized by greater activity in the alpha range. The highest number of intermediate contacts in Group 2 patients, especially in the Alpha and theta bands, have relative distributional symmetry, but slow wave characteristic is noted with sliding elements of right hemisphere activity, a component of interhemispheric interactions, especially with increasing frequency rhythm (Delta to beta). Observation Group 3 is characterized by increased activity compared to the control group, but differs from the group of patients with epilepsy: Theta rhythm, less consistent connections in the Alpha and beta ranges, a significant decrease in slow wave activity indicators, symmetrical distribution of Bea coherence in the alpha range. Thus, the slow-wave activity of strong and medium coherent communication in patients with epilepsy has been recorded much more accurately compared to Groups 1 and 3 of patients, the bioelectric activity of

the cerebral cortex has significant differences in EEG pictures, the growth of interhemispheric asymmetry on the right side and a certain location of processes affect the study of spectral EEG found significant statistical differences between normal Indicators, Group 1 (N=40 patients), and group 2 (N=101, symptomatic epilepsy). In the Delta and theta ranges, especially in the frontal and temporal regions (Fp1, F7, F8, T3, T5), an increase in spectral power was noted, which was maintained in the beta range in the frontal and central regions with a relatively homogeneous image of this indicator in the alpha range. The same exact spectral power difference is observed when comparing groups 2 and 3 of patients (see Figure). 2). The leading place in the composition of non-psychotic mental disorders (NPDS) in the patients we examined was occupied by depressive and anxiety disorders, but the proportion of these NPDS found in the compared groups was different: depression was found in 56,3% and 21,4% of patients with epilepsy. patients with ONMC alone and anxiety disorders are 8,7% and 64,3% respectively, with mild cognitive impairment 11,7% and 7,2% respectively (see Figure). 3). In comparable groups (groups 2 and 3), the BDI depression averages were  $34,81 \pm 2,73$  and  $28,57 \pm 3,07$  points, respectively, while HRDS was  $21,84 \pm 1,50$  and  $13,79 \pm 1,36$  ( $p \leq 0,01$ ), respectively. In the study of symptomatic psychopathology under the SCL-90-R methodology, the following results were obtained: the general severity index of GSI symptoms (symptom severity general index) scored 1,21 in the second group and 0,70 in the third group. Group 2 (EPV) patients have an overall weight index of depression, anxiety, and symptoms, as well as a clear correlation relationship between a number of other psychopathological factors. In Group 3 (consequences of ONMC), weak correlational correlations between anxiety and general severity index of symptoms (GSI) were found, which did not significantly affect other factors of psychopathological symptoms.

**Conclusions:** Analysis of the neurophysiological picture in patients with elderly epilepsy allows us to draw conclusions about the significant differences of this group from other groups of nosological age-related pathologies. Evaluation of EEG by the channel compliance comparison method found significant differences in all frequency rhythms (Delta, Theta, Alpha, beta-1) in EPV patients, confirming the clear effect of the epileptic process on the state of neural connections of different regions of the brain, including exacerbation of non-psychotic mental disorders. to a group of patients with symptomatic epilepsy. The spectral power factor varies significantly across three groups of those examined, with the greatest values found in elderly epilepsy patients, which may be a clinical and neurophysiological predictor of the activity level of the epileptic process. Gradual changes in wave activity with interhemispheric connections in the Posterior-temporal, parietal and occipital lobes, the presence of pathological changes in the alpha range in epilepsy patients (posterior temporal region, anterior frontal right, left in the parietal region-T6, T5, F8, P3) are characteristic "markers". EPV. The results of the study show that the incidence of emotional-Affective Disorders in patients with EPV has increased statistically significantly, with a focus only on increased depression compared to stroke patients. The degree of severity of depression and anxiety affects and is directly related to other psychopathological manifestations of epilepsy (somatization, phobia, psychotism, interpersonal sensitivity, hostility, obsession, coercion), compared only to a group of patients with onmc consequences. A neurophysiological picture of brain activity obtained by the correlation comparison method shows that patients with symptomatic post-stroke epilepsy in old age have an interaction between the level of local BEA disorders and the severity of psychopathological manifestations, especially depression.

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# DISORDERS OF DECISION-MAKING IN THE CASE OF DEPRESSION: CLINICAL EVALUATION AND CORRELATION WITH EEG INDICATORS

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**Abstract.** *Recently, the problem of neurocognitive insufficiency in mental disorders has become increasingly relevant. Neurocognitive insufficiency is manifested in the form of impaired executive function (planning, control, braking, switching), energy components associated with memory, attention and endurance, as well as operational components of activity associated with cognitive and motor functions, which mainly leads to a violation of the social adaptation of patients, their performance of daily actions., professional and social functions. An important component of neurocognitive deficits is a violation of decision-making mechanisms.*

**Keywords:** *depression, electroencephalography, mental disorders, neurocognitive deficiency.*

**Introduction.** Neurocognitive insufficiency develops due to damage to individual areas of the cortex and subcortical structures of the brain, as well as structural functional changes resulting from impaired internal and interhemispheric cortical connections and corticopodcor interactions [1]. Neurocognitive insufficiency is observed in various mental disorders. If neurocognitive insufficiency in schizophrenia is seen as a "third group of symptoms" along with positive and negative disorders, disorders of neurocognitive mechanisms in depressive disorders are studied weaklier [2-4]. Recording the electrical activity of the brain has long been used to study the neurophysiological basis of depression. The first studies of Affective Disorders with the EEG method, conducted in the 40s of the 20th century, revealed an unexpectedly large number of abnormalities in patients. Generalized literary evidence suggests that even with "regular" visual analysis of EEG, pathological signs are detected in 20-40% of depressive patients [5-8]. The use of modern methods of mathematical analysis and processing of EEG data further increases the diagnostic significance of the method.

Thus, according to the American neuropsychiatric Association [9-12], the suitability of EEG quantitative analysis data is found in I depressions, that is, their sensitivity and specificity are 72-93% and 75-88%, respectively. In addition, the American Academy of Neurology recommended EEG mathematical analysis as an additional tool for classifying depressive patients from healthy patients, as well as patients with schizophrenia, alcoholism and dementia, for unipolar and bipolar disorders [13-17]. The EEG method has been used not only in the examination of the diagnosis, but also in the prediction and evaluation of the results of the treatment of depression [18-20].

Currently, EEG studies that offer neurophysiological models of depression are of the greatest scientific interest. The context for the formation of such models is the ideas of reflecting

the General Laws of emotional reaction in the EEG. The reflection of human emotional states in EEG wide literature on EEG changes in a variety of emotional contexts is usually devoted to and in brain pathology [21-27]. The EEG indicators of the main characteristics of a simple emotional reaction are described: valence, strength and motivational significance. Based on EEG data, the accuracy of classifying emotional reactions based on their Valency and strength reaches 80% [28]. Each emotional state is accompanied by a certain spatiotemporal pattern of changes in the electrical potential of the brain. Changes in cortical rhythm in emotional reactions consist of increased slow wave and gamma activity, and different sensory-specific changes in Alpha and beta power [29-33].

Thus, feelings of fear and sadness are accompanied by a Depression of the alpha rhythm, and joy and anger are accompanied by its growth. Intense hate and fear reactions have been found to induce desynchronization in the 10 to 18 Hz range, i.e. Alpha2 and Beta1 rhythms, which may reflect the role of non-specific activation in carrying out the emotional reaction [34-38]. Show Alpha depression1 rhythm in response to anxiety stimuli, increased alpha activity in response to facial display with anger expression has been recorded [39-41]. The overall increase in beta2 power and its decrease during the excitation of positive emotions, in the temporomarcctic parietal sections, is localized by negative induction. Changes in slow rhythm are associated by many authors with an assessment of the emotional and motivational significance of stimuli, while beta and gamma are associated with strength and to a lesser extent with Impact valence [42-46]. Gamma rhythm has been shown to increase when an object of phobia is presented and from rest to normal arousal and anxiety experience. In addition, the large gamma force in the right temporal part is associated with the positive valence of the stimulus, with the left temporal and parietal-negative [47-50].

Regardless of the sign of emotion, the presence of an emotional reaction is accompanied by an increase in the rhythm gamut in the right frontal hooks [51]. It is also worth noting that a decrease in gamma strength and to some extent beta activity in frontal regions are observed before stimuli that cause conscious experience [52]. But, in general, [53] as noted, the specific role of changes in each frequency range in the creation and regulation of an emotional reaction is not fully understood. The views on the relationship between the parameters of the emotional reaction and the localization of changes in the brain potential are more consistent. Frontal sections are associated with features such as the valence and motivational significance of the stimulus. The left-brain asymmetry of Alpha Force reflects the dominance of approach motivation, while the right brain reflects the dominance of escape motivation [54]. The posterior regions of the right hemisphere are considered as the main branch of the brain system responsible for the activation aspects of the effect.

The purpose of this study: was to analyze the relationship of disorders of neurocognitive decision-making mechanisms based on both logic and reasoning and emotional experience with clinical and neurophysiological indicators in patients with depression.

**Materials and methods.** A multidisciplinary clinical-psychological-neurophysiological study carried out in compliance with the standards of modern biomedical ethics included 28 patients of the Sopb clinic (all women, right-handed, aged 18 to 56, with an average age of  $36,3 \pm 13,1$  years). F31. Mild to moderate depressive states that meet the criteria of titles 3, F33.0 and F33.1 on ICD-10. The long-lasting nature of depression was noted in many patients-in previous courses of treatment, the clinical effect of antidepressant pharmacotherapy of these patients was



not enough. When hospitalized before the start of the therapy course, all patients received a quantitative assessment of the severity of depression on the Hamilton Scale for depression (HDRS-17). Quantitative evaluation of the cognitive functions of rational decision – making based on logic and reasoning was done using the computer version of the Wisconsin Card Sorting Test (Wisconsin CardSortingTest-WCST), which identified prefrontal cortex dysfunction. In the case of uncertainty based on emotional learning, a test was used to assess the decision-making function of the Iowa game problem (IowaGamblingTask-IGT). To assess the functional state of the brain, all patients were given a multichannel recording of the background electroencephalogram (EEG), in a waking state with closed eyes, followed by spectral analysis. The control group comprised 50 healthy women between the ages of 18 and 55 (with an average age of  $33,1 \pm 10,9$  years) who performed only wcst and IGT psychometric tests. Groups of patients and healthy subjects did not differ statistically socially and demographically. Statistical data analysis was carried out using a set of SPSS programs. To compare the results of conducting psychometric tests by groups of patients with depression and healthy subjects, the anova method was used, correlation analysis methods were used to determine the relationship between clinical, psychometric and neurophysiological indicators.

Results and their discussion. Patients with depression have been shown to have neurocognitive deficits in decision making compared to healthy subjects. At the same time, patients had decreased decision-making ability based on logic and reasoning (based on WCST test results) and emotional learning (based on IGT test results). The low performance of both psychometric tests is associated with the severity of depressive symptoms in the form of large values of the total sum of HDRs-17 Hamilton Scale scores and the sum of signal cluster scores (the sum of scores on points 9, 10 and 11 of the HDRS-17 scale). Patients with endogenous affective disorders have made mistakes when performing this part of the Reye technique, in most cases it is not about skipping whole numbers, but about breaking their details, introducing new parts that were not previously presented in the sample. This may indicate a weakening of executive functions, primarily planning and organization. There is reason to assume that structures of the right hemisphere are involved in this process, in particular, the general dysfunction of prefrontal formations, mainly the right hemisphere.

When conducting a block of specialized neuropsychological methods, it was noted that minimal difficulties were noted in determining the rhythmic sequences presented in both groups of subjects. At the same time, in a group of patients with organic Affective Disorders who have difficulty replicating the sequence of motor movements, errors of the perseverative type ( $0,05 < p < 0,1$ ) have been observed significantly more frequently (relative to the underlying group). These data show not only dysfunction of the premotor regions of the brain, but also elements of auditory Gnosis disorder, decreased selectivity and attention distribution in the selected group. The ability to detect subject images is fully conserved in 2/3 (68,8%) of the group of patients with endogenous depression, while in subjects with organic brain damage, such results were observed in more than half (45,5%) of those examined ( $p < 0,1$ ).

When identifying pictures of unfamiliar faces, patients with endogenous depression perform the task much better than patients with statistically confirmed organic Affective Disorders. Only 23,5 percent of such subjects performed error tasks, while 51,4 percent of patients with organic Affective Disorders made mistakes in identifying unfamiliar faces ( $p < 0,05$ ). When conducting subtests of a standardized neuropsychological block of non-verbal geometric shape

recognition methods, patients with organic Affective Disorders performed tasks much worse than patients with endogenous depression. Patients in the first group successfully performed the task in only 32,4% of cases, while patients with endogenous depression successfully performed the task in 70,6% of cases ( $p < 0,01$ ).

Thus, the data cited shows the predominance of short-term visual memory disorders that manifest primarily in nonverbal stimulus material in a group of patients with organic Affective Disorders. This allows us to talk about the selectivity of the right hemisphere (right hands), which is associated with the information described in the literature. The differences between the results in the groups examined in the initial neuropsychological study indicate that for patients with endogenous Affective Disorders, violations indicating the phenomena of executive functions, lack of functions for planning and organizing cognitive activity, discordation of interhemispheric interaction are common. Gnostic, Mnestic functions, spatial changes, dynamic Praxis disorders are more pronounced in patients with organic depression, but their severity does not reach the level of traditional neuropsychological syndromes.

Moderately pronounced disorders of auditory and visual Gnosis, short-term visual and auditory memory, nominative function of speech, dynamic praxis and simultan gnosis are identified in a weakly structured form, but this, by the totality of their manifestation, allows them to be classified as signs of insufficiency of the left temporal lobe, in particular, its convection-basal Sections. In addition, unlike healthy subjects, patients with depression alone had a reduced ability to make rational decisions based on logic and reasoning (based on wcst test results), which recorded a "compensatory shift" towards relatively high IGT test performance, i.e. better decision making based on emotional learning. Analysis of correlations between psychometric and neurophysiological indicators showed that higher wcst test rates were higher in most snails in patients with depression with spectral power values of Von EEG's Alpha-2 lower range (9-11 Hz), reflecting a more conserved functional state of the cerebral cortex. Conversely, difficulties in Task orientation in the WCST test are associated with large values of spectral strength of the EEG Delta sub-band (2-4 Hz) in the frontal-central-temporal hooks, which reflects a decrease in the functional state of the anterior regions of the cerebral cortex – "hypofrontal". High decision-making rates in IGT testing are associated with large values of teta-2 (6-8 Gts) and Alpha-1 (8-9 Gts) spectral power in most snails, reflecting a decrease in the functional state of the cortex and an increase in the activity of the hippocampal structures of the brain.

Analysis of the relationship of the quantitative values of EEG spectral capacity to the results of neurocognitive methods also confirms that there is interaction between different neurocognitive decision mechanisms in patients with depression, manifested in the form of "compensatory displacement". A decrease in the functional state of the anterior (frontal-central-temporal) regions of the cerebral cortex - "hypofrontal", which is reflected in the form of a predominance of low-frequency components of the EEG and causes a lack of executive functions based on logical thinking, can lead to disinhibition of hippocampal structures responsible for subcortical, including emotional behavior, an increase in their activation. EEG has been associated with the best indicators of emotional learning that are reflected in Teta rhythm amplification. Conclusions. In depression, there is a violation of neurocognitive decision-making mechanisms. Compared to healthy subjects, patients with depression decreased their ability to make decisions based on logic and reasoning and emotional learning. The greater the lack of neurocognitive decision mechanisms, the more strongly depressive symptoms manifest. Relatively high rates of

emotional learning have been reported in depression patients with decreased ability to make rational decisions based on logic and reasoning, i.e. there is a "compensatory shift" towards emotion-based decision making. In healthy subjects, the effect of "compensatory displacement" is not observed. The findings lead to disinhibition of "hypofrontal" subcortical, including hippocampal, brain structures that present difficulties in making decisions that require logical thinking, the activation of which may mediate higher rates of emotional learning. It should be noted again that a characteristic feature of disorders identified using sensitive neuropsychological tasks is the recognition (from memory) of stimuli with strict individual characteristics (unfamiliar faces, geometric shapes), which indicates great interest in the temporoparietal and parietal – occipital parts of the brain in the right hemisphere. The peculiarities of these diseases, especially in short-term memory mechanisms, impaired recognition as an intermediate operation, most likely indicate dysfunction of the structures of the Papezian circle (hippocampus, amygdala, cingulate gyrus, etc. at the same time, activation disorders are also clearly identified, indicating that limbic complex structures are inextricably linked with activating structures of interstitial brain and root formations. interaction with neocortical structures.

For patients with endogenous Affective Disorders, disorders that indicate a lack of executive functions, planning and organizing functions of cognitive activity are common. This indicates a possible dysfunction of the interrelated structures of the left and right temporal lobes with different sections of the prefrontal and orbitofrontal cortex.

**Conclusions.** Neuropsychologically, this is manifested in a violation of the decision-making process, given the emotional color of the situation, for example, due to an alarming and asthenic "attachment" to the depressive picture. Gnostic and other disorders characteristic of patients with organic depression are less pronounced in patients with endogenous affective disorders, with the exception of elements of auditory-speech memory and verbal thinking disorders (weakly expressed disorders), which is probably the result of the influence of Affective Disorders on the overall activation potential of the system of interconnected structures of the mesolimbic complex. The above data from the preliminary study requires structural and functional clarification, primarily using modern neuroimaging studies. It is envisaged in a multidimensional research design project, the results of which will be published when the relevant material is analyzed.

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# BIOPSYCHOSOCIAL MODEL OF INTERNET-DEPENDENT BEHAVIOR. RISK FACTORS FOR THE FORMATION OF THE INTERNET

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**Abstract.** *Studies in recent years show that adolescents are overly influenced by the internet, often abuse it and, in some cases, are clearly dependent on the virtual environment. At the same time, the risk factors for the emergence of internet-dependent behavior are not well understood.*

**Keywords:** *youth, internet-dependent, biopsychosocial model, risk factors.*

**Introduction.** The situation of the problem of internet addiction is the opposite today. Often the question arises, is it possible to talk about such a phenomenon in clinical categories? Is internet addiction an independent phenomenon or is it a form of implementation of already known forms of addiction, such as gambling [1-3]. The term "internet addiction" itself was introduced by New York psychiatrist Ivan Goldberg (1996) to describe a pathological, unbearable urge to use the internet. By internet addiction, he understood the violation of behavior that, as a result of the use of the Internet and computer, has a detrimental effect on the daily, educational, social, work, family, financial or psychological spheres of human activity.

Local researchers of internet addiction [4-7] propose to consider internet addiction in three options: 1) pathological craving for the internet, as a form of related behavior in understanding it as a disorder of deviant behavior (relevant for adolescents); 2) internet addiction syndrome, behind which many other personal and/or mental disorders with a certain nosological dependence are hidden; 3) internet addiction as an independent nosological unit due to the characteristic features (processuality) that have a certain dynamics (processuality) of psychopathological diseases and the mutual pathogenic influence of the internet environment. Many researchers say that internet addiction often manifests itself at a young age — among adolescents and young people, which makes it difficult for them to socialize, hindering their ability to make a career, build a family [8-12].

Computer games are played by every second guy and every fifth girl between the ages of 14-25. On average, 39% of young people in the 14-25 age group play computer games. Note that the larger the respondents, the less they play. The highest level of interest in games falls on adolescents aged 14-17 years-at this age 55% play. From the age of 18, young people play 30% less. Young people aged 14-25 prefer to play online than offline — 41% and 17%, respectively [13-17].

According to the study • 90% of girls and 85% of guys have their own smartphones; 63% of girls and 48% of guys use a smartphone for more than 3 hours a day • 54% of girls and 40% of

guys have their own tablets; 92% of girls and 86% of guys use mobile internet • messengers on smartphones are 72% girls and 60% guys; 32% girls and 42% guys play computer games every day. Generally accepted criteria for addictive behaviors that are very relevant for internet addiction qualifications [14-18]: abuse of a particular type of activity; impossibility of subjective control of activities; the presence of improper adaptation due to the abuse of activities that affect reading, performance, interpersonal relationships; increase tolerance to the amount of time spent on activities; State of cancellation: psychological discomfort (irritability, decreased mood, depression, increased aggressiveness, etc.); objective overeating with activities, squeezing other aspects of social life. However, internet addiction is qualitatively different from other forms of non-chemical addiction by accessing the infinite possibilities of the virtual world. A number of features of the internet as a potential addictive agent stand out [19-24]: the possibility of many anonymous social interactions; virtual realization of fantasies and desires with the establishment of feedback; finding the necessary "interlocutors" who meet the desired requirements; the possibility of establishing a connection at any time and stopping it; unlimited access to Information, Various entertainment, games. The Virtual world is dynamic, in which you can realize your hidden desires, possess a situation, overcome difficulties, feel like a hero, experience all emotions [25-28].

In this case, bilateral contacts and interactions appear, which form the illusion of communication with the real world. At the same time, the real world is perceived as uninteresting, boring and often hostile. Emotions, interests, cognitive sphere, energy and value system are focused on the virtual world. An internal psychological space is formed, which expands its influence on the assessment of external phenomena [29-31]. Relations with reality will subside. With no other addiction, it is not achieved to combine mental functions such as internet addiction. Insufficient belief in its inviolability, extreme immunity, reassessment of intellectual, volitional, physical and other capabilities makes a dependent person incapable of contact with reality [32-34].

Recently, the risk of the emergence of internet-dependent behavior has been considered within the multi-factor biopsychosocial model of dynamic interaction of biological, psychological and social factors [35]. Many researchers consider the family to be one of the main sources of drug development. Most of the research focuses on chemical dependence: a number of researchers consider surfactant dependence to be a "family symptom" [36-38]. There are separate works devoted to the influence of family factors on the formation of internet addiction [39]. It has also been found that low-level family activity is positively correlated with internet addiction in adolescence [40]. It has been found that in families with multiple conflicts, the level of parental involvement has decreased, which leads to insufficient parental control. This, in turn, is a harbinger of the emergence of internet addiction in a teenager [41].

The purpose of the study: is to study the biological, social and personal-characteristic factors that affect the formation of internet addiction.

**Materials and methods.** Chen internet addiction test (CIAS) malygin V. L, Feklisova K., Kettell hspq survey; MPDO pathocharacterological survey, " body image I " technique (M. Feldenkreis,) ASV poll 2 (Justickis V., Eidemiller V. G.), projective method "mother and child" (Melnikova M. L.); projective methodology "family sociogram" (Eidemiller E. G.); Guildford's methodology for the study of social intelligence; msceit methodology for the diagnosis of emotional intelligence. All children who participated in the study were educated in a

comprehensive school, without a psychiatric or chronic somatic diagnosis. Some children's histories have consulted a neurologist for various reasons. All adolescents are from socially prosperous families with an average or above-average income level. Parents of all children under investigation had higher or secondary special education. All families live in Moscow or the Moscow region. The study was conducted by the method of questioning one of the children and parents. The following methods were used to perform research tasks: 1. Kimberly Young's internet addiction screening test has been modified for parents' child-related surveys and adolescent self-diagnosis.

**Research results.** 180 teenagers were examined. Of these, 50 (27,7 %) were found to have abused the internet. 9 (5%) adolescents found signs of formed internet addiction. Neuropsychological studies of 30 adolescents with internet addiction have shown that, compared to conditionally healthy adolescents, more often ( $p < 0,05$ ), there is a smooth interhemispheric interaction, functional weakness of interhemispheric commissures and the Left front of the brain, which is manifested by spatial Praxis, auditory-motor coordination, control disorders. and the regulation of activities. The functional deficiency of interhemispheric interactions increases the load on the first and third blocks of the brain and, accordingly, causes fatigue. Thus, adolescents prone to internet addiction, characterized by increased fatigue, can use the internet as a way to stay active and concentrate, since the constant appearance of new stimuli increases the level of concentration. In turn, strenuous activity on the internet helps to get more tired and tired, thereby forming a kind of vicious circle of the dependent state. On the other hand, insufficient inclusion in the functional system of the front parts of the left hemisphere reduces planning, regulation of their activity and time spent on the network. Less advanced functions C. N. S. development in adolescence can and should continue, but the lack of an active lifestyle, limiting actual communication as a result of Internet dependence, complicates development processes. Studies of body image in adolescents with internet addiction have shown that they have a more formal symbolism of emotional tissue in their body than adolescents in the control group.

The body image of adolescents "I" is characterized by weak differentiation and reflects their tendency to separate mentality from emotion, the presence of problems in the field of communication, a lack of self-confidence. Insufficient development of the body sphere can hinder the development of the emotional and emotional sphere, in particular, emotional intelligence. Studies among 111 families of adolescents with internet addiction have shown that in families of adolescents with internet addiction, a type of education with hyperprotection or hypoprotection characteristics is recorded significantly more often. In these families, in general, with a low level of prohibitions, the number of sanctions significantly exceeds the number of sanctions in families in the norm group, which indicates inconsistency and ambivalence in the upbringing of a teenager's parents. Adolescents who are addicted to the internet demonstrate the characteristics of infancy in their relationship with their mother, overestimating their closeness to her. The identified characteristics of family relationships can contribute to the adolescent's escape to the virtual environment.

A study of the characteristic features of 80 adolescents with internet addiction revealed their following distinctive features. Adolescents with internet-dependent behavior are characterized by a decrease in regulation and the voluntary sphere, which are characterized by impulsiveness, excessive activity on weak excitatory stimuli. They are characterized by anxiety, distraction, insufficient concentration, difficulty in self-control of both behavior and emotions.



They are often prone to affective response and have excitability and general personal frustration. It is difficult for them to organize their activities, time, the procedure for performing work. Analysis of the prevalence of stress types has shown that among adolescents with internet addiction, the types of excitability (12,76% and 0,94%, respectively), introvert (8,5% and respectively), asthenoneurotic (6,38% and respectively) and unstable (4,25% and 0,94%, respectively) compared to the control group. Thus, adolescents with an exciting and introverted character are perhaps the most vulnerable to the virtual environment. A study of the emotional intelligence of 94 adolescents with internet-dependent behaviors found a significant decrease in it compared to the control group (49,25 and 51,42,  $p < 0,05$ , respectively). Reliable differences are determined by section a (perception of the emotions of others) and Section e (ability to capture the general mood around), which are included in the "ability to detect emotions" component. The study of social intelligence (Guilford test) found that internet-dependent adolescents reliably recognize less of the different meanings of other people's verbal messages, making it difficult to properly understand what people say to each other (speech expression) in the context of a particular situation, specific relationships.

Adolescents with internet-dependent behavior significantly poorly identify the emotional state of other people and the surrounding space, reduce sensitivity to the nature and shades of human relationships, which makes it difficult for them to interact with other people and, accordingly, adapt in society. It should be noted that the internet space itself has its own unique characteristics: avoidance of flow and experience, anonymity, security, has a stimulating effect, promotes the appearance of disinhibition (D. M. Greenfield, 1999) and altered state of consciousness. Conclusions. Thus, the emergence of internet addiction in adolescents is due to biological factors (C. N. S. of congenital functional insufficiency) and are associated with the peculiarities of family upbringing (the style of double upbringing, insufficient emotional closeness), which in turn contributes to the formation of personal characteristics in the form of excitability, emotional instability, personal frustration.. as well as the underdevelopment of emotional and social intelligence.

These personality traits prevent adolescents from social adaptation in time, exacerbate interpersonal conflicts and help them escape into the internet space, which in turn has a certain specific effect. The principles of treatment of internet-dependent behavior should be based on the bio-psycho-social mechanisms of the formation of this type of addiction: neuropsychological and pharmacological correction of functional insufficiency C. N. S.; correction of maladaptive personality traits (teaching emotion regulation skills, developing emotional sphere and communication skills; developing the function of programming one's own activities); deviant parenting styles in the family and psychological correction of interpersonal relationships.

As can be seen from, the strongest communication is observed in the area of emotional acceptance-in the area of rejection of the child by the parent and autonomy and control of the child's behavior. Hypoprotection reflects an insufficient level of child support in the family. It is about how much effort, attention and time parents spend on raising a child. In this case, there is a situation in which the adolescent is in the center of attention of the parent, whose "hands do not reach him." The child often "disappears from sight". It is only "taken" from time to time when something serious happens. Entertainment reflects an excessive level of satisfaction of the needs of the child.

In this case, parents strive to maximally and critically satisfy any needs of a teenager. Any desire of a teenager is the law for them. In entertainment, parents subconsciously design their previously unmet needs for children and seek ways to replace them through educational actions. Ignoring the needs of the child-this type of upbringing disorder is characterized by insufficient desire of the parents to satisfy the needs of the child. In this case, mental needs, especially emotional contact, contact with the parent, the need for acceptance and love, are more affected. It is often combined with hypoprotection. Requirements-lack of obligations-a form of violation of the system of requirements for a teenager. Requirements-obligations-this is a list of daily obligations of the child to himself and other family members.

Thus, in the families under study, the following picture appeared, which describes the relationship between parents, adolescents and the Internet: with very high values of the factors of hostile, inconsistent, autonomous (fenced or distanced) behavior of parents, and with a very low value of the proximity factor, we observe a high level of internet dependence of adolescents. With above-average values of hostility and inconsistency factors, an autonomy factor and close proximity to the average, we see adolescents' over-interest in the Internet (risk of internet addiction). In families with low factors of hostility and inconsistency and regulatory importance in terms of factors of intimacy and autonomy, we observe the typical attitude of adolescents towards the internet. The factors of "directivity" and "criticism" in parents' behavior were expressed in an interesting way (these factors are related to education, control, prohibitions and rewards). The highest rates of these factors are in the group of teenagers who are overly passionate about the internet (but not addicted to the internet). In a group of adolescents with internet addiction, the extremely low value of these factors is most likely due to parental distancing and neglect (hypooppek). In a typical Internet user group, these factors tend to be close to the averages associated with giving adolescents independence while retaining some elements of parental control.

Correlational analysis has shown that anxiety (primarily in the field of social relations) and neurotic tendencies (primarily the emotional spectrum) are related to the susceptibility to internet-dependent behavior, as mediated communication in virtual reality likely allows for decreased depression, stress expressed in anxiety, phobic and aggressive conditions. The conclusion is a stable formation of the considered aspects of the parent-child relationship, that is, the style of family upbringing, the features of the interaction of parents and the emotional climate in the house, and the child is formed from the moment of its appearance in the family, if they are not consciously corrected, accompany the relationship of children and parents throughout. The adolescent proves to be vulnerable to various forms of addiction as the exercise of behavior of abstinence. He can choose one of the socially acceptable diction, such as internet addiction. In correctional work with a person addicted to the Internet, special attention should be paid to the formation of sources of emotional warmth and acceptance, a sense of security, increased self-esteem and self-esteem, as well as the stimulation of a gradual harmonious separation from parents. Of particular importance is the work of psychocorrection, aimed at correcting (if possible) the style of family upbringing with parents, as well as solving interpersonal and interpersonal problems of adult family members. Conclusions. The study also showed the need for correction in the following direction: a) to reduce the level of anxiety and increase the effectiveness of behavior; B) to attract specialists from the relevant specialties (neurologists, neuropathologists) to correct the psycho-physiological state of a dependent person. This study identified the need for an integrated approach to solving the

problem of internet addiction. The following psychocorrectional support can be offered to a teenage family that has sought psychological support for an internet-related behavioral problem. The complex approach proposed to work with adolescents with internet addiction is based on research carried out taking into account biological, psychological and Social Risk Factors and the modern biopsychosocial health model.

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## THE RELEVANCE OF PSYCHOTIC DISORDERS IN THE ACUTE PERIOD OF A STROKE

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**Abstract.** *Despite the many works devoted to mental disorders after a stroke, psychotic disorders are not given enough attention. The relevance of the study of psychotic disorders in the acute period of a stroke is determined in some cases by the fact that psychoses come to the fore and determine the severity of the disease. Delirium is the most common mental illness after a stroke.*

**Keywords:** *mental disorders, psychosis, acute period stroke, then stroke.*

**Introduction.** The relevance of the study of cerebral stroke is associated with its prevalence, high rates of death and disability. Acute cerebrovascular disease (UMC) ranked second among the causes of adult mortality before cancer [1-3]. According to the incidence of cerebrovascular diseases was 469 cases per 100,000 inhabitants, of which 34,7 had ischemic stroke, while deaths from diseases of the circulatory system accounted for 51,6% of the total number of deaths [4-7]. And in the composition of the causes of primary disability of adults, diseases of the circulatory system occupy the first place (19,1%). According to various authors, the frequency of delirium ranges from 2,3 to 66% [8-10].

Delirium can be a complication of a stroke or the first symptom of a developing disease. Risk factors for the development of delirium during acute stroke are aging, vision disorders, joint infections, taking anticholinergic drugs, and drastically stopping alcohol consumption [11-13]. The development of delirium in the acute period of a stroke worsens the prognosis, increases the risk of death, develops dementia and prolongs hospital stay. In addition to movement disorders, neuropsychological disorders play an important role in crippling patients with acute cerebrovascular accident [14-16].

Neuropsychological diseases occur in 12-57% of patients with stroke and are manifested by a decrease in memory, attention, mental performance and intelligence. According to literary data, cognitive disorders dominate lesion localization in the dominant cerebral hemisphere [17-19]. This is because the length of the left hemisphere exceeds the length of the right hemisphere in more than 54% of cases, the total area of the lower frontal gyrus in the right hands is larger than the left, in the left hemisphere areas 44 and 45 (Brock's speech region) the size of the neurons of layers III and IV is larger than the right [20-21]. More involvement of the left hemisphere in an important social function — is associated with speech and speech activity of other higher brain functions, which, in particular, include categorical perception, speech memory, the implementation of logical conclusions, delayed repetition of information, arbitrary regulation of higher brain activity. At the same time, the right hemisphere is known to be relatively dominant in non-verbal Gnostic processes, direct memorization, and automated mental functions [22-26].

Should be remembered about the systematic principle of the psychological structure of higher brain functions in accordance with the Vygotsky concept. Thus, a lesion that appears in one of the hemispheres leads not only to a violation of the functions of this hemisphere, but also to a violation of interhemispheric interaction, and also affects the preserved hemisphere, which leads to an imbalance in the interaction of specific and non-specific anatomical and functional structures of the brain, including interhemispheric diachysis and abduction syndromes [27-29]. The high frequency of post-stroke cognitive disorders leads to the need to diagnose them as early as possible and initiate recovery measures [30].

Research in recent years has shown that post-stroke cognitive disorders lead to poor recovery of motor functions, decreased life expectancy, domestic, social and professional malfunctions [31-34]. Despite the importance of detecting and correcting kr, most were either unrecognized or diagnosed only when they reached severe levels [35-37].

The purpose of the study: is to study impaired consciousness in the acute period of a stroke to create a treatment tactic and a subsequent rehabilitation program.

**Materials and methods.** Seventy-three patients with dementia were examined during the acute period of the stroke. Males were 49 and females 24. The median age was 65 years. Neurological and mental state, anamnestic data were analyzed. The study group does not include patients with dominant right hemispheres, as well as patients with pronounced motor, visual, speech disorders, impaired consciousness up to the level of sopor or coma, interfering with neuropsychological examination, as well as patients with Stage III, IV of chronic disease. Heart failure (according to NYHA). Diagnosis of ischemic stroke is the study of complaints, medical history, Life, General somatic condition, severity of neurological condition on the National Institutes of Health Stroke Scale (National Institutes of Health Stroke Scale), laboratory indications, instrumental examination data (magnetic resonance imaging of the brain, computed tomography of the brain, electrocardiography, ultrasonic duplex scanning brachiocephalic trunks, fundus, if necessary-Echo cardiography, chest X - ray).

Most of those tested were hospitalized for up to 6 hours from the moment of the onset of the stroke - 37%, up to 12 hours - 19%, up to 24 hours - 16%, and more than 48 hours - 28%. The neuropsychological condition was studied for 5-9 days from the moment the stroke developed. A short mental state assessment scale (KSHOPS) (KSHOPS, Mini-Mental State Examination, or MMSE) was used for this. KSHOPS allows you to study the following mental functions: orientation of the patient in time and place, perception, memory, attention and arithmetic calculation, oral and written speech, constructive Praxis. The survey on this test lasts 10-15 minutes, the highest score on the scale is 30 points. In addition to KSHOPS, a watch drawing test is used for screening cognitive functions, according to which the highest score reaches 10 points. Statistical processing of the results was carried out on the IBM Pentium 4 computer using SPSS 16.0 FULL and Microsoft Excel-2018 computer programs for statistical computing. The Pearson or Spirman criterion was used to analyze the correlation of quantitative characters. To assess the strength of relations between Nominal variables, the criteria  $\phi$  and V Cramer are considered, with normality testing using the Kolmogorov Smirnov criteria. In all statistical criteria, a value of 0,05 was adopted for the value of the degree of significance.

**Results and their discussion.** One or another clinical form of consciousness disorder has been observed in 56 patients with ischemic stroke, 14 patients with hemorrhagic stroke, and 3 patients with subarachnoid hemorrhage. In 40 patients (57,1%), the right hemisphere localization

of the lesion was found, in 25 patients (35,7%) the left hemisphere, in 5 patients (7,2%) the root. Disorders of consciousness were manifested by delirium, oneiroid and amentiv syndromes. In most cases, patients have developed a state of delirium (in 63 cases). The Oneiroid state is in 6 states and in 4 states – the amentiv state. In most cases, impaired consciousness developed 1-3 days after the onset of a stroke. The duration of the disorder of consciousness is often limited to a few days. In a number of patients, impaired consciousness syndromes lasted up to several hours, but were prone to recurrence. Changes in symptoms over time were noted with an increase in symptoms in the evening-night hours. Oneiroid syndrome is primarily diagnosed in patients with hemorrhagic stroke. The development of Amentiv syndrome was prognostically unfavorable.

The history of patients with psychotic disorders has identified risk factors such as severe somatic disorders, intoxication, and brain damage. In some cases, psychotic symptoms occurred against the background of mental trauma, the addition of an acute respiratory viral infection. The length of stay of patients with psychotic disorders exceeded the time of hospitalization of patients without psychosis. When patients were discharged from the hospital, an improvement in overall clinical performance, stabilization of the neurological condition, was not accompanied by a complete decrease in psychotic disorders. Asthenic symptoms, disorientation, delusional symptoms, which worsen during the evening-night hours, remained. According to the clinical-neuroimaging study, the patients under study were divided into three groups according to the localization of the lesion: the first group was dominated, patients with stroke in the left hemisphere; the second, subdominant, right hemisphere; the third, in the cerebellum and trunk.

The average score on the short mental state assessment scale in the first group was  $22,8 \pm 0,8$ . At the same time, the study rates conducted were in 9 patients (20,5%) as part of normal rates, in 12 patients (27,3%), and in 23 patients (52,3%) there were dement cognitive disorders. In the second group, the average for KSHOPS was  $25,3 \pm 0,6$  points, which corresponds to the average cognitive impairment. In this group, cognitive functions were normal in 10 (26,3%) patients, and unspecified diseases were found in 20 (52,6%) and different levels of dementia - 8 (21,1%) of those examined. The average score to perform the short mental state assessment scale in the third group was  $24,8 \pm 0,8$ . Navy scale 4 (19%), 11 (52,4%) at non-demental cognitive disorders and at 6 (28,6%) different levels of dement disorders were within normal values. This results analysis revealed a statistically significant difference between the localization of the ischemia foci and the degree of cognitive impairment ( $p < 0,05$ ).

Thus, with stroke in the dominant hemisphere, dement cognitive disorders prevailed reliably, with stroke in the subdominant hemisphere and in the cerebellum and trunk - moderate VPF diseases. The study shows that the majority of patients with acute ischemic stroke show a decrease in cognitive function - in 77.6% of cases, mainly in the form of non-demental diseases (in 41,7% of cases). A moderate correlation was found between the age of patients and the rate of neuropsychological disorders, as half of young people had no impaired brain functions and 89,2 percent of those over 60 were impaired, which was also confirmed by the results of the clock drawing test. The results obtained are explained by the fact that in old age there are a number of joint diseases that reduce cerebral circulation and mechanisms of adaptation to hypoxic conditions in onmc. Our study showed that the localization of the lesion is characterized by the development of certain features of disorders of high brain function. Thus, in the dominant hemisphere, a stroke was accompanied by dement diseases in 52.3% of cases, in most patients specific disorders of the following parameters were found:

time, space, perception, delayed auditory memory, speech functions and focus areas. In the first group, the predominance of cognitive disorders in the kshops and clock drawing test is explained by the great participation of the left hemisphere in the performance of upper brain functions. Constructive Praxis disorder with focus localization in the right hemisphere has prevailed statistically significantly (in 65.8% of cases). Differences depending on the hemisphere affected. However, high frequency of constructive apraxia occurred not only in patients with subdominant localization of focus, but also in 54,5% of patients with ischemic focus in the dominant hemisphere. In this case, it is possible to functionally suppress the activity of the parietal-occipital parts of the same region, that is, the opposite hemisphere. Thus, onmc found an increase in somatosensory induction potential indicators on the opposite side of focus during the acute and subacute periods. At the same time, the results and assumptions obtained about diachysis, which occurs in patients with ischemic stroke, require a detailed examination using modern neuroimaging methods.

In the group of patients with cerebellar blood vessels or brainstem, we did not find significant differences in cognitive disorders compared to those of the blood vessels of the subdominant Hemisphere, where both groups were dominated by non - demential cognitive disorders-in 52,4 and 52,6% of cases, respectively. However, memory, attention, speech, reading disorders of auditory speech are most often observed. The results obtained are explained by the phenomena of diachysis, in addition, it is known that the cognitive functions of the cerebellum are associated with speech processes through Mnestic functions, attention, fatigue, constructive ability, as well as frontal-bridge-cerebellar, occipital-temporomascotor-cerebellar, cerebello-thalamocortical pathways. It should be noted that detailed neuropsychological studies often make it possible to identify damage to parts of the brain that are not described by instrumental research methods.

**Conclusions.** With the development of psychotic disorders in patients during the acute period of stroke, delirium diseases predominated. Oneiroid consciousness disorders have been observed primarily in patients with hemorrhagic stroke. Psychotic disorders in most cases were also maintained against the background of stabilization of the neurological condition and normalization of general clinical indicators in patients. Patients need additional follow-up and treatment by a psychiatrist at the place of residence, which requires continuity to be ensured.

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# THE QUESTION OF THE FEATURES OF CLINICAL AND IMMUNOLOGICAL PARAMETERS IN THE DIAGNOSIS OF JUVENILE DEPRESSION WITH "SUBPSYCHOTIC" SYMPTOMS

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**Abstract.** *In modern psychiatry, an interdisciplinary approach to the study of mental disorders is most in demand. More research has focused on finding the biological basis of mental illness. The issues of their pathogenesis and pathodynamics have not been resolved, especially in the context of biochemical anomalies caused by the disease.*

**Keywords:** *mental illness, subpsychotic symptoms, depression, diagnosis, feature.*

Introduction. The current appeal to the problem of chronic depressions of minors is determined by their high prevalence, vague approaches to diagnosis and nosological assessment, as well as difficulty in choosing appropriate therapy strategies. In modern studies dedicated to long-term depression, there is practically no information about the characteristics of these conditions in adolescence [1]. However, according to epidemiological data, the rate of chronic depression in adolescence ranges from about 1.5% to 3% in the total population, with chronic depression accounting for about 20% among all depressions of this age. The high risk of chronification of depressive states in adolescence is associated with certain neurobiological and hormonal changes, which increases the particular weakness of the brain at a certain age, in particular, its sensitivity to stress hormones [2-4]. At the same time, these features, as well as disturbances in interpersonal interaction, social, educational, labor malfunctions, provoke atypia and polymorphism of the clinical picture of young chronic depressions, the breakdown and variability of psychopathological symptoms, a high frequency of comorbid mental disorders, wear of the thymic component [5]. Due to such an effect of the characteristics of adolescence on the psychopathological structure of chronic depressions, it is impossible to extrapolate the data obtained from the study of chronic depressions of a mature age for a certain age period [6, 7].

At the same time, morphofunctional changes in the main body systems observed in adulthood and restructuring of regulatory mechanisms play an important role in the formation of depressive disorders, lead to polymorphism of their pronounced atypical and clinical picture, increase the risk of developing side effects caused by psychopharmacotherapy, high frequency of comorbid pathology, which aggravates the course of the disease, worsens the prognosis, timely and correct diagnosis, often leads to the wrong choice of therapeutic strategy [8-12]. The latter is an additional factor in the chronification of the depressive state, and also helps to incorrectly identify depression as resistant if there is no therapeutic response [13].

It should be noted that there are many works dedicated to depression in youth, in which a very high frequency of chronification of these conditions (up to 20%) is highlighted, but there are no special studies on long-term depressive states of this age. It should be noted that the fact of

chronification significantly changes the structure of depression, gradually directing the direction of disorders to negative affectivity. Symptomatology is characterized by homogeneity, monotony, poverty of psychopathological symptoms, their gradual stereotyping and poverty [14-17].

The analysis of the effects of the painful stage, taking into account the peculiarities of the clinical picture of young chronic depressions and the patterns of development, predictive assessment criteria, as well as the influence of constitutional and personal characteristics on the formation of young chronic depression, remains unexplored. It is also required to clarify issues of nosological assessment of developing adolescent chronic depressions within endogenous mental disorders of the spectrum of Affective and schizophrenia [18-21].

Neurocognitive disorders and the properties of the neuroimmune state under similar conditions have not been studied. Algorithms for the treatment of chronic endogenous depressions of adolescents have also not been developed, taking into account modern psychopharmacological drugs and sociorehabilitation methods [22-24]. Thus, the high frequency of juvenile chronic endogenous depressions, the complexity of diagnostic and nosological differentiation, the absence of detailed study of the clinical and psychopathological structure, the identification of predictive assessment criteria, unresolved issues of the choice of therapy determine the importance and necessity of the study [25-30]. In assessing the general condition of patients with endogenous mental disorders, it was found that the parameters of immunological reactivity determined in their blood are important. Previously, our studies showed that the acute stage of the disease is accompanied by the activation of inflammatory reactions (an increase in the enzymatic activity of Leukocyte elastase (Le) and an increase in the functional activity of an A1-proteinase inhibitor (A1-PI)) and the most severe and highly progressive forms of mental disorders are accompanied by the activation of autoimmune reactions (increased levels of autoantibodies to neuroantigens - to S100B and the main myelin protein (OBM)) [31-33]. All of the above is of particular importance in terms of the most relevant direction to date in search of the first signs of schizophrenia. Among the criteria for "psychotic risk", the main thing is the presence of "subpsychotic" symptoms, which are understood to be weakened psychotic experiences that are not part of the criteria for psychosis. Most often, "subpsychotic" symptoms occur in men in adolescence as part of depression [34-37]. The purpose of the study: to identify the possible differences between clinical and immunological parameters in the diagnosis of adolescent depressions with "subpsychotic" symptoms in order to determine the next course.

Research materials and methods. At the time of admission to the clinic in 2020-2022, patients with depressive disorders aged 68 years (16-25 years) were examined, who were diagnosed with "subpsychotic" symptoms that did not correspond to the actual psychotic level. As for the nosological differentiation of these cases, following the criteria of the formalized ICD-10, preliminary diagnoses were identified, according to which patients were divided into 3 groups: 1 Group (33 people – 48,5%) – mood disorders (F31. 3, F31. 4, F32 (f32. Except 2), F33 (except F33.3), F34.); Group 2 (17 patients-25%) psychopathic decompensation (F60), group 3 (18 patients-26,5%) schizotypal disorder (F21). Patients with concomitant mental (previously psychotic attacks, severe negative symptoms, organic mental illness, addiction to drugs), somatic or neurological pathology have been removed from the examination, making the examination difficult. Psychometric (HDRS scale for assessing depressive disorders and SOPS for qualitative and quantitative determination of "subpsychotic" symptoms), as well as clinical-psychopathological and statistical methods, have been used. Serum patients were identified: spectrophotometric method-enzymatic activity of Le and functional activity of A1-PI; enzyme - linked immunosorbent analysis - to neurospecific antigens-S100B and levels of autoantibodies (AAT) to the main myelin protein.

Results and discussions. When a careful psychopathological examination was carried out, the "subpsychotic" symptoms contained in adolescent depressions were divided into the following types: Type I (19 patients – 28% of cases) on the mechanism of development of acute sensory delirium; type II (20 patients – 29,4% of cases) on the mechanism of acute catatonic disorganization (19 patients -14 patients-20,5% of cases); Type IV (15 22,1% of cases) on the mechanism of pathognomonic thought disorders. Briefly describing the characteristics of the "subpsychotic" symptomatology of selected species, we can say that type i psychotic experiences are represented by sudden, abortive and unstable psychopathological phenomena, similar to the process of "crystallization of delirium", accompanied by the effect of confusion.

Often elementary deceptions of perception appeared-ocliki, tactile sensations, pareidolic illusions, hypnagogic and hypnopompic hallucinations. Type II subpsychotic experiences are represented primarily by inconsistent ideas associated with sketchy ideas of exposure, the evil eye, and damage, which are accompanied by the formation of avoidant behaviors. Type III symptoms often reached temporary psychotic levels, but did not fall into the diagnostic criteria for "acute polymorphic psychotic disorder" due to the short term (minutes, hours). Such phenomena appeared more often after exogenous provocation and were ridiculous. Cognitive disorders similar to type IV schizophrenia were manifested in the form of breaks, currents, confusion of thoughts, short-term difficulties in expression, difficulty in perception. Thoughts could not be controlled, a stream of abstract meaningless figurative images was recorded.

In conducting a psychometric assessment of the severity of "subpsychotic" symptoms on the SOPS scale, the following results were obtained: in Type III patients, statistically significant differences were obtained in the subschall of positive symptoms compared to type IV patients and in the subschall of general symptoms compared to type II patients. Also, Type III patients scored the most points in the disorganization subchannel compared to type i ( $p=0,06$ ), type II ( $p=0,017$ ), and Type IV ( $p=0,03$ ) patients.

An assessment of the severity of depressive disorders found more accurate depressive symptomatology on the hdsr scale compared to type III ( $p=0,08$ ) and Type IV ( $p=0,07$ ) patients in type i patients. Also, type i patients had higher overall symptom severity on the SOPS scale than Type II patients ( $p=0,04$ ). Differences in the dynamics of development of depressive and "subpsychotic" diseases have also been identified.

Thus, in type i patients, "subpsychotic" symptoms developed at the height of depressive disorders and are usually characterized by a very short duration. With Type II, the parallel development of these diseases with depressive experiences and the reverse dynamics of subpsychotic and depressive disorders were noted. Type III patients were characterized by the development of depressive disorders following subpsychotic experiments. Type IV subpsychotic disorders have been identified prior to depressive symptoms and persist after its reduction.

In immunological examination, an increase in Le and A1-PI activity compared to the control group was found in all four types of patients ( $p<0,001$ ). An intertipological comparison found that type i patients had significantly higher Le activity than Type II ( $p=0,03$ ) and Type III ( $p=0,001$ ) patients. In type i patients, AAT levels were statistically significant compared to S100B in Type II and Type IV patients ( $p=0,018$  and  $p=0,04$ ).

In the study of clinical and biological relationships, the following correlations were found: severity of negative disorders in type i patients-Le activity and SOPS scale ( $p<0,05$ ); in Type II patients-severity of depressive symptoms on primary myelin protein AAT scale and hdsr scale ( $p<0,05$ ); in Type III patients AAT level S100B and severity of positive symptoms on SOPS scale ( $R=0,71$ ,  $p<0,05$ ).

Conclusions. The findings suggest different mechanisms for the development of "subpsychotic" symptoms in patients with adolescent depression, which may mediate different nosological affiliations of the described conditions. Early detection of "subpsychotic" symptoms helps to prescribe an adequate therapeutic response that can affect the course and outcome of the disease later.

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## FACTORS OF ALCOHOLIC DELIRIUM PATOMORPHOSIS

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**Abstract.** *Clinical practice shows that acute psychoses, regardless of nosological affiliation, are often similar in clinical presentation. The polymorphism of mental disorders, their significant variability in a short period of time, makes qualification and correct nosological interpretation difficult.*

**Keywords:** *alcoholic delirium, patomorphosis, mental disorders, alcoholic hallucinosis.*

**Introduction.** Among the psychopathological phenomena found in acute psychoses, it is possible to notice symptoms of false recognition, combined with the concept of "Capgra syndrome" by French psychiatrists. K. Fritt E. As Johnston points out, the sign of false recognition is played around the performance in patients, strangers appear to be seen before, acquaintances, relatives are strangers, and are manifested by the claim that they correspond to close relatives. Patients note that the kakoylibo person is replaced by the same or almost the same person [1-4]. Capgra syndrome is observed in many mental disorders. A number of publications have reported cases of Capgra syndrome in schizophrenia. A number of researchers have tried to determine the dynamics of the symptom within the framework of a psychotic attack. An analysis of literary data shows that in a complete attack of schizophrenia, various false acquaintances are an expression of the same disorder, mutating at the same time as other symptoms, psychosis develops, and at the same time each stage of the painful state has its own false recognition. Thus, at the stage of dramatization delirium, false acquaintances are part of the main syndrome, one of its manifestations, in which the delusional component becomes more pronounced [5-8].

Most often, the patients themselves say that they are surrounded by fake people, and their twins, fake faces, specially selected, painted, resurrected from the dead, etc.in the period prior to the oneiroid consciousness blurring, false confessions become kaleidoscopically erratic, fantasy-fiction [9-11]. With a long course of schizophrenia, as soon as the clinical picture is stopped at the stage of paraphrenic delirium, false acquaintances become much more stable and relate to narrow faces, the entire structure of the delirium is closely related to oral hallucinosis and is accompanied by a whole system of evidence. Thus, in schizophrenia, the nature of false recognition is determined by the underlying disorder, in some cases they make the delusional component more pronounced, in others – imaginary, but always false recognition is an element of the delusional syndrome structure [12-15].

Often among the pathomorphosis factors of alcoholic psychoses, local researchers are considering alcohol surrogates, drug use, which leads to deep dullness of consciousness, lack of hallucinatory symptoms, prolonged psychosis and the appearance of organo-psycho indromy. All types of physical and chemical substances affect organs and systems, which, in combination with



alcohol, can cause psychotic states, with completely unexpected manifestations. In their opinion, it is quite logical to explain the pathomorphosis of alcohol psychoses by a complex of effects of alcohol, physical and chemical factors [16-18]. Currently, visual hallucinations, which are highly dependent on the environment, predominate. Hallucinatory views of people, anthropomorphic hallucinations are common, and demonomaniac hallucinations are reduced accordingly. For them, the monotony of thematic design, the absence of a frightening nature, visual hallucinations in the form of small insects are extremely rare. The author believes that oneiroid experiments, visual hallucinations of erotic content and the ideas of jealousy closely related to them, the share of psychopathological phenomena of Kandinsky-Clerambo syndrome has increased. The psychotic picture of alcoholic delirium is dominated by anthropomorphic hallucinations-views of people, scenes of everyday life [19-22].

The following forms of atypical alcoholic hallucinosis are: alcoholic hallucinosis with a short-term stupor; alcoholic hallucinosis with pronounced depression; visual hallucinosis without signs of dullness of consciousness. According to the author's description, alcoholic hallucinosis, combined with pronounced depression, is characterized by the predominance of depressive delirium and a relatively unopened syndrome of oral hallucinosis [23-26]. With visual hallucinosis, visual hallucinations are observed against the background of clear consciousness, without signs of dimming consciousness. Having studied the issues of the origin of alcoholic psychoses, in addition to the usual picture of acute alcoholic hallucinosis, its atypical course appears, on the one hand, in addition to auditory hallucinations, a separate visual (psychotic state approaches delirium tremens) is observed at different stages of the disease, on the other hand, in addition to rich hallucinatory symptoms, there are also paranoid disorders. We have identified the following features of the pathomorphosis of alcoholic psychoses - among auditory hallucinations, the voices of acquaintances and relatives prevail, which are heard directly in the room or near the auditory analyzer (outside the window, at home, from a neighboring room) [27-31].

The occurrence of imperative hallucinations is rarely recorded. With visual hallucinations, they often see acquaintances, less often strangers, usually react negatively to them, which leads to the emergence of the idea of harassment, relationships. Old people have been recorded seeing aliens. Tactile hallucinations are characterized in most cases by a feeling of a clogged bone in the tongue, broken glass in the mouth, wire in the neck, teeth and transmitters in the head [32-36]. Zoological hallucinations are very rare (see cats, rats, midges, reptile worms). A certain pathomorphosis of chronic alcoholism, as well as an increase in the number of severe and atypical alcoholic deliriums, the early development of the first delirium (three to five years after the onset of the disease), alcoholic psychoses in adolescents. The result is a decrease in the duration of alcoholic delirium, Zoological, tactile hallucinations, a decrease in the representation of delusional harassment ideas, a decrease in the severity of the effects of fear and anxiety, while the specific severity of visual anthropomorphic views and orofaringeal hallucinations, the Kandinsky - Clerambo phenomenon, jealousy, influence, self-blame, oneiroid supplements, subdepressive and benevolent-euphoric effects, visual hallucinations of erotic content, auditory hallucinations. The authors classified these manifestations as true pathomorphosis, not factors that aggravate the prognosis of the disease [37-40].

The purpose of the study. Study of the features of the alcoholic delirium clinic, taking into account the justification of the role of surrogate alcohol and anthropogenic pollution of the environment in the pathomorphosis of the disease.

**Research materials and methods.** 50 male patients between the ages of 25 and 45 were under supervision and underwent a course of inpatient treatment at the regional psychoneurological dispensary, with signs of false confession reported in their clinical form. Of these, 37 reported cases of delirium removal as a result of alcohol consumption [F 10.4], 7 patients reported a predominantly hallucinatory psychotic disorder as a result of alcohol consumption [F 10.5], 6 patients reported a psychotic disorder as a result of alcohol consumption, mainly delusional disease [F 10.5]. In many patients, the experience of alcohol has exceeded 8 years. Family history in 11 patients is aggravated by alcoholism. In all observations, it was possible to observe a direct relationship between the appearance of delirium and alcoholism. In the clinical picture of alcoholic psychoses, analysis of the false recognition symptom and comparison with a similar symptom in the framework of paranoid schizophrenia were carried out. Fifteen patients with Paranoid schizophrenia were studied.

**Results and discussion:** In patients with psychotic disorder, mainly delusional, as a result of alcohol consumption, a disorder that does not reach full false recognition levels has been reported in all 6 observations. Patients recognize the masked stalkers they saw some time before their hospitalization from the people around them. At the same time, we talked about previously unknown persons, no specific names were said, often they guessed: "I think these people, they got sick and dressed up." The fragmentation of false recognition, incompleteness, is characteristic, therefore, they can be considered the initial stage of the phenomenon, which, with the further complication of emotional figurative delirium, assumes the symptom characteristics of twins. The image of psychosis in 37 patients coincided with the usual state of removal with delirium as a result of alcohol consumption, the period of darkening of the mind lasted from 2 to 3 days. In 11 observations, delirium was complicated by oneiroid appendages. In all cases, false acquaintances were noted with a significant change in consciousness, with a violation of time and environmental orientation, which was assessed by patients as mostly familiar, every day or, rarely, fantastic. Patients were excited. Often the Restless excitement had a busy character. Conflicting fragmentary statements reflected professional and everyday situations. It was possible to attract the attention of patients with difficulty and in a short time, so it was impossible to obtain any description of the experiences that existed during the period of psychosis.

False confessions could only be identified from fragmentary statements of patients who conducted a dialogue, called others who fell into their point of view, named them after their friends and relatives, based on observation of behavior and allegedly. In a short time, the same person was called by different names – it was enough to look at the patient. With a directed request, active attention, patients easily gave up their words, admitted their mistakes, sometimes apologized for what they "did not recognize", and immediately called this person by another, but wrong name. False confessions, despite the funniest, fantastic experiences, a lot of terrible hallucinations, were distinguished by simplicity, everyday life, spread to a large number of people, usually coincided with the content of professional culinary scenes. If the patient said that he was at home, then the people around him perceived him as relatives, at work – colleagues, etc. in no case have there been any fantastic false confessions typical of oneiroid cases in schizophrenia. In the group of patients described, false confessions were deprived of any delusional component. Patients not only did not give any interpretation, justification, delusional development, but they did not notice their own mistakes, they themselves never talked about doppelgängers, Shell faces, "changes" of the surrounding faces in front of their eyes.

In some cases, the clinical picture of psychosis became more complicated, incoherence increased, the condition acquired the character of amebic delirium, muscivorous delirium. At the same time, there was no false confession, it was not possible to attract the attention of patients, any contact with them became impossible. Severe somatic and neurological symptoms (decreased cardiac activity, hyperthermia, coarse tremors, dysarthria, hyperkinesia, convulsive events, etc.). From the first hour, the course of psychosis was distinguished by a special severity in patients whose false acquaintances clearly manifested themselves in the composition of professional delirium. The self-description of false confessions during the exit from psychosis was characterized by poverty due to significant amnesia. Only in some cases, an ambiguous opinion remained that this or that person was perceived as a relative, sometimes there was really little external similarity – the contours, structure of the figure. Often no memories were preserved.

In 7 patients, a psychotic disorder, mainly hallucinatory, false acquaintances are included in the picture, which occurs atypically. At the height of the disease, the mental state was determined by hallucinatory experiences involving acute sensory delirium episodes with elements of oneiroid consciousness blurring. Oral hallucinations were a symptom of the "end" when psychosis began and ended, visual hallucinations were recorded in the form of a single joint. Patients believed that they were on an airplane, a rocket, a submarine. Psychotic experiences were largely dependent on changes in the environment, with arousal being impulsive. Sometimes it was possible to involve patients in conversation. Answers about accommodation showed a false direction, often with fantastic elements. Speaking about their experiences, patients reported flying into space, flying over clouds, and traveling in the underwater world. Elements of such experiences were false confessions. The latter were simple, more durable, with the same real faces and the plot of delirium. Patients demanded that those around them "not show themselves", because they "still recognize" them, despite some changes in their appearance. In this research group, no fantastic live acquaintances were observed, typical of oneiroid States in schizophrenia.

When comparing the symptoms of false recognition in the framework of schizophrenia attack and acute alcoholic psychosis, first of all, the variety of manifestations, unusual, consistent development – the stage of the symptom during the attack in accordance with the modification of diseases that accompany schizophrenia, and vice versa, its simplicity, fragmentation, everyday life in alcohol psychoses.

They are characterized by recurrent alcoholic psychoses, alcoholic delirium variants with severe clinical manifestations, less pronounced psychomotor arousal (limited by bed limits or motor anxiety), lithic type of exit from psychosis, long average duration, painful experiences and lack of memories of the real environment, Transitional Organic psychosyndrome. The findings suggest a change in the clinical picture of alcoholic delirium in patients who consume alcohol surrogates. This is expressed by a decrease in a number of mandatory signs of the disease (zoological and tactile hallucinations) with an increase in others (anthropomorphic hallucinations), the appearance of new ones (oropharyngeal hallucinations, damage delirium, weakness, dysphoria), previously not described in classical literary sources. A number of symptoms (oropharyngeal hallucinations, weakness, dysphoria) were evidence of organic brain damage. In people living in unfavorable environmental conditions, the alcoholic delirium clinic is characterized by the severity of the disease compared to those living in relatively satisfactory environmental conditions.

They have alcoholic delirium options with severe clinical manifestations, less pronounced psychomotor arousal (limited by bed limits or motor and speech anxiety), a lithic type of exit from psychosis, its average duration, painful experiences and the absence of memories of the real environment, a Transitional Organic psychosyndrome. In patients in a habitat with an unfavorable environmental situation, the features of the alcoholic delirium clinic indicate the manifestation of a pathomorphosis of the disease, which is expressed by a change in the structural sides of painful experiences, a new appearance, which was not previously considered in the Classic descriptions of psychosis phenomena. We are talking about anthropomorphic hallucinations, oropharyngeal hallucinations of a foreign body, deliriums of damage and influence, grace and dysphoria, some of which (oropharyngeal hallucinations, Grace, dysphoria) reflect the manifestation of organic pathology of the brain. The results obtained can be used to diagnose alcoholic delirium, predict its course. They allow the existing modes of treatment of alcoholic delirium, especially in the postpsychotic period, to make adjustments with the manifestation of organic psychosyndrome.

**Conclusions:** The alcoholic delirium clinic in individuals who consume alcohol surrogates and live in a region with poor environmental conditions is characterized by a more severe course in relation to standardized alcohol consumption and living in relatively satisfactory environmental conditions. A form of alcohol consumption, the environmental condition can be used to assess the prognosis of alcoholic delirium.

Surrogate alcohol products, anthropogenic contamination act as the causes of alcoholic delirium patomorphosis. This is manifested by the severity of its clinical picture, a change in the meaningful side of painful experiences, the appearance of new ones that were not previously considered in the Classic descriptions of psychosis phenomena (anthropomorphic visual hallucinations, orofaringeal hallucinations of a foreign body, delirium of damage and influence, politeness and dysphoria).

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## RATIONAL CHOICE OF PHARMACOTHERAPY FOR SENILE DEMENTIA

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**Abstract.** A popular name for dementia is senile marasmus or senile dementia. Most often, this disease occurs against the background of aging of the body and associated changes. Usually dementia develops after 65 years of age, but against the background of certain diseases, intoxication or injuries, it can also appear at an early age. Damage to the central nervous system is irreversible, properly selected treatment allows only to stop the process, but not to reverse it.

**Keywords:** psychopharmacotherapy, dementia of old age, Alzheimer's disease.

**Introduction.** Dementia affects 5% of people aged 65-69, with age doubling every 10 years [1]. In the total "burden" of diseases in the world due to dementia, the so-called quality life years (DALY) reach 1% [2] associated with a late onset of the disease. More than 90% of advanced-stage dementia patients identify behavioral and psychopathological symptoms [3], violations that aggravate the economic burden [4] and the subjective burden of caregivers [5] are associated with grief [11], which in turn increases the risk of hospitalization and placement in boarding schools [6]. Out-of-community patient care time is a major (70%) part of dementia costs [7]. Thus, patients with AD (Alzheimer's disease) require informal caregivers an average of 60 hours per week [8]. At the same time, a complex biopsychosocial approach in the form of targeted psychosocial work against the background of rational therapy with antedements [9] scientifically proven has the potential to save resources. The opposite is also true: inadequate therapy leads to the waste of limited medical costs. Although in our country it is devoted to the study of models of pharmacotherapy and the burden of dementia, only special Works [10], pharmacoepidemiological audit with secondary value analysis at the level of a separate psychiatric institution helps to identify and solve the problems of the quality of therapy. Generalized data from population studies in Europe show that dementia and AD frequency (prevalence) of 65 years and older are 6,4 and 4,4%, respectively [11-14]. In the United States, the AD rate for 70 and older is 9,7%. Worldwide dementia rates for residents aged 60 and older are 3,9% and regional rates range from 1,6% (for Africa) to 6,4% (for North America) [9, 13-15]. According to the International Association of Alzheimer's Disease (Alzheimer's Disease International) of the World Health Society, in 2013, the total number of patients who are considered with Dementia in the world accounted for 44,5 million, by 2030 it amounted to 75,5 million, and by 2050 it accounted for 50-70% of 135,5 million [15-19]. The extrapolation of the gender and age indicators of AD, determined by a study of the population conducted in a limited area of Russia, into the sexual and age composition of the country's population, made it possible to determine that the number of patients with AD is 1 million 248 thousand people, according to forecasts, this will increase by 1 million 354 thousand people by 2050. The diagnosis, treatment and care of patients with dementia will be a huge economic burden on the state budget [20-24]. In

developed countries, only direct costs for the treatment and care of patients reach 38 thousand dollars. as for one patient per year, the total worldwide costs for dementia patients exceed \$ 600 billion each year [25-27], and regional spending is much higher than the spending portion of the budget of many countries. The cost of treating and caring for patients with AD is constantly growing: in particular, in the United Kingdom, such financial costs in 2010 amounted to about £ 20 billion, and by 2016 their growth was £ 27 billion [28-30]. The world community's awareness of the socio-economic significance of the ad problem is associated with an increase in the population at risk of developing the disease, its duration and a constant increase in the patient's severe disability and the costs of their maintenance and treatment, in particular, in specialized institutions for the mentally [31]. In this regard, in economically developed countries, special attention is paid to the organization of medical and social services for patients with dementia in the conditions of various forms of outpatient care (memory clinics, Alzheimer's centers, university clinics operated by the community, etc.). In addition, special studies have been carried out to analyze the pharmacoeconomic aspects of AD [32]. In 2005, the cost of caring for patients with dementia with a mathematical modeling method (not counting the cost of drug therapy) is estimated to be 74,8 billion rubles in the Russian Federation per year [33]. In recent years, all measures to improve local psychiatric care for dementia patients have mainly focused on expanding forms of inpatient care (creating wards with additional nursing care in psychiatric hospitals, increasing the number of seats in neuropsychiatric boarding schools) and have practically no effect community service to elderly patients [34]. According to the WHO Expert Committee on issues of medical support for the elderly, including leading experts, the focus on the development of psychiatric care for the elderly and the elderly should be on non-community forms [35]. This is determined by both economic expediency and a modern humanistic attitude to the Prevention of social adaptation and hospitalization phenomena, which inevitably occur with long-term stasionization of elderly patients. Assessing the situation with special outpatient care, which can be described as critical to elderly patients with dementia, we tried to create different models of specialized care for the elderly. In particular, an outpatient-counseling unit for elderly patients with memory and dementia has been established by the Alzheimer's Disease Research Unit and related staff and continues to operate successfully to this day, in which the Department's researchers conduct a consultation-diagnostic reception [36]. It is an outpatient counseling department, which also interacts with sections I to address the cases of late-age pathology that are the most difficult from the point of view of differential diagnosis. In addition, information and, if necessary, psychological and therapeutic and diagnostic assistance is provided to individuals who care for patients with dementia on an outpatient basis [37]. At the request of patients and caregivers, the vast majority of patients who seek help in the first place remain under constant outpatient supervision of employees of the Alzheimer's disease and related diseases department [38]. During the analysis, the long-term outpatient follow-up cohort included 394 patients. This contingent of AD patients attempted to study some pharmacoeconomic aspects of ad [39]. The task of pharmacoeconomic analysis was to compare the financial costs of providing modern medical care to patients with AD on an outpatient basis with the economic costs of providing inpatient care to a similar contingent of patients [40]. Studies on the economic feasibility of using long-term ad pathogenetic therapy on an outpatient basis are based on the available evidence that AD patients who did not receive pathogenetic therapy were admitted to psychiatric institutions in the early stages of the disease compared to those who were actively treated on an outpatient basis



[41]. Since the cause of hospitalization is often psychotic and/or behavioral disorders that develop in severe stages of dementia, the delay in the development of the disease as a result of the use of pathogenetic therapy can help delay hospitalization [42].

The purpose of this study: 1) determination of methods for rationalizing the treatment of patients with senile dementia (e) in everyday practice; 2) assessment of the safety, clinical and resource-saving effects of antidemental therapy on the example of the original acatinolamemantine (M); 3) prediction of the clinical and economic effects of long-term antidemental therapy B. Alzheimer's (ad).

**Materials and methods.** The work consisted of three logically related stages. In the first (I) – Pharmacoepidemiological study (according to >500 patients) and cost analysis of D therapy was carried out in HDPE. In the latter, a 6 – month comparative study of naturalistic multicenter (II) - M and "simple" ba and vascular D therapy was carried out, in the third (III) a mathematical model of a -5-year M ba therapy was built. Statistical analysis used Microsoft Excel 2000, Statistics 6.0 for Windows. Descriptive statistics methods have been used. 95% confidence interval (CI) limits are specified for the selected average. Descriptive statistical methods, the Kolmogorov-Smirnov test, are used to check the distribution form. When comparing stocks, the  $\chi^2$  criterion is used for Z-statistics or conjugacy tables of properties. When comparing the values of constant values, the student criterion is used, as well as the Mann-Whitney non-parametric U criterion.

Results and their discussion. Every fourth patient with AD gets the attention of Psychiatrists. The latter serves as a permeable "filter" for individuals with the most severe mental disorders. Behavioral and mental manifestations are divided into the following groups-levels. "Mild" mental and behavioral disorders (Group I) are characterized by moderately expressed depressive (usually incomplete) syndrome, anxiety-prone, apathetic disorders (no more than 5%). For comparison, they were reported in 30% of dementia patients.

From 2017 to 2022, an analysis of the activities of this outpatient counseling unit showed that patients often turn on the recommendation of a neurologist (48,7 %) or psychiatrist (33,3%), rarely independent (12,8 %) or therapist (5,2%). To solve the task, a team of 100 AD patients was formed in the outpatient counseling department, who were observed for two or more years. During the observation, 41% of these patients took courses of pathogenetic cholinergic (rivastigmine, galantamine, ipidacrine), glutamatergic (acatinol memantine), as well as neurotrophic (cerebrolysin) or neuroprotective (nitzergoline, tanakan) therapy in different sequences, 20% - cholinergic or glutamatergic therapy in different sequences, 15% of patients - pathogenetic cholinergic (rivastigmine, galantamine, ipidacrine). glutamatergic and neurotrophic or other neuroprotective therapy in different sequences and 4% - cholinergic and neurotrophic or neuroprotective therapy in different sequences. 6% of patients underwent monotherapy with cholinergic drugs; glutamatergic monotherapy - in 8% and neurotrophic or neuroprotective therapy - in 6% of patients. The average duration of glutamatergic therapy during the observation period was  $16,3 \pm 9,8$  months; cholinergic –  $14,6 \pm 9$  months and neurotrophic or neuroprotective therapy –  $26,6 \pm 12,3$  months. Because of the addition of psychotic and behavioral disorders to dementia syndrome, 36% of patients received antipsychotics for  $19 \pm 8,3$  months and 12% received antidepressants for  $17,7 \pm 9,1$  months.

Such problems (poorly defined and slightly treated against the background of dramatic manifestations of dementia) cause more cognitive impairments, increase patient dependence, and serve as an additional source of stress for informal caregivers. In this group alone, patients (20%)

were treated in a day hospital. In 55% of patients, moderate mental and behavioral disorders (Group II) are characterized by agitation (screaming, crying, verbal and insignificant physical aggression, sexual dysinhibition, night walks against the background of confusion), anxiety depression, periodic hallucinatory-paranoid and confabulatory disorders. For comparison, 20% of people with dementia fall into this category. For a quarter to a third of patients, the context of the development of dementia is typical: loneliness, insufficient family support, disability due to many somatic diseases. Management of such diseases can be an important component of the model of effective output groups. In 40% of patients, severe mental and behavioral disorders (Group III) are represented by physical aggression, negativism, delirium-related arousal, hallucinatory-paranoid psychosis, cruel exposure. Home care is difficult and patients need a controlled hospital psychoherontology unit for 24 hours. In our sample, such patients are hospitalized only once a year, on average 55 days, half of them were alone. In general, more than 1% of people with dementia do not correspond to this level, but among 2/3 of the dement population of nursing homes, 15-20%, psychosis – 15%, 20% suffer from depressive disorders. There are less than 5% of patients in need of dementia in inpatient social service facilities or nursing homes. Of the 36 patients with moderate to severe dementia, only one can be placed in a inpatient Social Service Institution for the elderly and disabled, and the main burden of caring for such patients in the Russian Federation falls on the shoulders of relatives. 75% of patients with confirmed dementia duration 1-2 years were identified in Group I; Group II includes 60% of patients with dementia duration 2-4 years; Group III 80% of patients with dementia duration over 5 years

**Conclusion:** 1. The main burden of insufficiently treated D falls on psychiatric services (due to the burden on the resource-intensive psychiatric unit, which performs the function of archaic patronage and shelter in the absence of forms of inpatient replacement assistance) and indirectly on close patients. 2. Half - year treatment m, improving performance, regulating patient behavior D, facilitate the burden of caring for them by formal and informal caregivers. 3. Long-term (lifelong) treatment with clinically proven efficacy (m) anti-cement agents has the potential to save resources from the point of view of psychiatry and social services, the patient and his loved ones, in addition to the traditional humanistic message. The effect of anti-treatment enhances targeted psychosocial work with the patient and his loved ones.

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## DISEASES OCCURRING IN AUTUMN POTATO VARIETIES GROWN IN THE CONDITIONS OF BLACKPINK AND THEIR INFLUENCE ON PRODUCTIVITY

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**Abstract.** This article presents information about diseases and their damage in potato varieties grown in the conditions of Karakalpakstan. In the research, the distribution of diseases of Santa and Gala varieties of autumn potatoes was studied. Experiments were conducted under field and laboratory conditions. Samples were collected from infected plants in the field and analyzed in the laboratory. *Alternaria solani*, *Ph. infestans*, *Fusarium sp.* When the bacteria isolated from infected plants were analyzed using Maldi-TOF device, it was found that *Bac.mojavensis*, *Bac.licheniformis*, *Bac.subtilis*, *Bravibacillus brevis* bacteria belonging to the genus *Bacillus* were present.

**Keywords:** potato, leaf, stem, nodule, fusarium, phytophthora, alternaria, *Bac.mojavensis*, *Bac.licheniformis*, *Bac.subtilis*, *Bravibacillus brevis*.

### Introduction

One of the important tasks before the agrarian sector is to fully provide our population with food products. Among food products, vegetable crops occupy the main place. Currently, special attention is paid to planting and growing vegetable crops in our republic, and their areas are expanding year by year.

One of the urgent issues of the present day is the development of scientifically based control measures that are ecologically safe and do not have negative effects on nature and humans in the fight against fungal and bacterial diseases of the potato plant belonging to the 'Ituzumdosh' family. Currently, potatoes are mainly affected by diseases such as fusarium, phytophthora, alternariosis, gray rot, cladosporiosis. Research Santa and Gala potato samples with disease symptoms were isolated from Amudarya district and Nukus district of the Republic of Karakalpakstan. These signs were determined by visual observation of potato tubers and seeing the spots on the inside of the cut. Affected potatoes were harvested and brought to the laboratory for examination. Laboratory experiments were conducted at the Institute of Microbiology of the Academy of Sciences of the Republic of Uzbekistan.

**Research methods and materials.** It is important to use special techniques to isolate fungi and bacteria from plant parts. For this, any plants must be cleaned of external microflora. 3% hydrogen peroxide is used to sterilize external microflora. The studied part of the plant is kept in the prepared solution for 1-2 minutes, then it is washed several times in sterilized water. It is also possible to use 1:3000 diluted formalin solution (for 30 minutes), 1% bromine water (several seconds), 2% manganese potassium solution (1-5 minutes). A branch of some shrubby and tree-like plants is first soaked in alcohol and then burned in a flame to extract the internal infection. Infected potatoes were cleaned of external microflora, and first, potato leaves, stems and nodules were thoroughly washed in running tap water. Then it was wiped with sterile cotton soaked in 96%

ethyl alcohol and burned. [2]. Externally sterilized potato tubers, leaves and stems were cut using a sterile scalpel. Potato slices containing damaged and healthy tissues were planted in Chapeka nutrient medium and the samples were incubated at 25°C for 48 hours.

### Research results.

On the outside of the selected potato plant, sunken spots of various sizes with a brown appearance were detected. When the nodules were cut, it was found that there were rusty, brown spots along the circumference and in the middle of the potato.

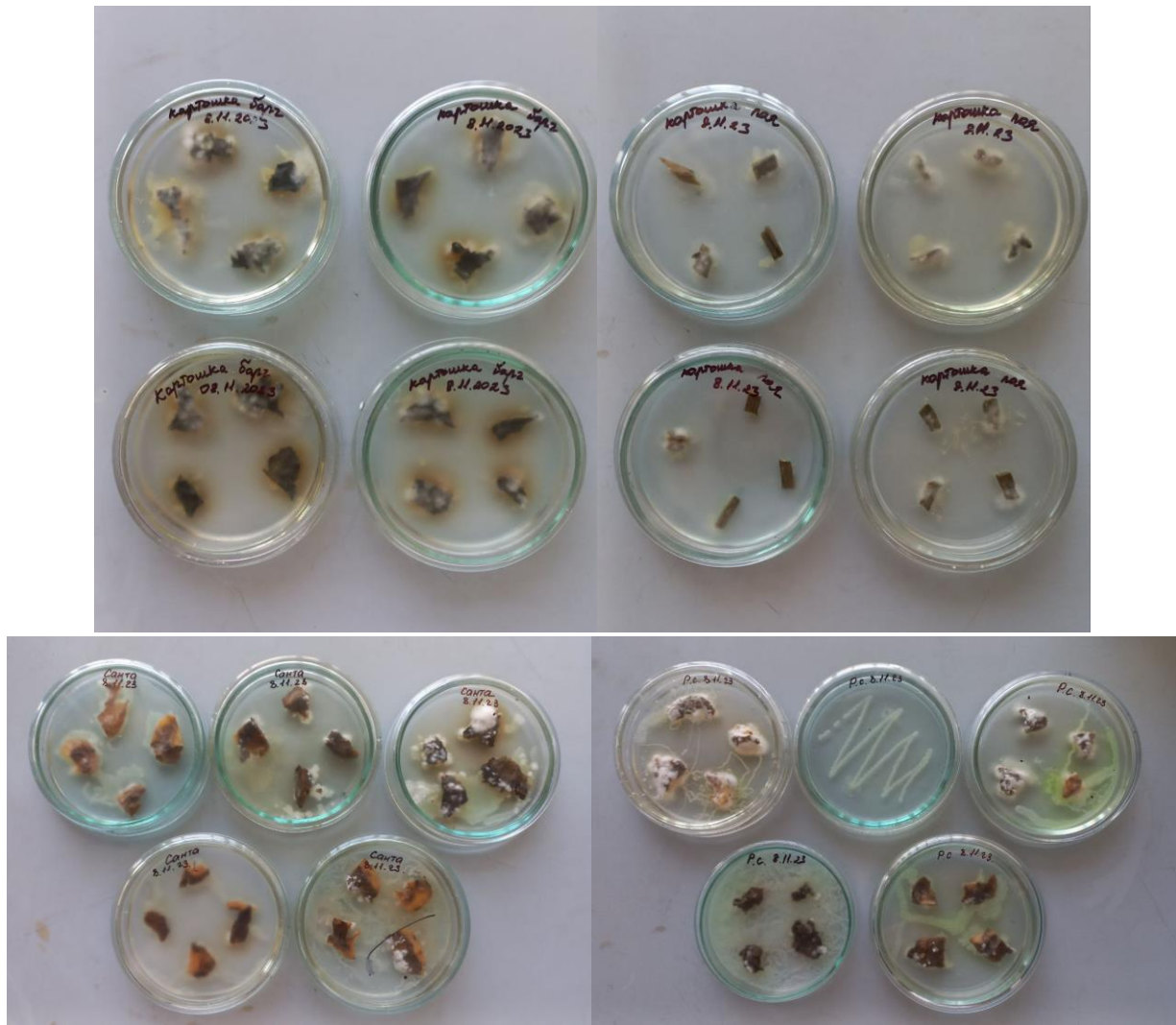


**Fig. 1. Damaged potato pieces**

It is known from the literature that the growth of fungal sporangia is closely related to external conditions, especially temperature. Zoospores are formed at low temperature (4-18°C), when the temperature rises (20-27°C), zoosporangia do not form zoospores, but the embryo tube grows and penetrates into the plant tissue [5]. In the course of research, pathogenic microorganisms were isolated from diseased plants grown in a thermostat at an air temperature of 20-25°C.

Microscopic analysis of samples planted in Chapeka nutrient medium revealed the presence of *Alternaria solani*, *Ph. infestans*, *Fusarium* sp. When the bacteria isolated from infected plants were analyzed using the Maldi-TOF device, the presence of bacteria belonging to the genus *Bacillus*, *Bac.mojavensis*, *Bac.licheniformis*, *Bac.subtilis*, and *Bravibacillus brevis* was found (Fig. 2).

In these pictures, we can see that several types of microorganisms were isolated from the potato when the diseased part of the Santa and Gala varieties of potatoes was planted in an artificial nutrient medium. From these isolated microorganisms, pure cultures were isolated and morphologically identified using a microscope. These diseases damage potatoes during the growing season. Diseases can reduce the yield by 20-25% during the growing season of potatoes, especially in years with high rainfall. In the studies, the prevalence of fusarium disease in the autumn potato crop was 15-20%, *Alternaria* disease was 15-18%, *Phytophthora* disease was 15%, and bacterial diseases were 20%.



### *Growth of diseased potato parts in Chapeka nutrient medium*

Controlling the spread of potato diseases and determining which disease-causing microorganism is infected is one of the important activities. Because in the fight against the disease, it is recommended to use preparations containing substances that affect these pathogens.

#### **Conclusion**

In conclusion, in order to obtain a high and quality harvest from the potato crop, the correct application of agrotechnical measures, planting the crop in the specified periods, choosing disease-resistant varieties, and planting the potato seeds with effective seeders before planting are important measures.

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## ASSESSMENT OF THE EFFECT OF PSYCHOPATHIC DISORDERS ON THE DYNAMICS OF WITHDRAWAL SYNDROME IN SYNTHETIC CANNABINOID ADDICTION

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**Abstract.** *New psychoactive substances synthesized for scientific or medical research, as well as derivatives of these substances or previously identified drugs, mainly with a pronounced effect on the nervous system, up to a complete change in consciousness. They can be classified according to clinical effects (sedatives, stimulants and hallucinogens) or chemical structure.*

**Keywords:** *new psychoactive substances, psychopathic diseases, withdrawal symptoms, synthetic cannabinoids.*

**Introduction.** The chemical structure of a large number of substances for sale is still not known. Since only individual substances, not classes of substances, are prohibited and remain under the law, manufacturers are increasingly offering new derivatives to the consumer [1]. The situation could have improved as a result of amendments to legislation that allowed the ban on classes of substances, but in this case, many drugs could also be banned [2]. At the moment, consumers communicate on the internet networks of new psychoactive substances, discuss the emergence of new substances, their dosages, effects and side effects. New psychoactive substances can be ordered in the online store, and then delivered by mail. They are easily available and in great demand by consumers due to their legality, low cost and low health risks [3, 4]. New psychoactive substances are not identified by Standard immunological studies used for drug screening [5].

Synthetic cannabinoids are not detected by the standard THC test, nor are synthetic catinones detected by the amphetamine ELISA test. True, a small part is determined by Standard methamphetamine tests of new psychoactive substances. The piperazine ring, which is part of some substances, gives mixed results in a standard amphetamine Test [6]. For detection, novel psychoactive substances typically use other complex techniques, primarily gas chromatographic mass spectrometry (GC-MS) and liquid chromatographic mass spectrometry (LC-MS/MS). Thus, the necessary analysis can only be carried out in a toxicology laboratory or a forensic medical institution [7].

Most new psychoactive substances have not been clinically studied and there is not enough knowledge about them. Controlled clinical trials are often difficult due to methodological difficulties. Most of the available information was obtained by retro or prospective analysis of the medical history of patients being treated for poisoning new psychoactive substances, as well as from the data of the history of drug addicts [8-11]. As a result, the data obtained has limited scientific value. The description of the symptoms that occur during the consumption of a particular substance is difficult, since it is not always possible to identify this substance, or poisoning occurs against the background of the consumption of several substances [12-14].

New psychoactive substances are a heterogeneous group of psychoactive substances that have a psychotropic effect, with sufficiently wide points of toxicodynamic application, which explains the variety of clinical symptoms, even when taking them once [15-17]. Acute toxic effects are now described in literary sources. In the absolute majority of cases, they are a case or representative of a number of cases that are rarely analyzed in terms of studying the characteristics of the intoxication picture arising from a particular substance. Most of the publications provide information on the whole groups of new psychoactive substances or on the set of heterogeneous substances found in specific chemical-toxicological analyzes of the biological environments of those tested [18-21].

It should be taken into account that the large number of new psychoactive substances (more than 700) and chemical subgroups with different toxicodynamic profiles that have been identified to date present great difficulties for practitioners [22].

Clinicians should experience a variety of clinical symptoms that occur in patients over a short period of time, requiring rapid evaluation and orientation in underlying pathogenetic syndromes while stabilizing the patient. In addition, the use of the results of many publications for practical clinicians can lead to difficulties taking into account the variety of information presented in them, which has a more descriptive nature and requires critical evaluation and structure [23-27]. This literary review, according to our data, is the first Russian-language publication that jointly analyzes English and Russian data on the clinical aspects of acute intoxication of new psychoactive substances. Real analysis with elements a quantitative description was created, developed and successfully used using the method of empirical assessment of the risk of ingesting new psychoactive substances [28-31]. Based on the analysis of the data collected on certain toxic risks, recommendations for legal and preventive measures against new drug threats are being developed in the countries of the European Union, New Psychoactive Substances. Taking into account and analyzing the description of cases of intoxication in the post-Soviet space, new psychoactive substances are of mainly clinical importance for informing psychiatrists, toxicologists and emergency and emergency medical specialists [32-37].

The analysis shows that there is a great risk to human health when consuming new psychoactive substances. New psychoactive substances that represent a very diverse class of chemicals have many target organs, which is their effect on the neurotransmitter system, including the central nervous system [38]. For example, synthetic cannabinoids show activity in both synapses and endothelial cells [39]. This, in turn, leads to various clinical signs in the acute picture of intoxication by this group of new psychoactive substances [40-42].

The exponential growth of the new names of "synthetic drugs" requires constant study of their toxicological spectrum. However, this often leads to a number of difficulties: for example, obtaining prototypes of these substances in research laboratories and the legal status of such studies. An additional important point is the difficulty of extrapolating the results obtained in animal experiments and their application in clinical medicine [43-45]. All this determines the importance of "field" observations in practice with the accumulation of a base of intoxication States, new psychoactive substances with the most detailed description of the observed symptoms [46]. The possibility of studying the effects of basic structures in these formulas, which cause a certain toxic and psychotropic effect, and not individual formulas, remains important in relation to poisoning. As an example, it is worth mentioning the modern separation of new psychoactive substances depending on the direction of psychotropic action of groups within the class: cannabinoid receptor agonists (synthetic cannabinoids), stimulants of the central nervous system (synthetic catinones, phenethylamines), psychodispleptics (tryptamines, aminoindanes), suppressors of the central nervous system (synthetic opioids) [47].

The purpose of the study: to assess the effect of psychopathic diseases on withdrawal symptoms in synthetic cannabinoid addiction.

**Materials and methods.** The object of the study is 63 Narcological inpatient patients suffering from dependence on synthetic cannabinoids (JWH-18). The diagnosis is confirmed by the method of expert assessment in accordance with the criteria for the International Classification of diseases 10 revision (ICD-10) - heading F12. Criteria for joining the research group: adult age, consent to the study, withdrawal syndrome in mental and behavioral disorders caused by the use of synthetic cannabinoids. Exclusion criteria: the presence of co-chemical dependencies (including "conventional" drugs), endogenous diseases, dementia and other severe organic diseases. The subject of the study is psychopathic and abstinent syndrome in patients addicted to synthetic cannabinoids. Research methods: clinical-psychopathological, psychometric (Kardashian R. A. scale for determining the severity of psychopathological disorders of, 2007), statistic (Kaplan - Mayer survival analysis, Cox regression).

**Research results and their discussion.** The research group is divided into two subgroups according to the presence/absence of symptoms of history of psychopathic disorders (ICD-10 – heading "F60"): Group 1 – there are signs of psychopathy (n=17), group 2 – there are no signs of psychopathy (n=46).

Neither subgroup found significant differences in major socio-demographic factors. The average age in Group 1 is  $21,5 \pm 2,04$  years, in Group 2 The Age is  $21,2 \pm 3,29$  years. Both groups had a male majority: group 1 had 15 people (88,2%), Group 2 had 42 people (91,3%). The average experience of consuming synthetic cannabinoids has also been compared in small groups: Group 1 –  $2,35 \pm 0,99$  years, group 2 –  $2 \pm 0,9$  years. The tolerance of the substance also did not differ: Group 1 –  $2,12 \pm 0,99$  grams per day, group 2 –  $2,00 \pm 0,76$  grams per day. In small groups, the frequency of consumption of "spices" was equal: Group 1 -  $3 \pm 1,23$  times a day, group 2 –  $3,37 \pm 1,42$  times a day.

All patients addicted to synthetic cannabinoids entered the study at the initial stage of removal (1-2 days). During the withdrawal period, they underwent non-specific detoxification infusion therapy. The dynamics of cutting marks are R, which is replenished every day. A. Observed using the Kardashian scale.

In the early days of removal, the severity of the removal syndrome in small groups was comparable. Thus, the study was dominated by the average level of withdrawal symptoms: in subgroup 1 - 11 patients (64,7%), in subgroup 2 – 37 patients (80,4%). When conducting a comparative analysis using Kaplan-Mayer survival curves (observation period 20 days), the following characteristics were identified. In subgroup 1, the average duration of the removal period is greater than in subgroup 2 (14,89 days, 95% CI 13,37-16,39) ( $10,74$  days, 95% CI 10,07-11,39). The long-level test confirmed the statistical significance of the detected differences (chi-squared 21,5,  $p < 0,001$ ). Evaluation of the predictive model conducted using Cox analysis confirmed the effect of the psychopathic factor on the duration of the withdrawal symptoms. The ratio of coefficients is 4,34, 95% CI 2,10-8,98,  $p < 0,001$ .

**Conclusion.** Psychopathic diseases are one of the main comorbid factors affecting the removal period in chemical dependence. A study conducted proved this fact in relation to the dependence on synthetic cannabinoids. The study of other comorbid conditions associated with new types of addiction remains very important. The results of such studies are especially important in the construction of diagnostic and therapeutic approaches in the control of new types of Narcological nosologies.

Thus, analyzing the clinical aspects of the acute toxic effect of new psychoactive substances present in the scientific literature, it is necessary to highlight the very partial nature of the information presented.

Most of the research on this topic is at the level of individual clinical cases/description of a number of cases. At the same time, a structured review of literary sources allows us to talk about the variety of toxic effects of a particular class of psychoactive substances, a wide range of presented symptoms: from moderate pain syndrome and autonomic dysfunction to death. Knowledge of toxic profile data and constant monitoring of new psychoactive substances are an indispensable necessity in the practice of narcologists, psychiatrists, toxicologists who have faced modern drug threats.

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## MULTIDISCIPLINARY APPROACH TO THE REHABILITATION OF PATIENTS WITH SOMATIZED PERSONALITY DEVELOPMENT

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**Abstract.** *Many additional medical diagnostic measures lead to significant economic costs. Endless clinical and paraclinical studies, the cost of ineffective therapy is so great that the timely diagnosis of somatized disorders is seen as a socio-economic problem for any society. Each of these patients is spent several times more time than real somatic patients. Large financial costs are due to the fact that assistance to patients with somatoform diseases is often provided by doctors who do not have sufficient qualifications in this area*

**Keywords:** *Somatoform diseases, rehabilitation, somatized development of personality.*

**Introduction.** A small number of publications are devoted to the study of variants of the dynamics of somatized diseases (F 45.0) in the special literature. With an episodic course of neurotic diseases after the disappearance of psychopathological disorders, there is an opinion that the restoration of social and labor functions is observed, and in cases of complication of living conditions due to a decrease in compensatory personal capabilities, neurowegetative shifts and regressive behavior are repeated. In the case of a continuous course of the disease, the rigidity of individual characteristics leads to stereotyping of neurovegetative diseases and ineffective psychopathological reactions, which leads to a decrease in social and labor adaptation [1-4].

Preliminary preventive measures should also be carried out in the prepositional fractal, where they may be aimed at determining hereditary, psychophysiological predisposition and moral and psychological harmonization of family relations [5].

Measures in the latent fractal are aimed at identifying individuals prone to the development of somatoform disorders (weak and unbalanced nervous system, high level of anxiety, psychasthenic, asthenoneurotic, with hysterical accentuation of character), correcting the moral socialization of the individual, premorbid characteristics [6-8].

The initial Fractal has both medical and non-drug effects that prevent the development of somatoform disorders. The extended clinical picture fractal of Somatoform disorders requires early qualified medical and psychological, social and spiritual-moral support. Timely detection and adequate diagnosis of Somatoform diseases is essential for successful therapy and a positive prognosis of the disease long before the chronification fractals and results [9-13].

In this regard, it is advisable to further integrate the psychotherapeutic care system into the structures of general somatic therapeutic prophylaxis, open psychosomatic departments in multidisciplinary hospitals and organizational design of a multidisciplinary mental health service [14-17].

Pharmacotherapy of Somatoform disorders involves the use of a wide range of psychotropic drugs – antidepressants and anxiolytics, nootropics and antipsychotics. However, the use of psychotropic agents in the somatoform diseases clinic has its own characteristics [18-22]. It is recommended to limit yourself to monotherapy using convenient drugs for use in the appointment of psychotropic drugs. Taking into account the likelihood of hypersensitivity, as well as the possibility of side effects, psychotropic drugs are prescribed in small doses (compared to those used in "large" psychiatry) [23-25]. Therapy requirements also include minimal exposure to somatic functions, body weight, minimal behavioral toxicity of drugs, and teratogenic effects, the possibility of their use during lactation, and a low probability of their interaction with somatotropic drugs [26-28].

The medical block within somatogenesis involves the provision of assistance by General Practitioners, general practitioners. The psychological block of assistance within the framework of psychogenesis includes the participation of specialists involved in mental health: psychotherapists, clinical psychologists, psychiatrists. Social assistance is provided in the vector of sociogenesis with the participation of social services specialists (social work specialists, social workers) [29-32]. The spiritual and moral block in the vector of animogenesis is carried out with the participation of bioethics specialists and consultants, clinical psychologists and social work specialists, general practitioners who know the peculiarities of the moral environment of the patient's family. Education and psychotherapeutic, teaching methods and coaching are used, which stop demoralization syndrome and destructive occupationalogenesis. Mediation is carried out in conflict situations [33-36]. Patients are encouraged to participate in various programs of community organizations that combine flexible strategies in the ethics of business communication. The involvement of patients in volunteer and social movements, ethical-cultural activities of trade unions and veteran's organizations performs the same tasks. Church patients may be assisted by religious rehabilitation programs, which are administered by spiritual mentors of official denominations [37-39].

This study was based on the theoretical principles of the integral "biopsychosocial" model of mental disorders, which implies a comprehensive approach to the emergence of mental disorders (biological, psychological and social). Our study of the quality of life of patients with somatized diseases provided the basis for drawing conclusions about the unequal dynamics of quality of life indicators in the process of treating patients at different stages of the disease [40-42].

The purpose of this study: was to study the clinical dynamic characteristics of somatized diseases and to develop comprehensive treatment and rehabilitation measures for patients with their ongoing variant.

**Materials and methods.** The work is based on a comprehensive clinical-psychopathological, clinical-dynamic, psychological and therapeutic examination of patients with somatized diseases. Diagnosis of somatized diseases met the requirements proposed by DSM-III-R and ICD-10. The leading manifestations of the disease were numerous, recurrent, frequently changing somatic complaints presented by patients for more than 2 years. In most cases, patients have found a violation of Labor and social adaptation.

Clinical and dynamic analysis of 80 patients made it possible to identify two variants of somatized disease. They are indicated by us as Dynamic variants of somatized diseases: periodic and continuous. The periodic variant has been observed in 57 patients (71,25%), characterized by

a change in conditions that meet the criteria for somatizing disorder with periods free of symptoms. His clinical manifestations matched existing notions of neurotic condition (neurosis). In the remaining 23 people (28,75%), non-somatizing disorder has occurred continuously. A permanently present variant, along with somatized symptoms, is represented by pathocharacterological diseases, which has given rise to its consideration as an independent species (somatized) in the neurotic development series of the individual.

**Research results and discussion.** The compliance of its clinical and dynamic manifestations with the criteria for diagnosing the neurotic development of an individual present in the scientific literature allows us to propose the concept of "somatized development of an individual". The somatized development of the individual was characterized by a decrease in the frequency of somatized and generalized symptoms in the dynamics of the disease, a decrease in the role of psychotraumatic factors in the disease clinic and an unfavorable prognosis.

There is an opinion on the feasibility of treating patients with somatized diseases from the point of view of a biopsychosocial approach, they emphasize the need to involve such patients in rehabilitation measures, which will help them socially adapt to previous living conditions and reduce the consequences of the disease.

Distinguishing the concept of "somatized development of personality" has allowed corrections to be made in the treatment of somatized diseases. It should be complicated. To correct somatized manifestations (neurotic), it is recommended to use psychopharmacotherapy, pathocharacterological diseases – modern psychotherapeutic approaches.

Psychopharmacotherapy of somatized diseases was carried out taking into account the clinical picture of the disease characteristic of this dynamic variant. The therapeutic tactics of the somatized development of the individual are built taking into account the formation of the disease of pathocharacterological diseases at this stage. Here, attention was paid not only to somatized symptoms (antidepressants – fluvoxamine, sertraline-were used, which are selective inhibitors of serotonin reuptake), but also to the correction of pathocharacterological diseases.

There is an opinion that the long duration of somatized diseases affecting the individual characteristics of patients determines the choice of therapeutic measures. Antipsychotics-chlorprotixene and neuleptil have effectively affected the hysterical, explosive, irritating properties produced in patients.

Social rehabilitation and readaptation events were conducted in 19 of 23 patients (82.60%) with somatized development of the individual. They included attending a psycho-educational program and working in interest groups. The psycho-educational program was held in closed groups (no new participants were accepted after the start of classes), the number of participants is up to 10 people. Each cycle consisted of 10-12 lessons conducted 1-2 times a week.

The groups were led by a psychiatrist, clinical psychologist and social work specialist. The psychiatrist was responsible for the meaningful aspect of the curriculum, justified the inclusion of patients in the psycho-educational group and distributed the volume of work to the clinical psychologist. Clinical psychologists conducted an experimental psychological examination of patients, carried out counseling and psychological correction of emotional disorders, conducted several classes on topics recommended by a psychiatrist. The duties of the social work specialist were to maintain the necessary emotional environment in the group and to inform its participants about the resources of the society, existing organizations and support groups for individuals with



mental disorders. After the formation of the group, lesson topics were chosen, communication and style of behavior were determined.

The content of the psycho-educational program is to provide information about the disease, to study the manifestations of non-psychotic mental disorders, the features of their course and prognosis; to develop the ability to understand the disease and identify symptoms, to manage them. In the classroom, patients were told about the importance of drugs in therapy and recovery; the role of stress in the ways of exacerbating the disease and overcoming it.

In the process of training, within the framework of the psycho-educational program, the interests of patients were identified, this information served as the basis for introducing patients into the group of interests: initiative drugs, a group of image lovers, soft toys, vocals, Art Studio, etc. this approach was important in the complex of restorative measures carried out by patients with somatized development of the individual. Analysis of its effectiveness determined the positive dynamics of the emotional state of patients, indicators of social activity and quality of life. Based on the synergistic methodology of mental medicine, we have developed a program that includes four blocks: medical and psychological, social and spiritual-moral. Preventive-corrective directions are carried out in the first three nosological fractals, and treatment-rehabilitation directions are carried out in the following three nosological methods, which form a single multidisciplinary protocol carried out by a team of specialists in psychiatrist, psychotherapist, clinical psychologist, social work and bioethics.

Treatment of Somatoform diseases should be strictly individually structured, as they are very difficult for therapy and there is no well-developed strategy. Such patients should be prescribed psychotropic drugs with caution.

Currently, the effects of antidepressants and antipsychotics in the treatment of somatoform diseases are most reliably demonstrated. In the group of anticonvulsants, the effectiveness of treating only somatoform pain syndromes has been shown.

Treatment of Somatoform diseases includes a wide range of therapeutic and preventive measures that require the participation of not only a general somatic practitioner, but also a psychiatrist and psychotherapist. Of great practical importance is the fact that the corresponding mental disorders are not understood or dissimulated by the patient himself. Patients usually resist attempts to discuss the psychological state of symptoms, even if there are clear depressive and anxious manifestations. As a result, currently psychotherapy is the main focus in the treatment of patients with somatoform diseases. Almost all modern forms and methods of psychotherapy are used.

Rational therapy, autogenic training, hypotherapy, analytical, behavioral, positive, customer-oriented therapy, etc. are widely used despite the priority of psychotherapeutic correction, dominance in the clinical picture of somatovegetative components does not allow to do without drug therapy. In the early period, even strict directive methods do not allow you to achieve the desired result, which ultimately spoils psychotherapy as a method.

In a review of Foreign Studies on psychotherapeutic approaches to the treatment of Somatoform diseases, the prospects for psychodynamic therapy and hypotherapy were noted, as well as the need to further clarify the effectiveness of these methods. Social block of the program. Sociotherapy of patients with Somatoform diseases includes measures aimed at explaining the nature of the disease and, accordingly, stopping unreasonable somatic examinations and traumatic procedures, as well as organizing treatment and labor rehabilitation.

In polymorphic type diseases, the socialization of patients ensures a short stay in the hospital (2-3 weeks.), to prevent the development of hypochondria and the appearance or deterioration of the symptoms of hospitalism. The need to facilitate working conditions – provided that a set of measures is carried out to create a calm, gentle atmosphere in the family and in production-does not arise. Measures for the social rehabilitation of patients with somatoform diseases of the isomorph type include long-term (taking into account at least 1,5-2 months of resistance to therapy.) hospital treatment, as well as the creation of mild conditions in production, which ensure the reduction of the working day and liberation from the types of labor associated with certain physical activity.

Medical care for patients with Somatoform diseases is associated with the need to distinguish the pathology of this circle from somatic diseases, requires certain qualifications of employees and provides laboratory and equipment, it is recommended to be carried out within specialized institutions on the basis of a common somatic network. Taking into account the threshold level of mental disorders, high labor and social adaptation, the need does not arise in neuropsychiatric dispensaries to monitor the persons of this contingent of patients. The spiritual and moral block of the program. Screening and correction of the moral environment of a neurozogenic family is carried out in the process of family psycho - and sociotherapy, which carries out the tasks of ethical-psychological harmonization of interpersonal relations and spiritual-moral development of the family.

**Conclusion.** Correction of the formation and development of basic moral feelings and moral image is carried out according to all moral methods of the individual, which can develop demoralization syndrome and destructive occupationalogenesis. Therefore, within the framework of early intervention and mediation strategies, the Ethics Committee and mental health service consultants support adaptive occupationalogenesis and provide training in the ethics of business communication to prevent mobbing and bossing, deetize professional consciousness, and dehumanize. Within the framework of the formed demoralization syndrome, the restoration of moral position and behavior requires coaching, creative expression therapy and sanogenetic therapy, moral training and behavioral moral psychotherapy, spiritual and religious practices. Spiritual and moral rehabilitation completes socio-psychological rehabilitation, carrying out the tasks of correcting pessimistic-catastrophic relationships and forming an optimistic-resource life position that enhances mental resillance. Thus, therapeutic measures for patients with somatized diseases should take into account not only the clinopsychopathological, but also the clinical and dynamic characteristics of the disease, the individual characteristics of patients. At the stage of somatized development of the individual, therapeutic approaches should be carried out from the point of view of an integrated approach to rehabilitation, supplemented with methods of psychological assistance, social rehabilitation and readaptation (psycho-educational programs, participation in the work of interest groups, etc.).

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## SADNESS AND LOSS REACTIONS AS A RISK OF FORMING A RELATIONSHIP TOGETHER

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**Abstract.** *Modern research confirms the importance of the experience of loss for increased mortality, including cardiovascular disease, especially in the first year after the death of loved ones. Individuals with severe losses often seek medical attention. Somatization cases associated with grief experiences are common among health care patients, which are perceived as somatic disorders and treated without success.*

**Keywords:** *pathological somatized grief reaction, comorbid, somatization, somatic diseases, pseudosomatics.*

**Introduction.** It is noted that the grief reaction can occur mainly in the form of somatic complaints and in patients with a previous history of somatoform disorders. There are descriptions of patients with hypochondria, in which an increase in the intensity of pseudosomatic complaints was noted against the background of the loss of loved ones [1]. The formation of somatoform disorders or physical dysfunctions as a result of a complex grief response is more frequent than the pictures of melancholy, mania or obsessive disorders [2].

There is a great interest among local researchers of the last decade in the study of the structure of loss, the possibility of dividing the grief reaction into a separate diagnostic category is being discussed [3, 4]. Prioritizing the study of mainly affective disorders that develop after loss, the authors highlight the deterioration of the somatic functioning of individuals who identify the grief reaction. A number of researchers [5-7] consider grief reactions within the concept of posttraumatic stress disorder (PTSD). Thus, indicates that the death of loved ones is the second most common cause of the appearance of PTSD (in 25% of cases) (after combat actions) [8]. In addition, according to the author, a significant share of this disease is somatoform symptoms. In general, the modern literature emphasizes the relationship between the history of psychological trauma, post-traumatic stress disorder and the number of somatic complaints of patients in the primary network [9-11]. Individuals with a traumatic history and patients with posttraumatic stress disorder are more commonly seen in Primary Care [12]. In this contingent, the risk of developing not only comorbid psychopathological, but also somatic diseases increased [13]. For example, a grief reaction can determine the clinical picture of arterial hypertension [14]. Lists cardiovascular disease as the leading cause of death in the first 6 months after loss (2/3 of all causes of death) [15].

Therefore, reactions that begin with the loss of loved ones are accompanied by a wide range of psychopathological diseases, which include the risk of manifestation of Affective (anxiety and depressive), somatoform diseases, PTSD symptoms and somatic dysfunctions [16-19]. Despite the obvious interest in studying grief reactions in the psychiatric literature of recent years, the problem

of the relationship between loss and the emergence of pseudosomatic and somatic diseases has not been sufficiently covered [20-25].

The data obtained show that a contingent of women with an adequate level of Education (Secondary and higher education) and personal information will be more prone to developing a pathological somatized reaction to grief emphasis, mainly C and B clusters [26-29].

In addition, the prepositional role of the Pre - and involitional age period in the formation of a pathological somatization reaction of grief can be noted. At the same time, the influence of the age factor, not counting cases associated with the predominance of the affective register (depressive-somatoform variant), is less associated with the male sex, since other clinical variants of the pathological somatized grief reaction in men (dysthymic-conversion and anxiety-somatoform), as a rule, are formed at a relatively young age [30-34]. At the same time, it is legal to propose a more significant contribution to the influence of the constitutional-genetic background and the current situation. This is confirmed by data on the pathology of personality and the frequency of alcoholism among first-degree relatives. Male alcoholism is closely related to the anxiety-somatoform variant of the pathological somatized grief response and, to a lesser extent, to the depressive – somatoform. Patients with dysthymic conversion and anxiety-somatoform variants have been found to have high rates of neurotic disorders in childhood [35-37]. In the pre-Real state period, a tendency to give a clear psychogenic response to the death of loved ones, with a homonic personal appearance, is more common in the history of patients with a dysthymic conversion option [38].

The importance of the semantics of true psychogeny is evident in the identified differences between groups of patients with different clinical variants of pathological somatized distress response [39]. Clinical groups with approximately equal quantitative ratio as the object of the child's loss were significantly different from the loss of the spouse (most patients with depressive-somatoform variant), as well as with the parent and sibling, which was often observed in groups with anxious-somatoform and dysthymicoconversion variants [40]. Also, death as a result of suicide determined only affective options with a pathological somatized reaction of grief, and the cooling of relations before the death of a loved one predetermined the formation of a dysthymic-conversion option with a pathological somatized reaction of grief to a greater extent. With a pathological grief reaction, the identified features of the clinic and the differential importance of pathogenetic effects help to optimize the diagnosis, therapy and Prevention of these conditions [41].

The purpose of the study: is to identify and analyze the phenomena of joint relationships and transformations formed by the development of an incongruous state; to identify possible ways of solving the grief and loss reaction and to predict them.

**Materials and methods.** A permanent sample of patients with grief and loss reactions diagnosed with adaptation disorder (F43.20-43.28 on ICD - 10) was conducted at the clinical psychiatric hospital. In total, 110 patients were registered, of whom 48 were women and 62 were men. Research methods: clinocatamnestic research, premorbid background study, clinical-dynamic psychiatric examination, statistical analysis.

As there are currently no specific diagnostic criteria for the loss response, the cases studied have been diagnosed as "adaptation disorder (F43.2)", "mood affective disorder (F32, F33, f34)", "posttraumatic stress disorder (F43.1)". In addition, symptoms of somatoform (F45), conversion-dissociative (F44.4–F44.7) and psychosomatic disorders were identified in all cases, which were

defined as subsyndromal or comorbid depending on severity. Cases of chronic somatic diseases and organic brain failure were excluded from the study.

The main method of research was clinical. Clinical scales (Hamilton – anxiety and depression, Toronto alexithymic scale – TAS) and questionnaires (assessment of the effects of Horowitz's traumatic events, somatized disorders – SOMS, Spielberger–Hanin's personal and situational anxiety) have been used to qualitatively and quantitatively account for clinical manifestations., Smol, TORZ). Statistical processing of the material was carried out using the statistics program for Windows 6.0.

**Results and their discussion.** In recent years, the detection of borderline mental disorders, including conditions associated with adaptation disorders, which include grief and loss reactions, remains consistently high. Modern realities, determined by external and internal socio-economic, socio-moral, political paradigms, as well as the catastrophic restructuring of the system of personal adaptation in the event of loss, do not raise doubts about their impact on the mental foundation of a person. Demoralization can increase the formation of complex psychosomatic comorbid bonds in soil where Extinction is suffering, or the formation of negative soil to renew them when they are present in the past. This condition is seen as a difficulty in checking the initial condition, changing its clinical and dynamic characteristics, control problems for individuals with psychogenic diseases, as a result of which it worsens the prognosis and reduces the likelihood of a positive exit from the grief and loss reaction. This study examined the characteristics of the combined interaction of grief and loss reactions with other mental disorders within the aggravating factor of primary nosological unit resolution.

Each of the 4 stages of pathological grief has different clinical and dynamic indicators, which goes beyond the ICD-10 classifier, which in the clinic only determines depressive, anxious, behavioral responses, as well as their combinations. We managed to show that such differentiation is more characteristic of the first stage of grief (stage of emotional shock).

At the same time, by the end of this period, the manifestation of more subtle and specific pathological structures formed by the active functioning of the mechanisms of personal protection has already been observed: psychosomatic and conversion manifestations, personal shifts; as well as the dependence of the stage 1 clinic on the premorbid characteristics of the individual and the relevance of these presentable manifestations are determined.

In Stage 2 of grief (acute stage of grief), against the background of universal signs of response to a stress factor-depression, aggression, anxiety-an increase and stabilization of the manifestation of other syndromic units is noted (obsessive-compulsive inclusions-27,3%, psychosomatic manifestations-20,9%, phobias – 20,0%, addictive behavior-14,5%), which ultimately creates conditions for the sharp formation of comorbid relationships.

For Stage 3 of the reaction (stage of disorder and frustration), a decrease in the appearance and intensity of all clinical indicators is characteristic, but at the same time individual psychopathological manifestations-personal deviations (13,8%) and psychosomatic diseases (19,1%) are stabilized, which are in addition to the universal components of the psychogenic reaction. able to determine the basis for the formation of combined pathologies and their effect on the picture of grief.

Stage 4 (reorganization stage) of the loss reaction we will consider as a basis for updating existing or first manifested mental disorders, and therefore the presence of comorbid bonds found in 75,4% of cases in the study will be of serious importance in predicting the outcome of grief

reactions. In a combined relationship, the dominant pathology was Personality Disorder (30,0%), addiction disorder (21,8%), dissociative and somatoform disorders (12,7% each). Against the background of the pathological reaction of loss, we noted the decompensation of 26,7% of existing mental disorders (especially personal ones; 60,0%), as well as the formation of other psychopathological structures (in 27,2% of cases), with a predominance of Affective and personal pathology.

Studying age differences, it was found that the most characteristic ( $p < 0,05$ ) of the loss experience for young adults combines with nosologies such as personality disorder and Addiction Disorder. The middle-aged studied ( $p < 0,05$ ) recorded an equal distribution between personality disorder, addiction disorder, and a formed depressive episode (endogenous depression). Among elderly patients ( $p < 0,01$ ), a depressive episode as well as addiction and psycho-organic disorders and anxiety-phobic disorders have been found to be more frequent.

We found that only every 11 of the sample were intact, viz does not detect any combined pathology. At the same time, the duration of the 1st period and the overall reaction in intact patients is 2 times less than in patients with comorbid pathology ( $p < 0,01$ ). For a small group with combined mental pathology, the frequency of occurrence of this stretch corresponds to 34,1% and 30,1%, respectively (in an intact subgroup, this distribution is defined as 10,0% and 0,0%).

For patients with previously existing mental pathology compared to a small group of intact patients, the likelihood of the occurrence of other mental disorders was significantly determined. If for the first subgroup such a phenomenon is characteristic of 40,2%, for the second only 10,0% ( $p < 0,05$ ). In more than half of the cases in a small group with mental pathology, the resolution of the malfunctioning reaction is considered dysfunctional (56,1%). In a small group of undisturbed patients, dysfunctional resolution is significantly less common – in 10,0% of cases ( $p < 0,01$ ).

Taking into account the identification of significant prevalence among combined disorders of individual deviations, it is important to consider their personal impact on the picture of pathological grief. We have identified an important probability of additional joint relationships of loss reaction structure + personal deviations. For personality disorders-we first identified an emotionally unstable and Schizoid-the probability was 48,5%. The results of the study allow us to talk about trends in prolonging the transition from the grief and loss reaction, in the design of which there is a personality disorder ( $p < 0,01$ ; compared to those without personality disorders). This is also indicated by an increase in therapeutic measures (up to 57,6% of cases with specific personality disorders) and a negative prognosis of the outcome of the grief and loss reaction (up to 54,5%).

**Conclusions.** Thus, we were able to identify the following characteristics of comorbid relationships that occur in grief and loss reactions:

1. Comorbid pathology in grief and loss reactions is very common (in 75,4% of cases);
2. The formation of comorbidity begins at the end of the first stage of grief (the beginning of psychosomatic and conversion manifestations, personal shifts), manifests itself in the second stage (obsessive-compulsive, psychosomatic and phobic disorders), stabilizes in the third stage (personal and psychosomatic disorders) and determines the solution of the reaction in the last stage in connection with the identification of identified personal, addictive, dissociative, somatoforms. and endogenous Affective Disorders;
3. The presence of comorbid pathology contributes its destructive contribution to the possibility of a positive solution to the reaction: the severity and mixing of signs of a general



clinical picture, increasing the time of grief, strengthening and changing therapeutic interventions associated with the organization of new nosological units.

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## GNOSTIC DISORDERS AND THEIR COMPENSATION IN NEUROPSYCHOLOGICAL SYNDROME OF VASCULAR COGNITIVE DISORDERS IN OLD AGE

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**Abstract.** *In old age, the work of analyzer systems gradually deteriorates. In vascular diseases of the brain, changes affect not only the receptor peripheral apparatus, but also the central apparatus, generating Gnostic diseases in different levels of vision, hearing, kinesthetic areas. But along with disruptive involutinal trends, there are also compensatory trends based on neuroplasticity. Understanding these trends, in addition to drug treatment, is essential for the use of the patient's resources during neuropsychological correction of cognitive disorders.*

**Keywords:** *old age, cognitive disorders, neuropsychological syndrome, correction, treatment.*

**Introduction.** The safety of the cognitive sphere is essential for an elderly person to adapt [1]. In domestic and foreign Neuropsychology, the concept of physiological aging is widely used, which means a slow increase in cognitive decline, which is poorly expressed and does not lead to socio-domestic malfunctions of older people [2-4]. Along with physiological aging, the concept of pathological aging stands out, which means a previous and deeper cognitive decline due to an increase in the cerebrovascular process. In mixed vascular degenerative dementias and Alzheimer's dementia models, complete data has been collected on changes in higher mental functions during physiological and pathological aging [5-7].

Particular attention of researchers is attracted by mild to moderate cognitive disorders in old age in terms of their prognostic importance in the development of dementia [8]. But it is equally important to study the compensatory restructuring of higher mental functions that interfere with cognitive decline. This is necessary for the development of basic neuropsychological correction methods aimed at reconstructing and strengthening the higher mental functions of the compensatory orientation [9-11].

To solve the specified practical problem, it is important to understand which areas of the brain have failed and which are "turned on" in response to dysfunction. Compensatory strategies as a source of cognitive domain in elderly people with chronic cerebrovascular insufficiency have become a focus in this study [12].

A neuropsychological approach based on the analysis of methods that help the subject to improve the result of performing tasks during experimental psychological research. Introduced the concept of compensation ("compensatory tertiary formations") when talking about the structure of

neuropsychological syndrome. Compensatory formations were seen as necessary and inevitable changes in response to a decrease in one or another high mental function [13-16].

Described the phenomenon of "vicariation compensation" as the ability of certain parts of the brain to assume damaged functions [17]. He also proposed to have topic-diagnostic significance in the methods applied to patients in the event of difficulties in conducting neuropsychological tests [18]. Engaged in the training of patients with aphasia on recovery in accounting, reading and writing disorders, finding that in the conditions of targeted programmed education, higher mental functions can be reconstructed with changes in functional systems that carry them out [19].

The individual factor plays an important role in the implementation of the compensatory resource in the rehabilitation process: the attitude to cognitive disorders, self-esteem and the general emotional state of the patient [20].

In a study of the higher mental functions of elderly people with physiological aging (mild cognitive disorders), he found a tendency to automate mental actions and actions, their greater awareness. The tendency to improper automation is explained by the author as a manifestation of the left compensatory shift of the functional asymmetry of hemispheres [21-24]. Increase in inhibitory processes during physiological aging: a general slowdown in the pace of the formation of mental activity and skills, difficulties in joining the task, a weakening of the ability to carry out several programs at the same time. Compensating for these violations was achieved by the regulatory effect of pronouncing actions by elderly people, moving to the gradual implementation of the program [25-27].

Described the listed violations the first functional block of the brain (energy) sees as a manifestation of dysfunction. Luria, which is compensated by enhancing the regulatory effect of a secure third programming block, regulating and managing activities [28]. Actively being carried out on the compensatory restructuring of individual higher mental functions – memory, attention, thinking [29]. In the process of performing samples for sequential removal, some operations were included in the external plan, their pronunciation was observed [30]. When memorizing material, its semantic mediation was used [31], while finger-tracking movements were used during reading. During cognitive operations, it was found to reconstruct the interaction of the cerebral hemispheres in old age [32].

A neurophysiological approach based on the identification of brain regions involved in solving various cognitive tasks (simultaneous use of neuroimaging methods with experimental-psychological research – recording EEG, conducting fMRI) [33-36]. Using this methodology, structural changes in the brain that are "strategically important" for the development of cognitive disorders and their successful compensation were studied. Studies using neuroimaging techniques (MRI, PET, EEG) have shown that nerve cells can increase activity compensationally and branch, forming connections, explaining the relatively satisfactory state of cognitive function even if there are structural changes in the brain [37]. Positive changes in brain structures occur mainly in the context of stimulation and learning [38]. This feature is shown in the literature as neuroplasticity [39]. Neuroplasticity as the basis for a compensatory restructuring of higher mental functions [40]. According to the results of the study, several theories have been formulated based on this approach. The theory of compensatory reconstruction in the cognitive field, literally – "the theory of building bases" (cognitive aging - the scientific theory of stacks) considers the brain as a homeostatic organ, since in some of its areas the decrease in neuronal activity is accompanied by a compensatory

participation in the activities of others [39-41]. At the same time, additional neural networks that do not participate in youth have been shown to be activated in solving cognitive problems in old age [42]. Y. The Stern (the concept of "cognitive reserve") cognitive reserve concept follows similar visions [43].

Developed by the interhemispheric asymmetry mitigation model (age-related asymmetry reductions) based on data on the dual activation ("opposite attraction", contralateral recruitment) of homologous brain regions in elderly people when performing tasks, and at a young age, such activation becomes one-sided. The anterior - posterior shift theory (posterior-anterior shift model) is based on determining the increased activation of anterior structures during aging [44]. These concepts are the basis for the vision of brain aging and its compensatory restructuring, and can be applied in understanding the changes that occur at the level of individual higher mental functions. Thus, important materials have been collected in areas related to neuropsychology and medical psychology [45].

The purpose of the study: analysis of the semiotics of gnosis disorders and their compensation.

**Materials and methods.** 120 elderly people undergoing inpatient treatment were examined at the city's medical and social Geriatrics Center. 3 groups were compared: 1) cognitively conserved (n=31); 2) with moderate cognitive decline (n=47); 3) with vascular dementia (n=42). The vascular nature of cognitive disorders is confirmed by instrumental studies (brain MRI, cerebral vessels ultrasound and extracranial vessels), higher than 6 points on the Khachinsky scale. All participants in the study are examined by a neurologist, psychiatrist and neuropsychologist. Visual and auditory Gnosis were evaluated. For this, samples were used to recognize volumetric and contoured unfinished images of the subject (visual object Gnosis), determine the time by dialing without numbers (visual-spatial), interpret the plot picture "broken window" (simulated gnosis). Tests to replicate words revealed impaired auditory speech Gnosis. In the event of difficulties, self-help methods used by the elderly were noted. Interest rates and frequency of occurrence are calculated.

**Results and their discussion.** In 5 (16,13%) of cognitively preserved study participants, visual subject Gnosis is impaired. In all cases, the disorders are mild and are diagnosed only in sensitive samples when recognizing unfinished contour images. The optical-spatial gnosis, based on the ability to move in real space and symbolically (determine time by hour, use maps and schemes), has not been disturbed by anyone. Simultan agnosia events occur only in 6 (19,35%) and most are mild, with 1 (3,23%) being moderate in observation. Older people gradually realized the meaning of the plot image, missed insignificant details, the strategy of perception, on the contrary, was sequential, "contemplative": describing each detail and only then summarizing it, it could cause inaccuracies, but did not have a significant impact on the understanding of the meaning. Thus, a violation of visual Gnosis with cognitive security is rare, erased, partially and largely expressed by a weakening of the synthetic component of visual perception. They are identified in a small percentage of older people in this group and do not disrupt their daily activities, are not reflected in complaints.

The Gnosis of acoustic speech is largely preserved. In a small part of the cases (6 people, 19,35%), disorders were found in the differentiation of phonemes with impaired speech heard while hearing was preserved. Thus, in cognitively preserved people, slight disturbances predominate in the work of the cortical connection of the visual analyzer.

With a moderate cognitive decline in vascular dementia, impaired object recognition occurs in 17 (36,2%) people. They were usually light or rarely moderate, and even difficult to perceive images of things in common.

At approximately the same frequency, a violation of 15 (31,9%) optical-spatial object recognition was detected: the perception of spatial properties of objects and the orientation in the legal coordinate system were disrupted. Basically, the violations were light (25,5%), manifested by fatigue and increased complexity of tasks.

In rare cases-on average (6,4%) and on the map is reflected in complaints about the previously uncharacteristic deterioration of the direction to the ground. In the perception of a complex plot image in 25 (53,2%) people, signs of a simulated object recognition disorder were identified. Mild diseases (27,7%) prevailed, moderate (8,5%) and clear (17,0%) are less characteristic. In the case of moderate disturbances, important details were omitted, leading to a misunderstanding of what was happening, but errors were corrected when focusing on them. In 2 (4,3%) people, pseudoagnosia was observed, where the conclusion about the subject or logic of the relationship between the heroes of the picture was made impulsively on the basis of detail, without analyzing the whole.

The types of visual agnosia considered could be both combined and observed separately. Thus, although holistic visual perception, optical - spatial analysis and synthesis, in rare cases, perceptual activity worsens. Auditory object recognition disorders, which are mostly deleted, have been frequently identified in 20 (42,6%) observations. They were often accompanied by complaints of "bad hearing", requests to repeat what was said in the absence of violations according to the examination of the ENT doctor. Thus, the analytical-synthetic activity of visual and auditory analyzers it gets worse to the same extent. In addition, there are cases of violation of the regulatory component of perception.

Disorders of visual object recognition in vascular dementia occur in most people-29 (69,05%) and were moderate to severe. This was demonstrated by the difficulty of recognizing common objects. In 27 (64,39%), spatial relations and the perception of the right-left direction are impaired. In 30 (71,42%) observations, a sharp narrowing of the volume of visual perception occurred with a violation of the simultaneous object recognition. In numerous observations, a violation of the regulatory component of perception was found. Thus, a complex violation of the analysis and synthesis of visual information develops in dementia. Voice discrimination and consequent speech comprehension disorders are 26 (61.9%) patient-specific, mostly moderate to severe.

According to our observations, elderly people used various methods of self-help in the performance of tasks: speech mediation (oral description of the image), kinesthetic mediation (drawing with a finger along the contour), the creation of hypotheses. These techniques can be seen as strategies to compensate for object recognition deficits that occur as a natural response to involuntarily and pathological brain changes. Their basis is perhaps the source of neuroplasticity of the brain and the personal attitude of an elderly person to active life and systemic intellectual loads. The proportion of people with cognitively preserved and moderate cognitive decline who develop compensatory strategies to overcome difficulties in object recognition is similar (12,8% and 12,77%) and significantly lower in vascular dementia (2,38%). Similar dynamics could be observed for the optical-spatial object recognition. The number of seniors who use the strategy of compensating for simultaneous object recognition disorders has increased with the severity of cognitive decline. However, in vascular dementia, they were often ineffective, unlike people with VHD. The need

for counseling has increased linearly cognitive deterioration. Similar patterns have also been observed for the acoustic Gnostic field.

**Conclusions.** Thus, in the early stages of perturbations in the cortical branch of modal specific data processing, mechanisms for compensating for the perturbation of Gnostic functions are updated by connecting additional afferentations (kinesthetic) or the regulatory function of speech. With the severity of cognitive disorders, compensatory strategies are less developed and lose effectiveness. But violations of the studied forms of Gnosis remain. This condition leaves the resource and hopes for some success in neuropsychological correction.

A wide range of supramodal strategies (the application of abstract-logical strategies) to compensate for the disruption of higher mental functions corresponds to the previous theory of displacement, the use of which we have identified in older people with mild cognitive decline indicates an increased activation of previous structures in physiological aging. The activation of method-specific compensation strategies (connecting additional afferentation), more clearly expressed by moderate cognitive decline, is confirmed by domestic and Foreign Studies, according to which additional areas of the brain during aging are involved in the performance of cognitive tasks. At the same time, this study shows that method-specific compensation strategies are only applicable and effective for cognitive decline-mild to moderate cognitive impairment.

The results we get point to the significant compensatory potential of higher mental functions in the stage of mild to moderate cognitive impairment. This potential must be identified and taken into account when developing corrective programs based on a differentiated approach when choosing tasks based on the severity of cognitive decline. Neuroprotective therapy increases the plasticity of nerve tissue and the effect of neuropsychological repair carries out this potential, promoting the formation of new and compensatory remodeling of existing neural networks. With older people, it is important to carry out psychological correction work aimed at correcting higher mental functions and improving the quality of adaptation.

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## EVALUATION OF EXTERNAL RESPIRATORY FUNCTIONS ACCORDING TO THYROID FUNCTION IN PATIENTS WITH BRONCHIAL ASTHMA AND AUTOIMMUNE THYROIDITIS

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**Abstract.** *The authors argue that the increase in the size of the thyroid gland and the presence of thyroid hormone indicators in the state of subclinical or manifest hypothyroidism prevent a sharp decrease in external respiratory functions.*

*At the same time, the quality of life of patients with bronchial asthma decreases, the risk of complications and death increases.*

**Keywords:** *bronchial asthma, autoimmune thyroiditis, hypothyroidism, respiratory function, euthyroidism.*

The urgency of the problem. Bronchial asthma belongs to the group of multifactorial diseases, and its development is affected not only by various external environmental factors, but also by the endocrine status. Due to its geographic location, the Republic of Uzbekistan is located in the region of severe iodine deficiency, and the incidence rate of various diseases of the thyroid gland, including autoimmune thyroiditis, is high. Both autoimmune thyroiditis and bronchial asthma have similar features in their pathogenesis, including an increase in autoimmune inflammatory factors, interleukin 1 and 6, and high levels of cytokines, which increases the frequency of their co-occurrence [1,7,8,13].

Autoimmune thyroiditis is the most common thyroid disease and is characterized by an initial thyrotoxic phase, followed by a short euthyroid phase and a lifelong hypothyroid phase. This disease is considered dangerous due to its complications to the cardiovascular system, nerves and other systems. A late diagnosis of autoimmune thyroiditis, the development of other comorbid pathologies in these patients, encourages the development of Mummoni or aggravation. Such diseases include bronchial asthma.

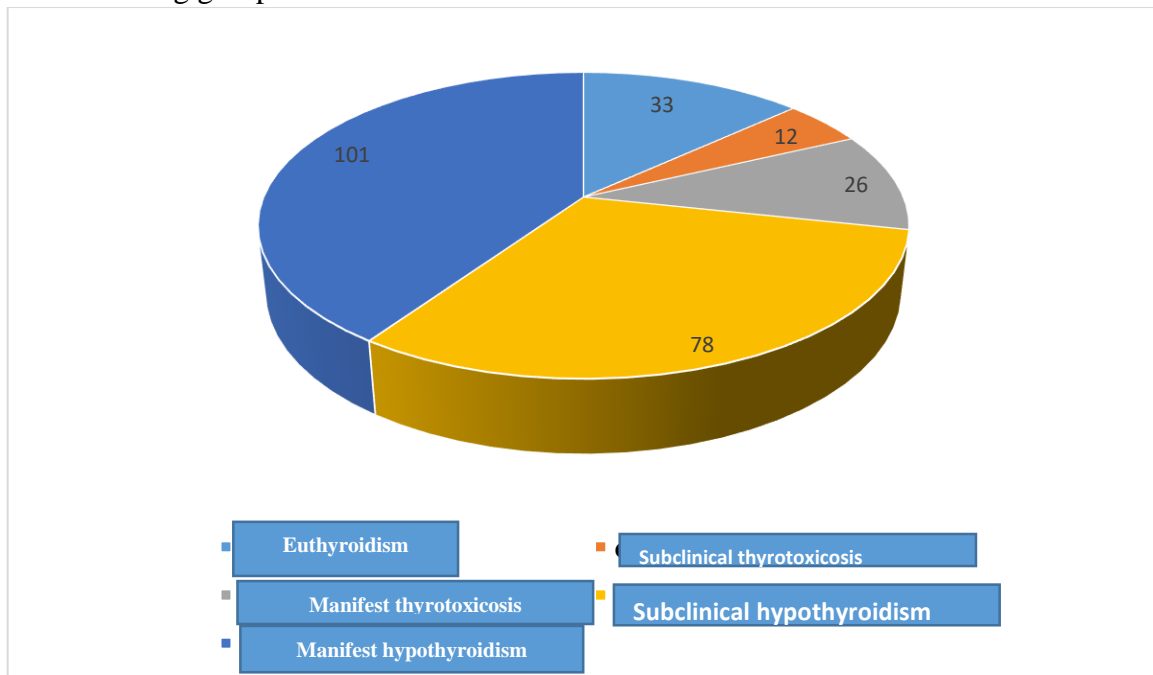
Sidorov L. D., Popova N. V. According to the works of et al., bronchial asthma lasts more than 1.5 years in some patients with endogenous and exogenous AD, and with the development of genetic predisposition to allergies and autoimmune changes, the thyroid gland is involved in the pathological process. As the severity and duration of BA, the degree of hypoxia, the level of treatment with inhaled drugs and glucocorticosteroids increases, the degree of changes in the thyroid system also increases; In patients with BA, changes in the thyroid gland are often accompanied by a decrease in the number and functional activity of T-lymphocytes, lymphoid infiltration of the thyroid gland, the appearance of antithyroid antibodies, and an increase in the titer of thyroperoxidase antibodies. The authors mentioned that these changes increase the manifestations of autoimmune thyroiditis [3,6,9].

Bondar I. A. and Kudelya L. M. studied the effect of hypothyroidism on the course of bronchial asthma. The purpose of the study was to compare the characteristics of the clinical course of BA and FVD in patients with BA. Patients with BA and AIT were compared with patients with bronchial asthma without thyroid pathology. Accordingly, the clinical presentation of bronchial asthma was more pronounced in hypothyroidism, and the number of both daytime and evening attacks was observed. Most of these patients were diagnosed with atrophic endobronchitis, which

is associated with the development of slow sputum or dry sputum in patients with hypothyroidism. Another noteworthy point is that these patients did not have a need for hormones in the treatment of bronchial asthma [2,4,11].

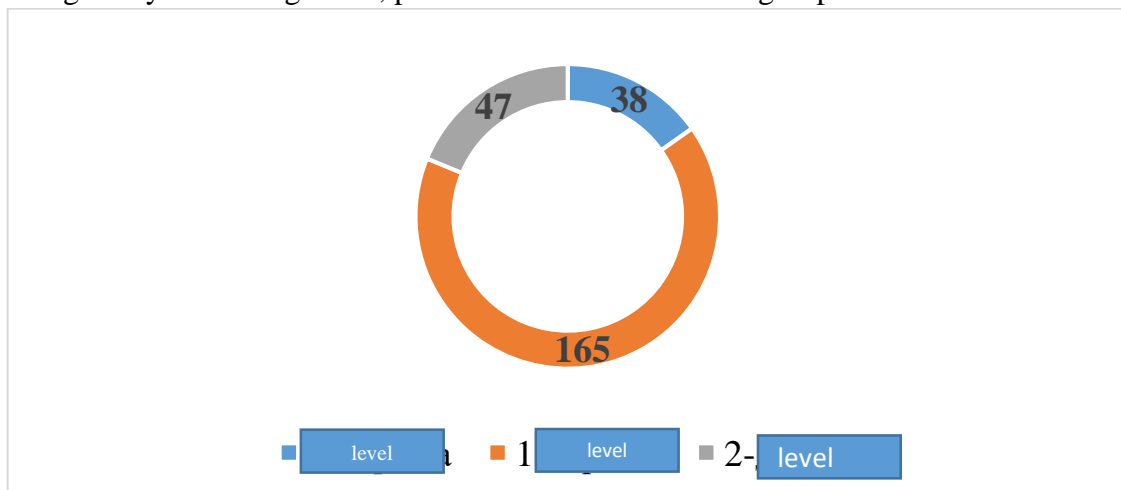
Based on the above information, it can be said that autoimmune thyroiditis and bronchial asthma often occur together. The hypothyroid stage of autoimmune thyroiditis has a significant impact on the course and number of attacks of bronchial asthma, and it is associated with the development of atrophic endobronchitis in most cases [5,10,12].

The purpose of the study. Assessment of external respiratory functions according to thyroid enlargement and thyroid function in patients with bronchial asthma and autoimmune thyroiditis. Research materials and methods. There were 250 patients with bronchial asthma and autoimmune thyroiditis involved in the study. According to the status of thyroid hormones, they are divided into the following groups:



**Figure 1. Distribution of patients in the study according to thyroid hormone levels.**

Accordingly, there were 33 patients in the euthyroid stage, 12 patients in the subclinical thyrotoxicosis stage, 26 patients in the manifest thyrotoxicosis stage, 78 patients in the subclinical hypothyroidism stage, and 101 patients in the manifest hypothyroidism stage. According to thyroid enlargement, patients were divided into 3 groups.



**Figure 2. Distribution of patients according to the degree of thyroid enlargement.**

According to the WHO classification, there were 38 patients with 0 degree enlargement, 165 patients with 2 degree enlargement, and 47 patients with 2 degree enlargement. Research results. Patients with autoimmune thyroiditis were assessed for bronchial asthma and external respiratory function according to thyroid enlargement (Table 1).

**Table 1**

**Assessment of external respiratory functions according to thyroid gland enlargement in patients with bronchial asthma of the 1st degree**

Indicators	0-level n=8	1-level n=23	2-level n=7
Age	47,2±1,03	49,5±1,03	54,8±1,05
Gender, A/Э	5/3	16/7	5/2
OFV1 (l)	1,79±0,2	1,76±0,2	1,76±0,2
HTS (l)	2,93±0,3	2,99±0,3	2,90±0,3
Tiffno index	0,7±0,02	0,7±0,02	0,68±0,02

According to the table above, there was no reliable difference between the groups when examining external respiratory function indicators according to the degree of thyroid enlargement. Thus, thyroid gland enlargement did not show a sharp change in the indicators of OFV1, OTS and Tiffno index among patients of the first degree of bronchial asthma. Now, patients with bronchial asthma of the 1st degree were studied according to the status of thyroid hormones (Table 2).

**Table 2**

**Indicators of external respiratory function according to thyroid function in patients with 1st degree of BA**

Indicators	OFV1 (l)	HTS (l)	Tiffno
Euthyroidism	2,24±0,2	3,2±0,3	0,7±0,02
Subclinical thyrotoxicosis	2,1±0,2	3,0±0,3	0,7±0,02
Manifest thyrotoxicosis	1,94±0,2	2,9±0,3	0,67±0,02
Subclinical hypothyroidism	1,42±0,2	2,84±0,3	0,5±0,02
Manifest hypothyroidism	1,35±0,2*	2,71±0,3	0,5±0,02*

Note: \*- difference is reliable compared to euthyroid group (\*-P<0.05)

According to the table above, external respiratory function was compared between the groups, and the group of patients with manifest hypothyroidism was reliably different from the euthyroid group according to OFV1 and Tiffno index. However, OTS did not show a reliable difference between the groups. This indicates that the formation of hypothyroidism leads to a number of disorders of external respiratory functions. There were 67 patients of the 2nd degree of bronchial asthma, whose external respiratory functions were studied according to the enlargement of the thyroid gland (Table 3).

**Table 3**

**Assessment of external respiratory functions according to thyroid gland enlargement in patients with bronchial asthma of the 2nd degree**

Indicators	0-level n=11	1-level n=47	2-level n=9
Age	49,5±1,03	53,8±1,03	51,9±1,03
Gender, A/Э	7/4	28/19	6/3
OFV1	1,82±0,2	1,67±0,2	1,54±0,2
HTS	2,76±0,3	2,75±0,3	2,68±0,3
Tiffno index	0,7±0,02	0,64±0,02	0,6±0,02

When patients with bronchial asthma of the 2nd degree were studied, the female gender predominated among these patients. Although the increase in the size of the thyroid gland led to a decrease in external respiratory function indicators, the difference between them did not meet the level of reliability.

**Table 4**

**Indicators of external respiratory function according to thyroid function in patients with BA level 2**

Indicators	OFV1	HTS	Tiffno index
Euthyroidism	1,98±0,2	2,84±0,3	0,7±0,02
Subclinical thyrotoxicosis	1,96±0,2	2,8±0,3	0,7±0,02
Manifest thyrotoxicosis	1,96±0,2	2,8±0,3	0,7±0,02
Subclinical hypothyroidism	1,48±0,11*	2,66±0,3	0,56±0,02*
Manifest hypothyroidism	1,38±0,11**	2,57±0,3**	0,54±0,02*

Note: \*- difference is reliable compared to euthyroid group (\*-P<0.05)

\*\* - the difference compared to the euthyroid group is reliable (\*-P<0.005)

According to this table, external breath indicators were compared according to thyroid function in patients with bronchial asthma of the 2nd degree, according to which a reliable difference was found between Tiffno index and OFV1 indicators not only in patients with manifest hypothyroidism, but also in patients with subclinical hypothyroidism.

**Table 5**

**Assessment of external respiratory functions according to thyroid gland enlargement in patients with bronchial asthma grade 3**

Indicators	0-level n=13	1-level n=51	2-level n=16
Age	51,1±1,03	49,8±1,03	55,2±1,03
Gender, A/Э	7/8	33/18	6/10
OFV1	0,86±0,01	0,80±0,01	0,71±0,01
HTS	1,70±0,2	1,67±0,2	1,53±0,2*
Tiffno index	0,51±0,02	0,49±0,02	0,49±0,02

Note: \*- difference is reliable compared to euthyroid group (\*-P<0.05)

In patients with bronchial asthma of the 3rd degree, there was no difference according to the age of the patients, but the incidence was higher in women. Of the external respiratory parameters, OTS showed a reliable inferior result among patients with grade 2 enlargement. This means that not only the state of thyroid hormones, but also the enlargement of the thyroid gland affects respiratory parameters.

**Table 6**

**Indicators of external respiratory function according to thyroid function in patients with BA level 3**

Indicators	OFV1 (l)	HTS (l)	Tiffno index
Euthyroidism	1,0±0,01	1,88±0,2	0,55±0,02
Subclinical thyrotoxicosis	0,85±0,01	1,68±0,2	0,51±0,02

Manifest thyrotoxicosis	0,86±0,01	1,70±0,2	0,51±0,02
Subclinical hypothyroidism	0,61±0,01*	1,4±0,2	0,44±0,02*
Manifest hypothyroidism	0,65±0,01*	1,42±0,2**	0,46±0,02*

Note: \*- difference is reliable compared to euthyroid group (\*-P<0.05)

\*\* - the difference compared to the euthyroid group is reliable (\*-P<0.005)

In this table, when patients are compared according to the level of thyroid hormones, there is a significant difference between OFV1 and Tiffno index in patients in the subclinical hypothyroidism group, and OTS in patients in the manifest hypothyroidism group (P<0.005), and between OFV1 and Tiffno index (P<0.05). showed the difference.

When patients with bronchial asthma of the 4th degree were studied, the general and thyroid status of the patients is reflected in the following tables.

**Table 7**

***Assessment of external respiratory functions according to thyroid gland enlargement in patients with bronchial asthma grade 3***

Indicators	0-level n=6	1-level n=43	2-level n=15
Age	51,1±1,03	49,8±1,03	55,2±1,03
Gender, A/Ә	4/2	23/20	8/7
OFV1	0,86±0,01	0,80±0,01	0,71±0,01
HTS	1,70±0,2	1,67±0,2	1,53±0,2*
Tiffno index	0,51±0,02	0,49±0,02	0,49±0,02

Note: \*- difference is reliable compared to euthyroid group (\*-P<0.05)

No significant difference was observed between the age and gender of the patients. However, in patients with 2nd degree of thyroid gland, it is possible to see a reliable reduction of the OTS indicator.

**Table 8**

***Indicators of external respiratory function according to thyroid function in patients with BA level 4***

Indicators	OFV1	HTS	Tiffno index
Euthyroidism	0,66±0,02	1,44±0,2	0,46±0,02
Subclinical thyrotoxicosis	0,68±0,02	1,42±0,2	0,48±0,02
Manifest thyrotoxicosis	0,61±0,02	1,4±0,2	0,44±0,02
Subclinical hypothyroidism	0,37±0,02**	1,21±0,2**	0,31±0,02*
Manifest hypothyroidism	0,33±0,02**	1,1±0,2**	0,3±0,02*

Note: \*- difference is reliable compared to euthyroid group (\*-P<0.05)

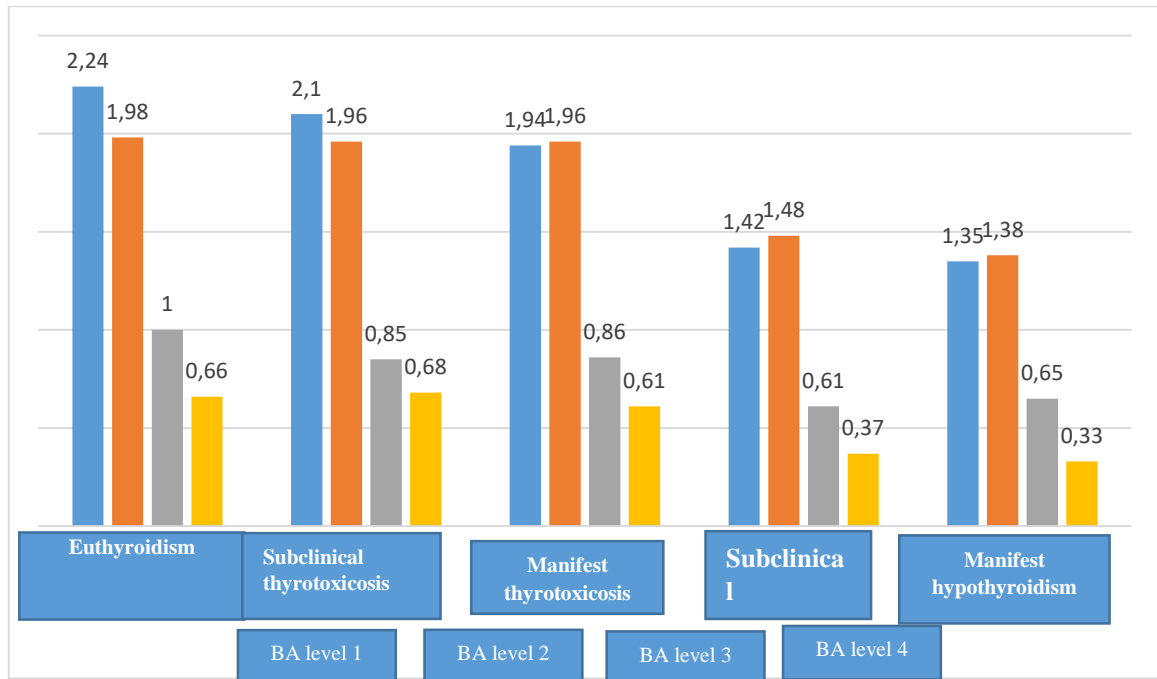
\*\* - the difference compared to the euthyroid group is reliable (\*-P<0.005)

According to the above table, exacerbation of bronchial asthma was clearly reflected in patients with manifest and subclinical hypothyroidism. The reliability value of comparing these groups to the euthyroid group was P<0.005.

Combining the results obtained during the study, a comparative analysis of external respiratory functions according to thyroid hormones was carried out.

Forced Expiratory Breath (OFV1) in 1 second was compared, the results are shown below (Figure 3).

Comparison of OFV1 values according to thyroid hormone status and bronchial asthma levels



**Figure 3. Comparison of OFV1 values according to thyroid hormone status and bronchial asthma levels**

According to Figure 3, external respiratory functions decreased according to the severity of bronchial asthma. However, in patients with subclinical and manifest hypothyroidism, this indicator showed a reliable lower result compared to euthyroidism and thyrotoxicosis groups.

According to the results of the vital capacity of the lungs (Figure 4), the severity of bronchial asthma was accompanied by a sharp decrease in the vital capacity.

However, this rate reflected a reliably higher rate in euthyroid patients than in hypothyroid patients.

This means that the formation of hypothyroidism, the lack of thyroid hormones in the body damages all joints of the metabolism, and is manifested by the development of dystrophic changes in the mucous membrane of the internal organs.

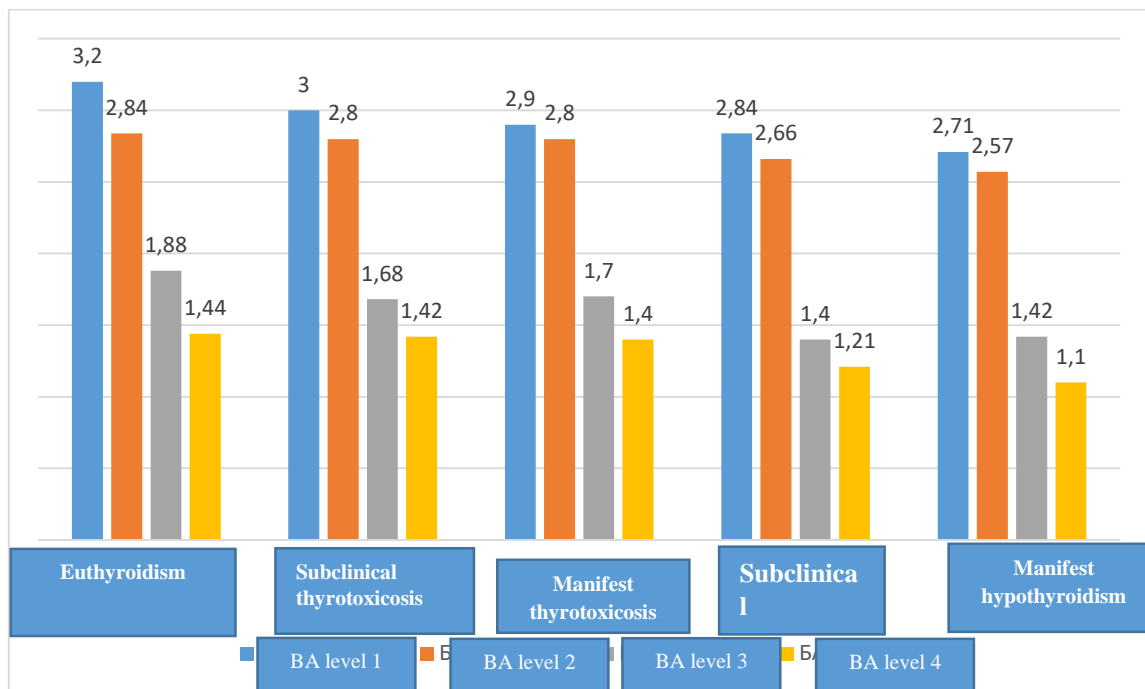
Below is a description of the variation of the Tiffno index according to the levels of bronchial asthma.

The Tiffno index also reflected changes in other external respiratory functions, and in turn, no significant difference was observed in patients with thyrotoxicosis compared to patients with euthyroidism.

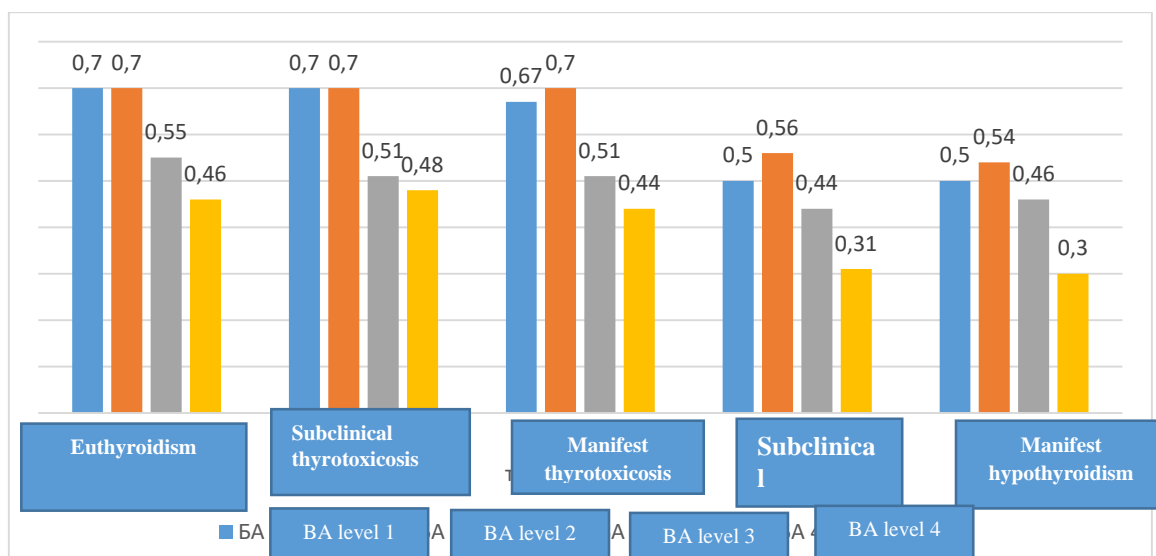
These changes are explained by the fact that thyroid hormones increase the sensitivity to catecholamines, which leads to dilatation of the bronchi.

Research results. Summarizing the above data, it can be concluded that the increase in the size of the thyroid gland and the indicators of thyroid hormones in the state of subclinical or manifest hypothyroidism significantly reduce the external respiratory functions. This reduces the quality of life of patients with bronchial asthma and increases the risk of complications and death. The development of atrophic endobronchitis and swelling observed in the mucous membranes in

hypothyroidism has a negative effect on the course of bronchial asthma. That is why timely diagnosis and treatment of this category of patients is considered important.



**Figure 4. Comparison of HTS indicators according to the status of thyroid hormones and according to the levels of bronchial asthma**



**Figure 5. Comparison of Tiffno index indicators according to the status of thyroid hormones and according to the levels of bronchial asthma.**

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## CLINICAL AND SOCIO-DEMOGRAPHIC CHARACTERISTICS OF ELDERLY PATIENTS WITH SUICIDE ATTEMPTS

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**Abstract.** *Socio-demographic and clinical indicators of persons who tried to commit suicide by poisoning with indicators of suicide patients. The effect of alcohol and its compounds with other negative factors on suicide attempts at poisoning was first identified. The tender and age characteristics of patients with suicide poisoning attempts were studied in detail. Based on the data obtained, for the first time, an algorithm for providing psychiatric assistance to individuals with suicide attempts in a multidisciplinary hospital was developed.*

**Keywords:** *socio-demographic, suicide, suicide attempt, mental health care.*

Suicide attempts of poisoning is an important and poorly understood problem. Their diagnosis is hindered by the ambiguity of the term "suicide attempt", which is reflected in the differences in epidemiological indicators. I. I. According to Sadovnikova [1] in the population, about 80% of all episodes result from accidental poisoning, 18% from suicide poisoning, and 2% from professional poisoning. Other authors [2] suggest that 3-5% of total calls to an ambulance station come from drug poisoning, 30% of which are accidental and 70% intentional. Their share in the population of mentally ill suicide attempts poisoning was 59% [3]. The close indication is from the material of the Toxicology Department of the somatic hospital. The number of psychotropic drug poisoning and their share among suicide attempts was 42%. A. According to Rahman [4], intentional self-poisoning is not permanent and accounts for 0,5-2% of visits to the ambulance unit, the site of the first medical contact. Suicide attempts in patients with poisoning are high risk of repeated suicide attempts and suicide [5].

At the same time, psychiatric care in emergency departments is not provided everywhere or in full size [6] showed that 41% of people with suicide poisoning attempts did not consult a psychiatrist. In the absence of psychiatric care, a year after the first, 16% of suicide attempts of poisoning will attempt again, while 2% will lead to death [7-9].

If the study of suicide attempts, in general, is devoted to a large number of cases, then there are few cases devoted to suicide attempts of poisoning [10]. In a number of dissertation studies, the focus is on somatic disorders in suicide poisoning with individual drugs [8], while psychosocial factors are not adequately analyzed [11].

There are differences in gender factors in epidemiological studies of suicide poisoning attempts. For example, some works have found that women are twice as dominant [12], while others do not observe such a ratio [13]. There are also differences in the proportion of mental illnesses of people with suicide poisoning attempts taken in emergency hospitals. For Example, A. According to Doshi [14], 55% of patients were diagnosed with mental disorders: 34% had

depressive disorders, and 16% had alcohol abuse. In another study, adaptive reactions (84,3%) were the most common, with depression only found in 18,1% [15-17].

There is almost no comparative study of Risk Factors in the literature on different methods of suicide [18].

Since mood decline occurs in all suicides, the most important predictor of suicide among mental disorders, according to many authors, published a meta-analysis of suicide in patients with affective disorders of Affective mood disorder and found a 15% lifetime risk [19-22]. Research obtained through a literary search containing data related to suicide in affective mood disorders. According to them, the assessment of the lifetime prevalence of suicide in hospitalized patients with suicidal behavior was 8.6%. The lifetime risk was 4.0% for patients with affective disorder who were hospitalized without signs of suicidal behavior [23-27]. The lifetime prevalence of suicide for a mixed inpatient/outpatient contingent was 2,2% and less than 0,5% for patients without Affective Disorders [28].

Other studies estimate that between 25% and 50% of bipolar patients attempt suicide at least once in their lifetime and that between 8% and 19% end suicide. Risk factors include the early age of onset of the disease, past history of suicide, family history of suicide, joint borderline personality disorder, surfactant abuse, and feelings of hopelessness [29-31].

Review, the risk of lifelong suicide in schizophrenia is approximately 5%. Young men with high educational attainment have a higher risk of suicide. Risk factors associated with the disorder: history of suicide attempts, depressive symptoms, acute hallucinations and delusions, criticism of the condition. The family's history of suicide also relates to the subsequent suicide of surfactant abuse. The only anti - suicide factor is the availability and adherence to effective assistance [32-34].

Conducted a comparative analysis of risk factors for attempted suicide in schizophrenia and affective mood disorders. The group of patients with schizophrenia was characterized by their youth and refusal to undergo treatment for more than 3 months. In contrast, the proportion of patients with comorbid somatic disorders was significantly higher in the group of Affective Disorders, with alcohol use in suicide attempts. Suicide attempts by schizophrenic patients were made in much more serious ways. In addition, hallucinatory-delusional symptomatology was the most common factor in a group of patients with schizophrenia, and was the only factor that showed a significant correlation with the severity of the suicide attempt method [35].

Among psychogenic diseases, the greatest risk of suicide is psychogenic reactions that are developing sharply. Suicidal behavior is more frequent in adolescents and adults with adaptation disorders, and is diagnosed in 1/3 of suicidal youth. However, there has been little work to link suicide to adaptation reactions, possibly related to over-diagnosis of depressive disorders. Highlighted the importance of studying crisis conditions leading to suicide, identifying two risk factors: formal conflicts and personal and family [36, 37].

A number of other mental disorders are associated with suicide – PTSD, personality disorders, alcoholism, drug addiction, psychosomatic disorders. Based on numerous studies on the correlation of mental disorders with suicidal behavior, the thesis on the direct dependence of suicidal behavior on individual psychopathological symptoms was rejected, two variants of suicidal behavior were identified in mental patients-situational (psychogenic) and psychotic, suicidal risk not only with the depth of mental disorders, but also the development of the disease [38].

The relationship of physical disorders to suicidal behaviors has been studied. He found that more than a third of people who committed suicide had physical illness. According to other authors, most physical diseases, including rheumatoid arthritis, diabetes, and hypertension, do not increase the risk of suicide, with some diseases this risk increases [39]. These include HIV / AIDS, which is seven times higher than the risk indicator compared to the general population. Nine times the risk compared to the general population and four times the risk compared to other cancers occurs in brain tumors [40]. The desire to live in Terminal cancer was positively associated with negative and social support for others with conscious perception of weights. And finally, compared with and double the risk in multiple sclerosis [41].

The relationship between physical illness and suicide can be indirect, and many other risk factors, including mental illness, functional limitations, and social isolation [42].

The purpose of the study: to determine the psychosocial and clinical characteristics of adult patients who were hospitalized in a multidisciplinary hospital after an unfinished suicide attempt of poisoning in order to improve the tactics of treatment and management of this contingent of patients.

**Materials and methods.** 53 young patients were examined: average age 26,6±4,4, CI (95%) 25,4 – 27,8 years, 19 men and 34 women and 24 elderly patients, average age 71,9±10,8, CI (95%) 67,3 – 76,4 years, 4 men and 20 women. The study was conducted clinically and psychopathologically using a formalized map of a patient with a suicidal behavior score of 250 points. Statistical processing of the material was carried out using the statistica6 package.

**Results and discussions.** Among elderly and young patients, poisoning with sedatives, sleeping pills and other psychotropic drugs is in the first place (X-61): elderly – 54,1% (13 people), young – 47,2% (25 people). Among young people, attempts to commit suicide without real danger to life (35,9%) and demonstrative blackmail methods that inadvertently threaten life (39,6%), in the elderly-suicide attempts were real intentions abstinence from life (37,5%), 25% of cases in old age were cases of so-called autoevtanasia. A positive correlation between autoevtanasia and loneliness (0,6800), severe somatic disease (0,5897) and persistent pain (0,6000) was observed, with a negative correlation between autoevtanasia and relationships with loved ones (-1,0000). The most common problems among young people are unfair attitude problems by relatives and those around them (32,1%), jealousy, adultery, divorce (32,1%), dissatisfaction with the behavior and personal qualities of "important others" (30,2%), loneliness, changing the usual stereotype of life, social isolation (18,9%), (17,0%), "an important other is" loss, illness, death of loved ones (15,1%), unsuccessful love (13,2%), neglect, care of others (13,2%), sexual incompetence (9,4%), unfair requirements for the performance of professional or educational tasks (9,4%), professional and educational disputes (7,5%), insolvency, failure at work or study, decreased reputation (7,5%), other material and domestic difficulties (7,5%), fear of punishment or shame (3,8%), self-judgment for misconduct (3,8%). In the first place among elderly patients there were also problems with the unfair attitude of relatives and surroundings (37,5%), loneliness (37,5%), lack or insufficient care (12,5%), in addition, the lack of funds for the purchase of medicines (8,3%), lack of funds for the purchase of medicines (8,3%), housing fees (8,3%), lack of food funds (4,2%), health problems most important for elderly patients: cardiovascular diseases (8,3%), long-term depressive reactions due to adaptation disorders (41,7%), endocrine, metabolic disorders and eating disorders (37,5%), diseases of the musculoskeletal system and connective tissue (37,5%), nervous system (33,3%), respiratory system (25,0%), genitourinary system (20,8%), digestive system (16,7%), diseases of

the eye and its appendages (16,7%), persistent pain syndrome(12,5%), oncological diseases (12,5%), skin and subcutaneous tissue diseases (8,3%), other mental disorders (4,2%). The data obtained on the basis of the research institute, we have developed an algorithm for providing psychiatric assistance to individuals who have tried to commit suicide to poisoning, which includes the participation of a psychiatrist in all inpatient stages of medical care.

**Conclusions.** Older people have identified more serious intentions to give up life, it has been noted that suicidal behaviors are associated with loneliness, somatic disorders, and difficulty stopping pain. The information obtained allows us to talk about the need for continuity and participation of a polyprofessional group in helping this contingent. The proposed algorithm provides full mental support for most patients who attempt suicide by poisoning.

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## SOCIO-DEMOGRAPHIC, PERSONAL AND CLINICAL CHARACTERISTICS OF RELATIVES OF PATIENTS WITH ALCOHOLISM

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**Abstract.** *Narcological diseases are diseases that are associated not only with the health and personality of the drug addict, as a rule, relatives get into this situation. At the same time, on the one hand, its further fate may depend on the behavior of the patient's relatives, and on the other hand, the life of loved ones is filled with unpleasant experiences. As a result, relatives themselves can develop codependency, psychosomatic disorders and even chemical dependence.*

**Keywords:** *personality, alcoholism, socio-demographic, code dependence, psychosomatic disorders, addiction.*

**Introduction.** Alcohol consumption has serious negative consequences and is seen as one of the main risk factors leading to a deterioration in the health of the population around the world [1-3].

Traditionally, the problem of gender fracture of alcoholism was considered more relevant for men. However, recent research seriously questions this view. The toxic effect of alcohol directly on the mother's fetus is a negative environmental factor for the latter. The consequence of this is a significant increase in various pathologies, including mental pathology, in the group of children whose mothers abuse alcohol in relation to the children of non-alcoholic mothers [4-8]. In modern society, the topic of alcoholism is of particular importance in terms of the rapid growth of youth alcoholism [9-11].

The range of factors that contribute to the formation of female alcoholism is very wide. These include, first of all, biological, such as heredity, chemical constants in men and women, and differences in enzyme activity, socio-psychological – mental trauma, microsocial environment, as well as mental (the presence of Affective, neurotic, and stress-related diseases) [12-16]. A number of publications show frequent comorbidity of early alcoholism of deviant (deviant) behaved teenage girls [17-19]. Mental health is a complex concept due to various factors (social, biological, psychological), as well as the capabilities of the health system [20].

Mental activity affects the ability of the environment to adapt to changes in environmental characteristics, plays a key role in border conditions and the emergence of diseases. Modern crisis phenomena in the country lead to an increase in the mental pathology of the population, a deformation of spiritual values, thereby reducing its level of adaptation [21-27].

An important indicator of the mental health and adaptation level of the population is the prevalence rate of drug disorders. The situation with the population's consumption of psychoactive

substances (Surfactants) is dynamic, so its constant monitoring is necessary to form the most appropriate and effective preventive programs [28-35].

In recent years, the use of surfactants in Russia has acquired a destructive scale and acquired an epidemic character [36], thereby causing a wide range of medical and socio-economic problems [37]. The fact that the main part of patients with Narcological diseases corresponds to working age – 85% of patients with Narcological diseases exacerbate the situation [38].

According to a number of authors one of the informative indicators that characterize the "Narcological tension" in the country is the official statistics data. G. M. A medico-statistical study by Entin and co-authors noted a progressive increase in surfactant consumption. Thus, in 20 years, the total number of surfactant consumers increased by 29.36 times [39].

According to various sources in the Russian Federation, the number of patients with mental and behavioral disorders associated with the consumption of surfactants registered by specialized outpatient institutions ranges from 3,3 to 4,5 million or 2,2% of the total population [40]. Other reasons are also called: the changed approach to methods of primary identification of patients [41], the expansion of the anonymous Narcological Assistance Network [42], which led to a decrease in the appeal to state specialized institutions.

It should be noted that the decrease in the incidence of general drug addiction belongs to the male population, on the contrary, in women and adolescents, their growth is recorded: 5,2 % (women) and 6,2 % (adolescents). In this regard, work on the study of mechanisms for the formation of addictive behavior and the development of targeted prevention programs in populations of women and children is of particular importance [43]. According to various authors, the number of alcohol-dependent patients ranges from 66 to 85,7% of the total number of all registered surfactant consumers. People or general population 1,5–2% [44]. Five years ago, the total number of alcoholics was 2,774,000. In some regions, this figure reaches 2-5% of the total population [45]. In addition, the main part of alcoholic people the problems are 20-22 years (31,4 %) and 23-26 years (40,4 %) [46].

The purpose of the study: to study the main socio-demographic, clinical and personal characteristics of relatives of alcohol-dependent patients according to the presence of code dependence.

**Materials and methods.** On the basis of the regional Narcological dispensary of the Transbaikal territory, a continuous examination, clinical-anamnestic and psychological examination of 232 relatives of alcohol-dependent patients who accompanied them when seeking inpatient medical care was carried out. Those included in the study are between the ages of 20 and 65 ( $40,6 \pm 1,1$  years on average). Females made up 64,7% and males made up 35,3%.

A special survey map has been developed that includes a socio-demographic block, drug history data, and a special section (21 items in total). The special part uses a code dependence measurement scale in the Spann-Fisher relations to determine the existence of a code dependence, L. T. With the help of Morozov's questionnaire-questionnaire and the "AUDIT" test (who), the level of alcoholism, L. T. Studied the self-assessment of the character in Morozov's modification. The character's self-assessment included 14 traits: 7 maladaptive and 7 maladaptive. The analysis took into account the change in adaptive and inflexible properties, as well as the change in the overall adaptive potential of the individual (the difference between the sum of adaptive and inflexible properties of the present and past). Over time, with an increase in personality trait violence, the difference was determined by the sign "+", with a decrease by the sign "-". Statistical



processing of the results obtained during the work was carried out using the Microsoft Excel analysis package and the Statistica-6.0 applied statistical software package.

It included description of the sample, arithmetic mean, mean quadratic deviation, and arithmetic mean error finding, frequency of appearance of properties, data grouping. The reliability of the differences was determined in accordance with the student's criterion  $t$ , the presample was checked for compliance with the normal Gaussian distribution.

**Results and their discussion.** During the course of the work, according to the Spann-Fisher scale, a moderate codependency was found in 62,9 percent (146) of relatives of patients with alcoholism, with a sharp expression in 25,9 percent (60), with no codependency in only 11,2 percent (26) cases.

Based on the results obtained, two groups of those examined were identified: the main ones were 206 people who depended on the code, and the control group-26 people who did not depend on the code. The age of the respondents was compared to  $40,7 \pm 1,2$  years and  $40,0 \pm 3,1$  years, respectively. It is important to note that code-dependent relatives were dominated by representatives of the female sex (67,0 %;  $p < 0,05$ ), while in the absence of code dependence, male (53,9 %;  $p < 0,05$ ).

Currently, they do not have their own family 37,9 % (in the main group – 40,7%, in the control group – 15,4 %;  $p < 0,01$ ); relations with loved ones are assessed as bad 31,0 % (in the main group – 32,0%, in the control group – 23,1 %); their living conditions are considered unsatisfactory 23,3 % (in the main group-40,7%, in the control group-15,4%;  $p < 0,01$ ); in the main group 23,3%, in the control group). 20,7% of the individuals examined showed low family support (in the main group – 18,5%, in the control group – 38,5%;  $p < 0,05$ ).

6,0% of respondents had an incomplete secondary education, 8,6% had a secondary education, 37,9% had a secondary special education (40,7% in the main group, 15,4% in the control group;  $p < 0,01$ ), and 47,5% had a higher education. Currently, 81,9% of the examined relatives are employed, 18,1% are unemployed (19,4% in the main group, 7,7% in the control group;  $p < 0,05$ ).

In parental alcoholism, heredity was found to be aggravated in 28,4% of relatives, compared to 30,1% in the codeband group, and 15,4% in the non-codeband group (control).

Chronic somatic disease has 25,8% of those tested (in the main group – 28,2%, in the control group – 7,7%;  $p < 0,001$ ). 30,2% of respondents recorded suicidal thoughts, thoughts, intentions and suicide attempts (in the main group – 31,1%, in the control group – 15,4%;  $p < 0,05$ ). Of those previously tested, 13,8% tested drugs, while another 5,2% now admitted to using them regularly. 28,5% of relatives of patients with alcoholism are alcohol abusers (29,2% in the main group, 23,1% in the control group). There is no difference between groups on these indicators. An analysis of the character's self-esteem showed that the overall adaptive potential (COAP) change in individuals in relatives of alcohol-dependent patients was Phase II -  $26,2 \pm 9,7\%$ . Adaptive trait displacement (sas) -  $0,6 \pm 5,7\%$ ; inflexible (SDS) –  $30,3 \pm 7,2\%$ .

Thus, the severity of the adaptive characteristics of the individual (organization, language acquisition, thrift, efficiency, commitment, sense of Duty, satisfaction with fate) has practically not changed over time and has grown wrong (anxiety, tendency to excessive experience, doubt, fatigue, irritability, agitation, mood instability). Differences in character self-assessment between the two above groups have not been identified.

At the same time, there are clear differences between non-alcoholic relatives ( $-7,4 \pm 12,1$ ) and alcoholics ( $58,4 \pm 12,9$ ;  $p < 0,01$ ), as well as drug syndrome ( $87,3 \pm 9,8$ ;  $p < 0,001$ ) in the overall adaptive potential of the individual. This is due to a decrease in the severity of adaptive personality traits and an increase in improper flexibility. 45,7% of relatives of alcohol patients (49,5% in the main group, 15,4% in the control group;  $p < 0,001$ ) are not satisfied with the results of their appeal for Narcological assistance.

**Conclusion.** Thus, in relatives of patients with alcoholism, signs of code dependence were identified in 88,8% of cases. Among related loved ones, it was often dominated by people of the female sex (67,0%) who had secondary special education (40,7%), were divorced and lived alone (40,7%), were 2,5 times more unemployed (19,4%).

In addition, in code-dependent people, heredity is almost 2 times more likely (30,1%) than in the control group with parental alcoholism, they are 2 times more likely to manifest suicide (31,1%), 3.6 times more likely to develop chronic somatic diseases (28,2%), they are 3 times more dissatisfied with their relatives' Appeals for Narcological assistance (49,5%) than parental alcoholism. There was no difference in the appearance of chemical addiction.

At the same time, self-assessment analysis showed an increase in the severity of non-adaptive personality traits in relatives of alcohol-dependent patients over time. It should be noted that the change in personal qualities did not depend on the presence of code dependence, but showed differences in groups on the severity of alcohol diseases. All identified facts should be taken into account by specialists when working with relatives of patients with alcoholism.

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## SOCIAL CHARACTERISTICS OF PATIENTS WITH SCHIZOPHRENIA FOR A LONG TIME IN COMBINATION WITH EXOGENOUS-ORGANIC DISEASES OF THE BRAIN

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**Abstract.** *For many years, great interest in psychiatry has been a matter of combined pathology. Currently, the combination of schizophrenia with exogenous-organic brain diseases remains the least understood. According to the results of previous studies, the organic process significantly changes the clinic and orientation of schizophrenia, which affects both personality changes and the quality of remission, which in turn determines the parameters of social activity and reflects the patient's adaptive capabilities. In many years of the disease, the level of social activity in patients with schizophrenia decreases in many areas at the same time.*

**Keywords:** *schizophrenia, exogenous-organic diseases, personality changes, alcohol dependence.*

**Introduction.** There is an opinion that organic brain failure softens the schizophrenia defect, makes patients more comfortable and in contact [1-3]. Mental disorders combined with alcohol addiction are increasingly becoming an object of close study, as they exist at the "crossroads" of two specialties – addiction and psychiatry, thus leading to difficulties in the medical examination, prevention and treatment of patients [4-9]. Thus, according to various authors, one-fifth (20%) of patients with alcohol addiction, drug addiction, and drug addiction detect procedural endogenous mental disorders, and 12-50% of patients with endogenous diseases abuse alcohol and drugs [10-16]. However, the special dispensary account of patients in this group is not carried out in either Narcological or psychoneurological dispensaries. With a sufficiently studied psychiatric component of combined pathology [17-23] it should be noted that the clinical features of the course of secondary alcohol dependence are not sufficiently illuminated-real and symptomatic [24-29], also, the effect on the motivation and effectiveness of alcohol treatment in people with mental pathology of the characteristics of the recorded types of alcohol dependence. Thus, the purpose of this study is (1) to study the clinical features of secondary alcohol dependence in people with non-specific mental disorders, as well as (2) the effect of these characteristics on patients seeking alcohol assistance and the effectiveness of various types of Alcohol Therapy [30-33].

Excessive alcohol consumption is directly related to the exacerbation of the main symptoms of the disease [34]. There may be no primary pathological attraction to alcohol during remission [35]. During addiction, there may be long-term, "unexpected" self-remissions [36]. There is also "secondary true alcoholism", in which the symptoms of addiction that appear in the base "of mental illness are completely" separated " from the underlying disease, and alcohol addiction develops in the same patterns as primary true alcohol addiction [37-40]. Various forms of pathological attraction to alcohol, loss of control, increased tolerance, withdrawal symptoms and even typical alcoholic psychoses (delirium, hallucinosis) are observed [41]. Terminology, this

type of dependence belongs to the heterogeneous type of development and development of the addictive process in patients with endogenous diseases [42].

The purpose of the study: The goal is a comparative analysis of social performance in patients with schizophrenia and in patients diagnosed with organic brain disease at different stages of psychiatric observation, in addition to the diagnosis of schizophrenia.

**Materials and methods.** On the basis of the dispensary Department of a large psychiatric hospital, 105 cases of schizophrenia were examined, which were observed in a psychiatrist for at least 10 years by an unparalleled, clinical-psychopathological method. The study included individuals over the age of 18 diagnosed with schizophrenia (under ICD-10 F 20.0 - F20.9), with the duration of the disease ranging from 10 to 42 years. According to the research tasks, patients are divided into 3 groups: 1 – individuals with schizophrenia without constant organic deficiency; 2-individuals with schizophrenia and with an exogenous history of deleterious. Organic signs were identified in them. And later, in a clinopsychopathological examination, patients of this group were diagnosed with stage I or I-II psycho-organic syndrome. However, despite the information about the presence of a pathology in which they were combined, exogenous-organic pathology was not diagnosed in the second. Group 3-individuals diagnosed with exogenous-organic brain disease at different stages of the disease, in addition to the diagnosis of schizophrenia.

Such a sign is intended to distinguish between "primary" or "real" alcohol dependence, which appears on psychopathologically unloaded soil and continues according to classical law, forming mental and physical dependence – alcohol withdrawal syndrome. In symptomatic alcohol dependence, such patterns are not followed, and alcohol abuse develops as an independent symptom of a mental illness, or as a symptom that is directly related to it, despite the presence of alcohol abuse or constant abuse for a long time.

**Results and discussions.** The split left 64 people (60,9%) in 1 Group, 26 people (24,8%) in 2 groups, and 15 people (14,3%) in 3 groups. Next, an analysis of social indicators from objectified data sources (outpatient card), a clinical interview was conducted. The study was conducted through a survey-based map to assess the social functioning and quality of life of the mentally ill. To determine the level of social activity of patients, the GAF scale and the patient performance assessment scale in various social areas were used. The results obtained and their discussion. The distribution of patients in groups by gender and age did not reveal significant gender and age differences. Mixed factors predominated from exogenous-organic damage.

There were 11 people (42,3%) in 2 groups of such patients, and 7 patients (46,7%) in 3 groups. In the second group of those tested, the proportion of vascular and somatogenic factors was also higher - 7 people (26,9%), compared to the third Group - 2 people (13,3%). In the third group, the percentage observed in 4 patients (26,7%) was higher than in the second group in 2 patients (7,7%). The first group found 34 people (53,1%) to be unfit for treatment, the second group found 10 people (38,5%), and the third group found 6 patients (40,0%) to be unfit for treatment. Often the subjects received secondary special education. And if in the third group there were no persons who graduated from a higher educational institution, then in the first group the number of such patients was 12 people (18,8%), in the second Group 3 people (11,5%) received higher education. All three groups had students not anywhere during the study, 1 Group employed 11 people (17,2%), the second group employed 2 people (7,7%), and the third group employed 2 people (13,3%) (including temporary pay). There was a significant increase in the average seniority of patients in the second group.

The average seniority of patients in the second group is  $14,2 \pm 1,2$  years, in the third group  $9,7 \pm 1,4$  years, in the first group  $7,2 \pm 0,8$  years. All groups were dominated by individuals with Group II disabilities. In the first group, the proportion of widowed, single and divorced women

was 56 people (87,5%), living with their spouse only 8 people (12,5%).). In the second group, there were slightly fewer loners than in the first group, with 21 people (80,8%), and in the third group, the number of loners was 12 people (80,0%). The number of patients who never had a family turned out to be significantly higher in the third Group – 9 (60,0%), in the first group – 31 (48,4%), and in the second – 8 (30,7%). They live alone, without relatives. the first group had 25 people (39,1%), the second group had 10 people (38,5%), and the third group had 2 people (13,3%). Over the past 5 years, the first group has seen higher admissions to a psychiatric hospital (its average is 2,26 times in 5 years, and 1,38 and 1.46 in 2 and 3 groups).

In the third group, patients have been treated in a day hospital twice as often as in the other two groups over the past 5 years. On average, patients of the second group are less likely to be admitted to mental hospitals than patients of the first and third groups, and are treated in a day hospital at approximately the same frequency as patients of the first group. The sum of the average scores on the patient performance assessment scale in different social areas: in Group 1 – 13,1 points, in Group 2 – 12,8 points, in Group 3-13,4 points. In Group 1 of patients on the GAF scale, the average score is  $39,5 \pm 1,2$  points, in Group 2 –  $39,9 \pm 1,5$  points and in Group 3 –  $37,7 \pm 1,7$  points. In accordance with the goals and objectives of the study in the composition of the combined pathology, we considered true alcohol dependence or symptomatic alcohol dependence as components of a single combined (comorbid) disorder. True alcohol dependence was diagnosed by us in 67 people (60 men and 7 women) (1 gy), symptomatic – in 33 people (28 men and 5 Women) (2 gy). These groups did not differ in age. In terms of the psychiatric component of the combined disorder, Group 1 had a significant advantage over patients with organic brain damage (32,8%) and mental retardation (11,9%) ( $p < 0,02-0,05$ ) and 2 GT had a significant advantage over patients with schizophrenia (88,24%), and they had a higher prevalence than Group 2 ( $p < 0,02-0,05$ ). More than 1 g ( $p < 0,001$ ).

In Group 1 patients (with true Alcohol Dependence), alcohol-dependent relatives are reliably frequent ( $p < 0,009$ ) and the debut of mental illness has been found to be associated with prior intensive alcoholism ( $p < 0,0003$ ). Reliably, in Group 1 ( $p < 0,05$ ), patients began to abuse alcohol before the age of 25 and, accordingly, alcohol withdrawal syndrome was formed, periodic type of alcohol abuse ( $p < 0,04$ ) and frequent ( $p < 0,0008$ ) alcoholic psychoses were observed. We also evaluated therapeutic motivation, therapeutic efficacy and duration of therapeutic remission of alcohol dependence, as well as the duration of stay in patients of research groups outside the walls of a psychiatric hospital. At the same time, we tried to objectify the data as much as possible and were not limited only to the answers of patients to relevant questions. We used data from medical documents, information from close relatives, neighbors and medical personnel. In patients of Group 1, alcoholism significantly negatively affected the development of a combined mental illness in comparison with 2 gy ( $p < 0,05$ ), which was manifested in provoking an exacerbation of the underlying disease, increased aggression, including to close people, increased antisocial activity, which often served as a reason for psychiatric hospitalization. Group 1 patients showed significantly less time intervals outside the walls of a psychiatric hospital ( $29 \pm 4,7$  days and  $54,9 \pm 14,4$  days;  $p < 0,05$ ). Frequent ( $p < 0,02$ ) alcohol consumption by Group 2 patients "softens" psychiatric symptoms, such as depression, irritability ("calms"), and reduces the severity of suspicion, improves communication, etc. Apparently, due to the distinctive variety of alcohol methods, Group 2 patients were less likely to seek treatment from alcohol dependence, with nearly half (46,3%;  $P < 0,05$ ) Group 1 patients attempting to treat alcohol dependence by various methods, including secondary indirect psychotherapy methods (20,9% and 5,9% of 2 gy patients). 34,3% in Group 1 and 11,8% in Group 2 were re-treated for alcohol dependence.

However, despite such a reliable difference in turnover, the average duration of therapeutic remission did not make a reliable difference between the groups. Patients in this group were primarily (88,3%) diagnosed with true secondary alcohol dependence, and only 4 cases (11,7%) were diagnosed with symptomatic alcohol dependence. Organic brain damage in 68% of cases preceded the development of az and served as a kind of "soil", and in 32% of cases, the development of alcohol dependence preceded organic brain damage, sometimes the direct cause of brain damage (severe brain damage or dementia after alcohol delirium), sometimes absent (infectious brain diseases, epilepsy since childhood). Hereditary weight was reported in 63% of patients in this group due to alcohol dependence. Alcohol dependence in this group is a moderate component, and the median age for the formation of alcohol withdrawal syndrome is 28 years, which may be due to the presence in this group of mentally retarded patients with difficult access to alcohol. The composition of alcohol withdrawal syndrome is dominated by a neurological component, manifested by cephalgia, bulky tremors, epileptiform seizures.

The latter does not contain alcohol withdrawal syndrome in patients with schizophrenia combined with real addiction. Interestingly, in patients with schizophrenia, compared with "organic substances", alcohol withdrawal syndrome was dominated not only by the mental component, but also somatic-vegetative. In the study group, the constant type of alcohol abuse (70,4%) was significantly ( $p < 0,05$ ) superior to the periodic type (29,6%), which isolated the group of patients. Also, in 53% of cases, alcoholic psychoses were diagnosed, which is 2 times the number of alcoholic psychoses in a group of patients with schizophrenia who are addicted to real alcohol. We also studied in detail the issues related to alcohol addiction therapy. Organic patients with the true nature of addiction were found to have made confirmed treatment attempts in 53% of cases, with 43% of patients treated more than 1 time. Only 3 patients indirectly resorted to psychotherapeutic treatment with the method of emotional-stressful psychotherapy, which is much less (11 people) than patients with schizophrenia. It is important to note that 18 (60%) of organic patients have been diagnosed with varying degrees of decreased intelligence.

We also found out how much alcohol dependence affects the development of a combined disease in terms of its impact on the mental, somatic-neurological and social condition of patients. That reveal the positions of the "negative" and "positive" effects of alcohol dependence on the joint disease process. The data is represented by points. Each character of this or that register was given 1 point. It is clear that one patient can characterize the effects of alcoholism from different positions. Analyzing the data, we note that the positive aspects of intensive alcoholism have significantly affected the condition of patients in comparison with negative ones, even in relation to patients with schizophrenia. Considering that organic patients seek treatment and use it (and often repeatedly) more often than patients with schizophrenia, the more severe the effect of real alcohol dependence on the above conditions, the more patients and their relatives seek to get rid of addiction. mainly the use of inpatient pharmacological treatment, and less often-outpatient psychotherapeutic. Of course, the quality of treatment and personal involvement require a lot. Only 4 people from this group were able to achieve a remission of addiction for more than 1 month. However, there is a general trend in which intensive alcoholism is not seen as a coping or coping factor.

**Conclusions:** Exogenous-organic mental disorders in schizophrenia are not often recorded by psychiatrists as a second diagnosis, in our study only 15 people (14,2%). In the patients examined, a high percentage of exogenous-organic risks of a mixed nature were identified. Compared to a group of patients with schizophrenia who are incompetent, the diagnosis of exogenous-organic disease of the brain during the disease is less pronounced, the history of exogenous-organic damage is less indicated in incompetent patients.



In Anamnesis, patients with exogenous-organically non-harmful schizophrenia often graduate from higher education and carry out more labor activities, although not always on a permanent basis. In general, the second group (individuals with schizophrenia with a stage I or I-II psycho-organic Syndrome Clinic in exogenous deleterious Anamnesis) appears to be "safer" in terms of socio-demographics: they have greater seniority (statistically significant increase in average seniority of patients in the second group ( $p < 0,001$ )). compared to the first group of patients), they are less likely to be disabled, patients in this group are more likely to marry. In general, when assessing indicators on the social activity scale, indicators in the second group are slightly better than in the first and third. Thus, it can be assumed that patients with schizophrenia who have an exogenous deleterious history and do not have clear clinical manifestations of coarse organic pathology have a predisposition to a high level of social activity. To some extent, this is confirmation of the conclusion of a number of authors that organic brain failure softens the schizophrenia defect. In connection with the results obtained, further research in this direction is necessary.

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## CLINICAL AND SOCIO-ECONOMIC EFFECTIVENESS OF INJECTABLE LONG-TERM FORMS OF ATYPICAL ANTIPSYCHOTICS IN SCHIZOPHRENIA

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**Abstract.** *Since the introduction into practice of Chlorpromazine, a breakthrough in Psychiatry, the range of drugs for schizophrenia has expanded significantly, with atypical antipsychotics being increasingly used in recent times. Despite the advantages of atypical antipsychotics in relation to first-generation antipsychotic drugs, it remains a topic of debate, according to many experts, this is a promising direction of treatment, since this class of drugs has a very pronounced antipsychotic effect in the absence of dose-dependent extrapyramidal and neuroendocrine side effects.*

**Keywords:** *atypical antipsychotics, schizophrenia, clinical efficacy, antipsychotic effect.*

**Introduction.** Information about the results of the use of modern psychotropic drugs is especially important in the reform of specialized care, more and more oriented to socially restore the patient and relieve the burden of loved ones, rather than guardianship and isolation - in the context of chronic insufficiency of medical resources "not always adequate" (who) [1-3]. Long-term drug therapy to reduce the severity of psychotic symptoms, achieve remission, prevent relapses has been the main treatment for schizophrenia for over 60 years [4-7]. Since the introduction into practice of Chlorpromazine, a breakthrough in Psychiatry, the range of drugs for schizophrenia has expanded significantly, with atypical antipsychotics being increasingly used in recent times. Despite the advantages of atypical antipsychotics that remain a subject of debate over first-generation antipsychotics [7-11], according to many experts it is a promising area of treatment, since this class of drugs has very pronounced antipsychotic effects in the absence of dose-dependent extrapyramidal and neuroendocrine side effects [11-16]. However, until now, one of the main obstacles to achieving the therapeutic effect of treating schizophrenia is the unsatisfactory adherence of patients to therapy. Violation of the regimen of taking medications increases the risk of negative consequences of the disease, including relapses, re-hospitalization, suicide and, accordingly, increases the socio-economic burden of the disease [17-21].

Lack of commitment can manifest itself both in complete rejection of treatment and in partial failure to follow the therapy regimen prescribed by the doctor (irregular medication intake, dose changes, frequency and duration of administration) [22-24]. About 35% of patients face such a problem as early as the first weeks of therapy, and only 25% of patients adhere to the prescribed regimen for 2 years [25-30]. Violation of adherence to treatment in the mentally ill, on the one hand, is associated with the peculiarities of the disease, for example: insufficient perception of the surrounding world (mania, depression), distorted ideas about the patient's disease, pessimism in relation to the prospects of treatment, the need to resist any form of pressure, memory impairment,

etc. On the other hand, an unfavorable therapy regimen for the patient (the need to take medications long and often, unfavorable forms of use, etc.) also contributes to a violation of the doctor's recommendations and refusal of treatment [31-36]. Therefore, one of the areas of improvement in drug treatment for schizophrenia is the search for more convenient options for taking medications [37-40]. The creation of long-term medications that should be taken or administered less parenterally is a positive factor for increasing patients' commitment to therapy and therefore the outcome of treatment [41-45].

The purpose of the study: is to determine the clinical, social and economic effects of long-term forms of atypical antipsychotics in the treatment of schizophrenia in everyday practice

**Materials and methods.** A number of naturalistic studies with a "mirror" design (total > 200 patients)-the year and year before standard treatment against the background of long-term forms of atypical antipsychotics (on the example of rispolept const and paliperidon palmitate); mathematical (Markov) modeling of the pharmaco-economic prognosis of long-term (five-year) treatment for paliperidon palmitate. In this Paliperidone study, palmitate was compared with long-term risperidone in an injectable form, as currently only these two injectable atypical long-term antipsychotics are listed on the Russian pharmaceutical market. Long-term risperidone in the form of injections is included in the list of vital and important drugs, which makes it a justified alternative for comparison. Justification of the selection of criteria for assessing effectiveness based on clinical economic (Pharmacoeconomic) Research and types of clinical and economic (pharmacoeconomic) analysis; evaluation of evidence of clinical efficacy and safety of drugs. To confirm the advanced rules of the working hypothesis, to develop the design and structure of the model, the research methodology provides for a comparative analysis of the evidence of clinical effectiveness and safety of schizophrenia pharmacotherapy tutgan.in long-term atypical antipsychotics in the form of Excision.

**Results and discussions.** Rispolepta const and paliperidon palmitate are preferable compared to standard therapy (common in everyday practice) for safety (subjective tolerance), clinical effects (strengthening and deepening remission with reduced risk of regospitalization) and resource conservation – from a broad social perspective (personal and social recovery). In the long run, the main cost is to provide the treatment with an improved risk / benefit ratio but no isolation and maintenance medication in the PB. The effect of reducing the risk of relapse (exacerbation) with a simultaneous decrease in the demand for regospitalization during the selection and rational use of Rispolept const and Paliperidone Palmitate is manifested, especially in the context of everyday practice. First, the resource-saving result of long-term treatment with rispolept const and Paliperidone Palmitate is seen in the target group of patients with clinical and social problems (including non-compliance with drugs due to poor tolerance of standard therapy), namely: often (at least once in 3-5 years of follow-up) hospitalized ( $\geq 5\%$  among those covered by pharmacotherapy). Rispolept const and paliperidon palmitate (incorrect selection of maintenance doses, irrational polypharmacy with forgetting an individual rehabilitation program), drugs and typical errors that reduce the potential of postmarking patients and their doctors are highlighted. A mathematical model has been developed in the Excel program to identify factors affecting financial costs when providing medical care for patients with schizophrenia.

The concept of the model was to simulate the results of the treatment of the disease, depending on the commitment of patients to therapy. About 90 percent of the cost of providing medical care for patients with schizophrenia is due to hospitalization due to the exacerbation of

the disease. The use of atypical long-term antipsychotics in the form of injections allows patients to increase their commitment to therapy and thus reduce the rate of relapse that requires hospitalization. Based on this, the model included an assessment of two processes: analysis of changes in patient adherence to treatment during the observation period and prediction of the number of relapses that require hospitalization based on adherence to treatment. The time horizon of the modeled period (cycle) was 1 year. Data on adherence to risperidone use therapy is based on local findings from an international multicenter study. It was a prospective follow-up study, with a focus on studying the clinical, social and economic efficacy of using risperidone in the form of injections in a group of patients with schizophrenia and schizophrenia spectrum disorders.

The design of the study was close to the existing Real practice conditions and allowed doctors to prescribe risperidone in the form of injections, regardless of the presence and type of previous therapy. The observation period in the study was 24 months, with assessment of the results at checkpoints: 3, 6, 9, 12 and 24 months later. The medico-demographic characteristics of the cohort are characteristic of patients with schizophrenia covered by therapy, and the number of patients included in the study (2,456 patients) is sufficient for reliable statistical analysis when comparing the results of the study in different cohorts and at all points of evaluation of the results. Clinical and functional evaluation of treatment was carried out every 3 months on measures of total clinical impression-weight (CGI-s) and Total Performance (GAF). During the study, the frequency and causes of discontinuation of therapy were also noted, which made it possible to use the results of this study to create our model. By the end of the first year of the study, 75,7% of patients (1,858 out of the 2,456 included in the study), 24,3% of patients (598) had stopped therapy with risperidone during this period. Analysis of the causes of discontinuation of therapy has shown that in 59,6% of cases, discontinuation of treatment is associated with organizational causes (limited availability of the drug). Other fundamentals of discontinuation of treatment can be roughly divided into the following groups. Since the interruption of treatment in 59,6% of cases is associated with organizational reasons, among patients who did not take the drug under ideal conditions (ensuring the presence of the drug), the reasons for the discontinuation of treatment would be similarly distributed: 214 out of 355 patients stopped treatment for reasons that may be related to the therapy regimen; 78 - with inefficiency, intolerance to As a result, the proportion of patients who stopped treatment with risperidone by the end of the first year for reasons that may be related to the therapy regimen was 14,69% in our model.

These patients were considered to be incapable of treatment, with a high risk of relapse and hospitalization. A decrease in the frequency of injections can theoretically affect a decrease in the proportion of patients who stop treatment.

Patients with unsatisfactory compatibility and patients who have stopped treatment due to the choice of the patient himself and/or his relatives can be considered the most promising group of patients with schizophrenia in this context. We calculated the expected proportion of patients who have stopped treatment with Paliperidone Palmitate (who are not eligible for treatment) on the assumption that with each subsequent injection, the level of commitment will decrease evenly over time. As mentioned above, the decrease in adherence to therapy when using the drug risperidone in 12 months is 14,69%.

The scheme for the use of risperidone involves injections once every 14 days – 26 times a year, and paliperidone palmitate is administered once every 30 days – 12 times a year. In terms of 1 injection, the reduction rate of adherence to treatment is 0,565% (i.e., the proportion of those

who continue treatment with each subsequent injection is reduced by 0,565%). It is estimated that the rate of decreased commitment for each subsequent injection is similar for all injectable drugs. According to our assumption, since it is less likely to skip injections, the proportion of patients who have stopped therapy for reasons related to the therapy regimen may decrease. It is estimated that the proportion of such patients in the cohort decreases by 6,78% and is 7,91%, respectively, while the proportion of patients who follow the prescribed therapy regimen when using Paliperidone rises to 82,34%.

**Conclusions.** The evolution of drug forms that combine the benefits of atypical antipsychotics and Depos corresponds to a change in the paradigm of psychiatric care aimed at meeting and developing the "elastic" needs of patients and their loved ones in the multi-Labor path of psychosocial recovery. The resource-saving potential of drugs (rispolepta const and palipperidon palmitat) makes it possible to fulfill the strategic task of public psychiatry against the background of chronic resource shortages. Pharmacoeconomic analysis serves as a tool of antistigmatization at the systemic level: scientific evidence for fair funding of psychiatry, "Cinderella" – from a broad social point of view.

Although health (and especially psychiatry) cannot justify itself in principle, since strategic goals (social activity, the quality of life of the patient and his loved ones) are implemented outside their paradigm – the social aspect of Drug assessment (on the example of rispolept const and palipperidon palmitate) is especially relevant in our country standard medical cost (psychiatry) services are several times lower than the selling prices of innovative psychotropic drugs. Each additional "disease-free day" (remission) should be saturated with social content, which is possible with brigade (polyprofessional) and interdepartmental approaches (population employment centers, in improving legislation, involving self-help societies). The rational choice of Rispolept const and palipperidon palmitate, based on the patient's interaction with a specific target group, allows the resource-saving potential of the "right drug for the right patient" to be carried out at the highest level, and its regular use in everyday practice emphasizes the shortcomings and reserves of the organization and functions of standard psychiatric services, allows (recovery) patients.

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# THE IMPACT OF THE COVID-19 PANDEMIC ON THE MENTAL STATE OF PEOPLE WITH ALCOHOL ADDICTION SYNDROME

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**Abstract.** *The topic of the impact of stress factors on mental stability in people with alcohol addiction syndrome during the Covid-19 pandemic is the most relevant topic today. Social isolation, the death of relatives, the anonymity of the future, fear of illness together contributed to a new specific risk factor for the development of psychogenic diseases, as well as a deterioration in the situation in existing mental disorders. Restrictive measures related to COVID-19 have affected the substance use model in most countries, serving as an additional threat to the mental and physical health of the population.*

**Keywords:** *Covid-19 pandemic, stress factor, alcohol addiction syndrome, psychogenic illness, mental and physical health.*

**Introduction.** New strains of coronavirus have caused the SARS outbreak, which began in 2002, and the Middle East Respiratory Syndrome (Middle East respiratory syndrome) outbreak, which began in 2012 [1]. On 31 December 2019, the World Health Organization revealed several cases of SARS in Wuhan, China, which were later identified as the cause of the new coronavirus (SARS-CoV-2) [2].

With the spread of what is now known as COVID-19, data on neuropsychiatric manifestations began to increase [3].

In patients with COVID-19, cases of self – harm and suicide were reported in 49.06%, anxiety in 56.60%, sleep disorders in 67.92% and 24.53% [4]. Psychiatric symptoms, including post-traumatic stress disorder (PTSD), anxiety, and depression, were reported in patients with SARS-CoV-1 during SARS outbreaks, as well as 1 month, 1 year, 30 months or more after the disease [5].

In addition, symptoms of post-traumatic stress disorder, depression and anxiety are described in health workers during a certain epidemic, 2 months later and 2 and 3 years after the SARS epidemic, and among the general population during and after the epidemic [6].

It is not yet clear whether the viruses themselves or the immune response to them are the main cause of potential mental disorders. Interestingly, interleukin-1 (il-1), il-6, and tumor necrosis factor a (TNF–a) (cytokines involved in the immune response to influenza) promote activation of the hypothalamus–pituitary-adrenal axis [7-11].

Interferon-a is also involved in the immune response, a well-known side effect of cytokine that causes depressive disorder [12].

Cytokines have also been reported to cause decreased tryptophan, a precursor to serotonin. They stimulate indolamine-2,3-dioxygenase, which converts tryptophan to quinurenine, and make

it unavailable for serotonin synthesis [13-17]. There is evidence that tryptophan and ultimately decreased serotonin levels play a role in the pathogenesis of depressive disorders [18]. When studying the possibility of viruses directly affecting the brain with the development of emotional disorders, it should be taken into account that both influenza viruses and coronaviruses are potentially neurotrophic and isolated from the central nervous system [19-23].

In may 2020, the results of 43 studies on mental health assessment during the covid-19 pandemic were published [24]. This meta-analysis cited 2 studies that evaluated data from patients with confirmed COVID-19 infection and 41 studies that evaluated the indirect effects of the pandemic (2 – in patients with previously existing mental disorders, 20 – in medical staff and 19 – in a wide range of individuals). 2 studies involving patients with COVID-19 found high rates of post-traumatic stress disorder symptoms (96.2%) and significantly higher rates of depression ( $p = 0,016$ ). Psychiatric symptoms have been reported to worsen in patients with pre-existing mental disorders [25-29].

Research among health professionals has found increased symptoms of depression, anxiety, psychological stress, and sleep quality disorders. Population-based studies have reported lower levels of psychological well-being and higher rates of anxiety and depression compared to cases prior to the covid-19 pandemic, but there was no difference between these symptoms in the early stages of the disease and 4 weeks after its debut. Many factors are related to the risk of psychiatric symptoms and/or low levels of psychological well-being, including female gender, poor health, and the presence of relatives infected with covid-19 [30-35].

Information on psychiatric symptoms among COVID-19 patients is listed in 2 studies [36]. In one of them, post-traumatic stress disorder was observed in 96.2% of 714 stable patients hospitalized.

Another Internet Cross-survey collected 7,236 volunteer data containing data on demographic data, COVID-19-related knowledge, with the aim of identifying general anxiety disorder (Gad), depressive symptoms, and sleep disorders. The total prevalence of Gad, depressive symptoms and sleep disorders in the population was 35.1; 20.1 and 18.2% respectively. Young people have reported that the prevalence of Gad and depressive symptoms is much higher than in older people. Medical personnel were more aware of poor sleep quality than other professional groups [37-39].

Using multidimensional logistic regression, it was found that age ( $<35$  years old) and time spent learning about COVID-19 ( $\geq 3$  hours/day) were associated with Gad and that healthcare workers were at high risk of low sleep quality [40]. The same findings were also cited in a previous study conducted during the SARS epidemic in Taiwan [41].

The purpose of the study. Studying the effects of environmental stressors in people undergoing inpatient treatment with alcohol addiction syndrome in a Narcological dispensary during a pandemic and identifying psychogenic diseases. Special attention is paid to the features of the manifestation of depression and anxiety.

**Materials and methods.** We used the transverse research method. The voluntarily notified questionnaire ( $n=122$ ) was attended by patients between the ages of 20 and 60 who were receiving inpatient treatment at the Altai territory Narcological dispensary in February – October 2021. The clinical and nosological structure of diagnosed diseases in patients included in the ICD-10 research sample includes:

- 1) mental and behavioral disorders caused by alcohol consumption. Addiction syndrome. (F 10.2) 74%;
- 2) mental and behavioral disorders caused by the use of opioids. Addiction syndrome. (F 11.2) 8%;
- 3) mental and behavioral disorders caused by the use of other psychostimulants. Addiction syndrome. (F 15.2) 18%.

Clinical and psychological research is based on the Mississippi PTSD scale (civil variant) and A. Beck's standard application for anxiety and depression was done using a primary diagnostic scale. Calculations were made using Microsoft Office Excel 2013, Epi Info 7.2 data processing software packages.

**Results and their discussion.** The results are from the analysis of the patient survey (n=122). The age of the respondents ranged from 20 to 60 years.

The number of men surveyed (64%) was higher than the number of women (36%). More than half (56%) of survey participants fell to people between the ages of 31-40, with about a third (27%) of patients aged 40-60, with the smallest (17%) being the proportion of younger patients (20-30 years). Education Level: 16% of respondents have a higher education, 43,5% have a secondary special education, 39,5% have a secondary education, and 2% have an incomplete secondary education. 24% of 122 patients had a new coronavirus infection. A predominance of Diagnosed Patients (64%) was found: mental and behavioral disorders resulting from alcohol use, addiction syndrome (F10.2). Mental and behavioral disorders resulting from the use of other psychostimulants, addiction syndrome (F15.2), and mental and behavioral disorders resulting from opioid use, addiction syndrome (F11.2) were diagnosed in 26,5% and 9,5%, respectively.

According to the data presented, no connection was found between the consumption of certain surfactants and their susceptibility to COVID-19 infection. Family members and relatives (48%) fell ill more often than patients themselves (24%). According to the survey: among the sources that contain information about the spread of the pandemic and the death of COVID-19, the first place belongs to television and radio (80,7%), low-frequency respondents used Internet resources (34%), messages from friends and acquaintances (31%), printed publications such as newspapers and magazines (31%). More than a third of respondents (39%) claim that the virus caused irreparable harm to their health and psyche, as well as to the health of relatives, friends, acquaintances. Fear of death due to Covid-19 infection was experienced by 36% of those tested, 76% of whom were diagnosed with alcohol addiction syndrome.

Most of the survey participants (44%) indicated the source of contact for infection (patients and virus carriers), while a quarter of those surveyed (33%) considered air-borne infection to be the primary method of infection, with 23% of those surveyed lacking information on transmission methods.

Anxiety has been found in 81% of patients who consume surfactants, including 14,5% high, 7,5% moderate, and 55,4% mild. On the diagnostic scale of Beck anxiety detection, patients diagnosed with F15.2 in surfactant patients were dominated by the minimum (55,4%) anxiety levels characterized by rarity (78%) in patients diagnosed with F11.2 (67,6%) and F10.2 (42%). High levels of anxiety have only been observed in patients diagnosed with F10.2 (14%). Patients diagnosed with F10.2 (16%) and F15.2 (11%) were found to have moderate anxiety levels.

A number of patients diagnosed with F10.2 (28%) and F15.2 (11%) had no anxiety. I. e. anxiety during the pandemic is observed in most patients with pav addiction syndrome. According

to the psychometric scale of Beck's depression, depression was found in most (84%) pav-dependent patients surveyed. During psychodiagnostic studies, only 16% of respondents did not show depression, which has a high impact on the development of depressive symptoms during the pandemic in patients with pav addiction syndrome. Manifestations of mild depression (38%) outweighed moderate (23%), severe (13%), and severe (10%) depression. A mild course of depression is more common in patients diagnosed with F15.2 (35%) and F11.2 (38,5%), Dz: F10.2-27%.

Increased feelings of depression, with the impossibility of positive changes during the pandemic, are more likely to patients diagnosed with pronounced depression F10.2 (23,1%), F15.2 (23,5%) xosdir.va F 11.2 (11,5%). Among respondents diagnosed with F 10.2-16.3%, moderate depression was found. On the Mississippi post-traumatic stress disorder scale, 38 out of 122 people (31,1%) are addicted to surfactants, showing strong effects of past Psychotrauma due to prolonged social isolation and forced restrictions on normal life.

Manifestations of post-traumatic stress disorder have been found to be higher in patients diagnosed with F10.2 (90%, n=34) compared to those diagnosed with F15.2 (5%, n=2) and F11.2 (5%, n=2). More than half (64%) of patients with PTSD did not have information about coronavirus infection. Recently confirmed medical data on COVID-19 was obtained compared to 17% of patients. Almost half (48%) of people with a new coronavirus infection have not found post-traumatic stress disorder manifestations. At the same time, even if there is no perception of the state of the pandemic as a psychotraumatic phenomenon, i.e. People with no signs or symptoms of post-traumatic stress disorder showed depression. For patients who are addicted to pav and do not have post-traumatic stress disorder, clear (41,6%) and mild (34,7%) depression are more characteristic. On average (17,3%) and severe (6,4%) depression are less common.

It also dominated this group of respondents above the average (26,0%) and negligible (31,7%) levels of anxiety experiences (42,3%). The manifestation of depression and anxiety identified during the study, disorders in the mental sphere as a result of severe stress that meets post-traumatic stress disorder criteria, allow us to conclude that the development of psychodesadaptation disorders, as well as the severity of mental disorders present in patients with pav addiction syndrome, are associated with COVID-19.

**Conclusions.** According to the clinical observation of patients undergoing inpatient treatment at the Altai territory drug dispensary, a third of those tested in conditions of isolation and quarantine measures during the COVID-19 pandemic (31,1%) had negative psychological effects. The deterioration of the mental state of patients with surfactant dependence has been found to be associated with a dysfunctional epidemiological situation. The peculiarities of responding to traumatic stress due to a rapidly spreading infection consist in the hypertrophied experience of danger due to the threat of life and health, the possibility of death or suppressed-indifferent behavior.

According to the study, sources of information about the spread of the pandemic and the death of patients were identified: television and radio – 80,7%, Internet resources-34%, social networks - 31%, printed publications - 4%. Thirty-nine percent of those surveyed believed they had caused irreparable harm to their psyche, while thirty-six percent could not get rid of the fear of death. The main classifier symptoms of psychogenic diseases are the manifestation of anxiety, depression and post-traumatic stress disorder. Since people with post-traumatic stress disorder are prone to misconduct, they need special social and medico-psychological assistance, such as drug

patients who are at high risk of developing psychogenic mental disorders during the COVID-19 pandemic. These conditions must be taken into account when conducting medical and rehabilitation measures.

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## ATYPICAL ANOREXIA NERVOSA: FEATURES OF PREPOSITION AND PREMORBID

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**Abstract.** *Adolescence puts high demands on human adaptation in society, which affects the formation of stable mental response mechanisms that occur during this period of life. The problem of anorexia nervosa in teenage girls is very relevant not only with the durability and severity of the dysmorphomaniac idea, but also with severe somatic complications, including reproductive ones.*

**Keywords:** *adolescence, atypical anorexia nervosa, dysmorphomania, diagnosis and therapy.*

**Introduction.** Low curability and timely diagnosis, often associated with increased detection of atypical forms of anorexia nervosa, then lead to an unfavorable therapeutic prognosis. According to the authors, atypical eating disorders are associated with a significant negative impact on mental health and a risk of suicide [1-3]. According to modern data, the accumulation of pathological prepositional factors is associated with the characteristics of the clinic and the type of anorexia nervosa course. Thus, the identification of the characteristics of prepositional and premorbid personal qualities in anorexia nervosa makes it possible to diagnose the disease at an early stage, start timely treatment, as well as predict the effectiveness of therapy [4-7]. The problem of anorexia nervosa in girls occupies a leading place in both modern medicine and society and has a huge impact on the social circles of the population. Anorexia nervosa is a disease characterized by deliberate weight loss caused and supported by the patient himself [8-11].

Violation of the body image takes on a specific psychopathological form, in which the fear of obesity is maintained as an obsessive / extremely valuable idea, and the patient considers only low weight acceptable for himself. Body weight is at least 15% lower than expected, and body mass index is 17,5 or lower [12-15]. A general endocrine disease involving the axis of the hypothalamus-pituitary glands and manifested by amenorrhea in women is mandatory. The relevance of anorexia nervosa is due not only to the high prevalence - from 0,5 to 1%, but also to the rapid development of menstrual dysfunction, which leads to infertility in the reproductive period [16-19]. In addition, due to the increase in atypical forms, low curability and timely diagnosis lead to a negative life prognosis [20]. Criteria for atypical anorexia nervosa is the absence of one or more major symptoms of anorexia nervosa, such as amenorrhea, significant weight loss, or all major symptoms in mild form have been noted. Many attempts to identify developmental risk factors are based on the study of the preposition, including. According to modern data, the accumulation of pathological prepositional factors is directly related to the specifics of the clinic and the type of anorexia nervosa course [21-24] and 32-97% of patients with anorexia nervosa are diagnosed with personality disorder [25-28]. Currently, researchers are trying to identify "too early" predictors of anorexia nervosa, which is developing complex measures for the diagnosis and Prevention of disease prevention [29-32]. Thus, the identification of the

characteristics of prepositional and premorbid personal qualities in anorexia nervosa makes it possible to diagnose the disease at an early stage, start timely treatment, as well as predict the effectiveness of therapy and the possible outcome of the disease [33-37].

The purpose of the study. To optimize diagnosis and further therapy, identify prepositional factors in adolescent girls with anorexia nervosa.

**Materials and methods.** 70 girls aged 15 (17, 13) were tested with normal and secondary oligo-amenorrhea diagnoses. The study involved patients with atypical anorexia nervosa with normal anorexia nervosa and borderline mental disorders. The exclusion criteria were patients suffering from personality and behavioral disorders due to brain damage (F07); schizophrenia (F20); affective pathology (F30-33, history of moderate to severe and suicidal attempts); personality disorder (F60); also with the presence of primary somato-endocrine pathology. The core group (Group I) consisted of typical typical 42 patients according to the ICD-10 (F50.0) criteria and body mass index 15,7 (16,5; 14,7) kg/m<sup>2</sup>. The comparative group (Group II) includes 28 teenage girls with atypical anorexia nervosa (F50.1) and a body mass index of 18.5 (19.7; 18) kg/m<sup>2</sup>. All patients approached the gynecologist about secondary amenorrhea (N91.1 on ICD-10) (Group I) and secondary oligomenorrhea (N91.4 on ICD-10) (Group II). The control group included 20 healthy teenage girls with a normal body mass index of 18 (20; 17,8) kg/m<sup>2</sup> and a regular menstrual cycle. The main methods of research were: somatic, clinical and psychopathological with neurological examination. Experimental-psychological studies were carried out. The statistical justification of differences between selected patient groups was achieved using the Mann-Whitney U - test with a maximum first-round error probability of P=0,05. The calculations were carried out in the Statistics 6.0 software package environment.

**Research results.** An analysis of psychopathological heredity found that, in general, 14 (33,3%) patients reported the severity of mental disorders. Mental pathology was dominated by chronic alcoholism (17%) and endogenous diseases (14,3%) (schizophrenia, recurrent depressive disorder). Of the total number of patients with atypical anorexia nervosa, 20 (71,4%) had severe psychopathological inheritance. Of these, 39,3 percent were endogenous diseases and 24 percent were chronic alcoholism. The accumulation of mental pathology in the control group was observed in 1 (5%) cases with the severity of chronic alcoholism. Thus, the accumulation rate of mental disorders in atypical anorexia nervosa was 3 times higher than usual (p<0,05) and much higher than in the control group (p<0,05). The structure of somatic pathology of first-and second-degree relatives in Group I was determined mainly by the predominance of vascular (36%) and endocrine pathology (37%), expressed in hypertension and diabetes mellitus. In atypical anorexia nervosa, a predominance of endocrine pathology (70%), mainly diabetes mellitus, has been noted as part of the somatic pathology of relatives.

Chronic gastritis prevailed in the control group in the structure of somatic pathology of relatives-3 people (15%). Summarizing the total number of somatic pathologies of patients' relatives, we can say that with ana, these diseases were detected 1,7 times more often than with the usual (p<0,05) and much more often than with the control group (p<0,05). We found that 36,3% of the mothers of Group I patients and 50% of Group II had pregnancy and fertility pathologies, much higher than the control group 5% (p<0,05). A study of typical premorbid personality traits found that the number of Group I Girls-30 patients (71,4%) - had an epileptoid personality radical. A small percentage of the group - 8 (19%) patients-identified anxious and suspicious character traits. The rest of the Group-4 (9,5%) patients-had equally distributed



different personal radicals (hysterical and emotional-labile). In most cases with atypical anorexia nervosa – 18 (64,3%) patients-the individual's sensitive-schizoid radical was identified (isolation, lack of communication, increased sensitivity, predisposition to reflection). 6 (21,4%) patients were found to have pedantry and anxiety characteristics. The rest of the Group-4 (14,3%) of patients - had psychasthenic properties. In the control group, 13 (65%) of patients had a hyperthymic personality radical, while the remaining 7 (35%) girls were distributed as follows: 2 - with hysterical characteristics, 2 - psychasthenic, 2 – emotional-labile and one patient - anxious radical. The significant predominance of mental and somatic pathology in the research groups identified in our work, as well as the presence of a high percentage of pregnancy and fertility pathology in mothers of girls with a typical disease, are consistent with studies in recent years. The predominance of the epileptoid personality radical in Girls, which is usually typical, is confirmed by the data of the authors. In the case of atypical anorexia nervosa identified in the work, the sensitive-visoid radical of the individual, according to a number of researchers, mainly determines the clinical picture of the disease, dissimulatory behavior and leads to a deterioration in the effectiveness of therapy. No significant statistical differences have been recorded between values in the control group and in both groups ( $p \leq 0,05$ ). The percentage of pregnancy before the age of 28 is the same in all groups. In the first Group, 9 patients (40,91%) were born from the first pregnancy, and in the second Group, 7 patients (38,89%) were born. In a typical group, the first half of pregnancy was complicated by gestosis in 5 people-in 22,73% of cases. In the second half of pregnancy, gestosis was detected in 3 pregnant women-13,6%. In this group, the birth process was complicated by 3 cases – 13,63% prenatal leakage of amniotic fluid and 4 cases - weakness of Labor – 18,18%. In the atypical typical group, the first half of pregnancy was complicated by gestosis in 7 people-in 38,89% of cases. In the second half of pregnancy, gestosis was detected in 2 pregnant women-11,11%. The birth rate in mothers of patients in this group was complicated by the prenatal discharge of amniotic fluid in 2 cases – 11,11%, the weakness of the birth forces – in 3 cases – 16,67%.

Consequently, the overall pathology of pregnancy and childbirth was found in 36,33% of Group 1 patients and 50% of Group 2, which is much higher (5%) than in the control group. When studying typical premorbid personality traits, it was found that patients with normal typical (16 patients – 72,7%) are characterized by politeness, activity, purposefulness, stenic character traits, pronounced "perfectionism" and responsibility for everything related to the implementation of life goals. it is slightly affected by the microsocial group in this group. the epileptoid radicals of the individual predominated. A small part of this group-4 patients (18,2%) - identified anxious and suspicious character traits, the girls became compulsive, executive and responsible and sought to communicate. The rest of the group had 2 girls (9,09%) with equally distributed different personal radicals (hysterical, asthenic). In most cases, with atypical typical characteristic features of patients (12 patients – 66,6%) – isolation, increased sensitivity, predisposition to reflection, responsibility, suspicion, dissatisfaction. In the smaller part - 4 girls (22,2%) - the desire to communicate, hypersensitivity, anxiety, irritability, emotional lability, agility were noted. There were also features of pedantry, disgust. The rest of the group - 2 girls (11,1%) - had psychasthenic properties. It should be noted that the personal characteristics of all girls, as a rule, did not exceed the level of accentuation and did not interfere with the adaptation of patients in society. 6 months after the start of therapy, patients' catamnesis showed that treatment was effective in 75% of normal typical and

55% atypical typical patients, leading to normalization of eating behavior, affective state, and somatic state.

According to literary data, the premorbid characteristics of patients are excessive accuracy, accuracy, rigor, emotional maturity with increased dependence on parents, a tendency to obsessive doubts, a desire for self-affirmation in combination with the inability to make independent decisions, as well as a tendency to eat alone and attitudes practiced in the family limit its size. In our study, atypical typics, unlike the usual type premorbid, where the specific strain in the study coincided with epileptoid and hysterical radicals, the sensitive individual radical dominated in combination with more irritability, a predisposition to an intrapunitive reaction. This combination largely determined the clinical picture of the disease, dissimulatory behavior and, accordingly, a deterioration in the effectiveness of therapy and an unfavorable prognosis of the disease. Currently, for the early diagnosis of eating disorders, predictors of eating disorders are being studied, psychological risk factors for the onset of eating disorders are being evaluated, as well as the prevalence of anorectic training among young women.

The authors carried out work that determined the connection between the accumulation of pathological prepositional factors and the course of the disease, the peculiarities of the clinical picture. Our study determines the exact severity of heredity in normally suffering patients, which confirms this hypothesis.

Genetic and Neuroimaging analysis conducted in recent years reveals phenotypic traits and neuropsychological traits that precede the manifestation of symptoms in children with a higher risk of habitual. In our opinion, the above studies, as well as the identification of prepositional factors and risk factors, help to make a typical and atypical typical early diagnosis and prevent complications associated with this disease.

Thus, in patients with a typical form in the premorbid, epileptoid and hysterical personality traits prevailed, and among the prepositional factors were found mental disorders of the endogenous circle (schizophrenia, recurrent depression) and chronic alcoholism, as well as somatic pathology - diabetes mellitus and pronounced severity of arterial hypertension. With an atypical typical in the premorbid, in most cases, a sensitive radical of the individual was detected, in the preposition mental disorders – schizophrenia, mental retardation, chronic alcoholism, as well as somatic pathology – hypothyroidism, diabetes, lung cancer was aggravated.

**Conclusions.** Thus, an important role in the development of normal and atypical anorexia nervosa is played by prepositional factors in the form of severe psychopathological and somatic heredity, pathology of pregnancy and childbirth in mothers of girls, as well as premorbid personality traits in the form of epileptoid and sensitive-schizoid radicals. The latter can be considered a negative factor that helps to form atypical manifestations of the usual clinical picture.

According to the results of the study, we can conclude that a sensitive person with an intrapunitive reaction is not very prognostically favorable in terms of the effectiveness of radical therapy. According to the results of the study, due to the premorbid properties of the epileptoid personality radical, a high effectiveness of treatment was achieved in patients with a typical form, which is most likely associated with early diagnosis. The results obtained indicate the need to further study prediposition, personality traits in order to diagnose this disorder in a timely manner.

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## MODERN VIEWS ON THE TREATMENT AND REHABILITATION OF PATIENTS WITH DEMENTIA

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**Abstract.** *Alzheimer's is a clinical diagnosis. At the same time, Alzheimer's pathology begins long before clinical manifestations, and research is increasing to assume that biomarkers such as positron emission tomography and fluid tests directly prove this pathology. It is assumed that the diagnosis can be distinguished from the clinical expression of Alzheimer's disease. It is debated whether Alzheimer's preclinical disease changes the boundaries between "normal cognitive aging" or "healthy brain aging" and disease, which should change the notion that Alzheimer's disease belongs to the most feared aging diseases among late age-specific diseases fear of getting sick.*

**Keywords:** *treatment, rehabilitation, dementia, Alzheimer's disease, cognitive disorders.*

**Introduction.** Alzheimer's disease is exacerbated by negative or ambiguous signs in the title. It should be noted that in Japan, the government officially changed the sign of dementia to cognitive illness. In promoting knowledge about patients with dementia, their friends and relatives, especially the early and intermediate stages of the disease [1]. Dementia stigma is constantly studied in research by the International Alzheimer's Association [2], including in the study of criticism in patients and caregivers, the risk of suicidal tendencies [3]. Stigma is seen as one of the main barriers to understanding the disease, seeking help, diagnosing, and using support services. This closes the ways to openly discuss the disease and makes doctors think that they cannot offer anything. Consideration of various aspects of stigma focuses on finding ways to overcome stigma [4]. In modern classifications, dementia diagnosis and stigma elimination in DSM-5, radical changes in dementia diagnosis are determined by combining different levels of cognitive decline into a rubric called "neurocognitive disorders" [5].

This new diagnostic team derives from the old label "delirium, dementia, amnesic and other cognitive disorders" in DSM-IV and "organically identified mental disorders" in ICD-10. The basic concept is the definition of "neurocognitive disorder", recently introduced into scientific circulation, the main symptom of which is the cognitive decline acquired in the six main areas (domains) [6]. These include attention complex, executive functions, learning and memory, speech, perception and motor skills, and social cognitions. For all these domains, individual cognitive functions are indicated, on the one hand, there are clinical syndromes and, on the other hand, quantitative tests for evaluation [7]. Neurocognitive disorder is diagnosed as large or small based on the following criteria: - small neurocognitive disorder includes: moderate decrease in cognitive function, no loss of patient independence.

This condition is similar to mild cognitive decline (MCI); - major neurocognitive impairment implies a significant decrease in cognitive ability, leading to self-inability and

dependence on support [8]. Neurocognitive disorder replaces the concept of "dementia". The advantage of its introduction is the possible reduction of the "stigma" present in the concept of "dementia". From a medical point of view, this relieves the problem of treating dementia from theoretical disappointment [9]. At the same time, the exceptional concepts of "dementia" as a medical diagnosis can pose new risks, since special medical and socio-legal measures in the field of guardianship and trusteeship are associated with it. After all, at present, it is these areas that take on the main burden of ensuring the life of people with dementia [10]. Minor neurocognitive disorder poses another additional problem in Alzheimer's disease. Since the neuropsychological and clinical signs of this subtype are often difficult, first of all, to distinguish from physiological aging, the diagnosis of "probable" small neurocognitive disorder in Alzheimer's disease can only be made if very strict conditions are met, namely: with a clear statement of the genotype or with a sufficient number of biomarkers and values specific to Alzheimer's disease. In ICD-11 it is also assumed that the diagnosis of late-age dementias using the concept of "neurocognitive disorder" is presented in a similar way, which improves the understanding of the internal picture of dementias necessary for therapeutic communication, elimination of stigmatization, optimization of cooperation between specialists, patients and their loved ones. self-help societies, the presence of biopsychosocial approaches with proven resource-saving potential [11]. Helping with aging dementia is a health priority. Insufficient assessment of the problem leads to delayed and insufficient assistance, aggravating the burden of the disease; condemned the sick and their loved ones [12]. The ethical aspects of the extended stage of dementia during dementia arise many ethical questions, both daily and in special situations.

They include, but are not limited to, the following points [13]: - the balance between patient privacy and family awareness (including diagnosis); - the balance between the patient's previous views and values and current perceptions and opportunities, including the role of supporting decision-making; - the balance between security and freedom-keeping; - the use of assistive technologies (often the balance between security and Privacy); - making a decision to end life, including saving life in the absence of data and pre-orders for palliative care [14]. This attitude must meet high moral standards, but must be flexible and sensitive in certain situations. Moral principles that recognize basic human rights imply equal availability of resources and assistance for all members of society, regardless of their social status, culture, and geographical affiliation [15]. Over time, patients lose the ability to independently make decisions. Driving rights are lost in the intermediate dementia stage, where the use of a standardized assessment algorithm in depriving Lysen Zii of driving is considered morally correct [16].

Moral aspects at this stage of the disease can be more associated with the behavior of relatives who resort to "soft" lies or even direct lies. It is preferable to follow the patient's peace of mind than to achieve reality. for example, by repeating the same issue over and over again or not recognizing loved ones [17]. The same "holy lie" methods include hiding or reporting at the last minute about an event the patient is afraid of (visiting a doctor, placing it in a care unit). Any separation from loved ones, a violation of unity is seen as stress, and on the contrary, it is positive to maintain communication and interaction, which, according to autopsy, is pathogenetically justified by stimulating alternative mechanisms of the brain to compensate for the deficiency [18]. M. Roth noted that in the advanced stage of the disease, moral, medical and psychological problems appear in a paradoxical and problematic form to solve before the persons responsible for the patients. For some relatives, living with a beloved mother, father or spouse retains its dignity.

While they are influenced by ideas about the former importance of a loved one, it is surprising that in the early stages of ad, the need or expediency of treatment is needed [19]. For them, death is an enemy that needs to be fought until all individual traces of personality and spiritual life disappear. These feelings should be perceived with respect and meaning. Discussing the ethical problems of therapy modern symptomatic agents – cholinesterase inhibitors and memantine-are relatively easy to consume, but their availability is limited in many countries for economic reasons or due to therapeutic nihilism [20]. Although their effects are moderate, they affect the design of new drug testing protocols, as the use of placebo in clinical trials in Diagnosed Patients is rarely resolved beyond 3 months [21]. In addition, the opinion of psychiatrists may differ whether psychiatrists should prescribe antipsychotics to patients with dementia [22]. It is believed that these drugs increase the risk of serious adverse events or even death, but they can effectively weaken arousal and aggression, facilitating contact with caregivers who can take longer home care. Both patients and family members should be informed about this appointment [23].

Even if the patient misunderstands, it is important to show respect by involving him in the discussion [24]. At the same time, it is noted that the position of the doctor should be very flexible, make exceptions. This is due, in particular, to the appointment of antiandrogens for sexual dysinhibition. It is ethical to first Test behavior correction measures and only then prescribe antiandrogens. Physical compression measures are still widely used in the moderate to severe dementia stage. Alternative non-pharmacological therapy types and caregiver training programs have not been adequately evaluated in randomized studies [25]. The behavior of patients with dementia can be stressful for others and for themselves. The ethics of caring for AD patients are based on changing the socio-environmental situation and supporting activities to maintain independence and self-affirmation, such as creating stereotypical action or safe places to walk. The Prohibition of mechanical and chemical containment measures has been recognized as morally justified [26]. From the point of view of ethics, the question of whether psychiatrists should encourage cognitive stimulation exercises in ad is debated. It is believed that it is necessary to compare their benefits and risks, the latter means self-esteem, loss of self-esteem during mistakes, sometimes the fear of offending loved ones, that is, it is always necessary to take into account the impact on relationships with loved ones. Moral optimization of this situation involves performing these exercises together, solving crosswords, composing puzzles [27]. Moral dilemmas of the late stage of the disease moral problems of the last stage of dementia are often and to the greatest extent discussed. More than a quarter of a century ago, the classic of modern gerontopsychiatry M. Roth has dedicated a special work to this issue [28]. This followed the passage of a law regulating euthanasia in Denmark. Recognizing that the clinician's desire to cure or alleviate the disease and the experience of compassion can be undermined by impractical evidence over time, M. Roth notes that in the last years of the disease, most patients with AD are in a special vegetative state without traces of residual personality [29]. At the same time, the author pays attention to the fact that in the middle stage of the disease, apathy, inhibition, lack of attention and even partial cognitive decline are associated with a long stay in the institution [30]. In a number of patients with AD, a routine examination will determine a complete collapse, but in some cases different abilities may be retained. At the same time, with the development of pneumonia or coma, the ad is the only human and moral m in the management of the patient at the terminal stage. Roth allows the death process to continue to the end, as attempts to reconstruct such patients return them to a state where there is no longer life in the real sense [31]. The most controversial issue from the point of view

of Bioethics is the issue of voluntary active euthanasia. M. According to Roth, this measure is directly contrary to the doctor's moral sense. This medical position leads decision-making due to tradition, training, and experience. In relation to Ba, the intensity of this moral imperative is resilient, despite the pressing of ideas about the possibility of accelerating death [32]. Assessing the achievements of scientific research in recent decades, the researcher believed that "light has appeared at the end of the tunnel" due to the development of new drugs hope for the possibility of stopping the development of the disease and possibly preventing it [33]. It is recognized that there are no morally, morally and legally impeccable ways to solve problems of the last stage of dementia, since the choice is made not between good and evil, but between smaller and larger Evil [34]. The use of the latest technologies makes it possible to save the lives of patients whose body has forever lost the ability to independently cope with the most important functions of life [35]. Thus, the noble and human task of Medicine — the fight against disease — becomes its opposite — the struggle to preserve the disease for a long time. The main thing is the question of when and when to continue life with dialysis for treatment, prescribing antibiotics for pneumonia or kidney failure [36]. Patients present the problem of getting rid of pain that they cannot complain of, just like artificial (probe) feeding when swallowing is impaired. In the implementation of life support measures, it is recognized that it is necessary to explain complications and risks to relatives [37]. Other ethical problems in the final stage of dementia are related to the standards used in the appointment of antipsychotics, participation in research, decision-making for the deeply vulnerable. These decisions are based on what once sick people were or how they appeared, which explains the existence of diametrically opposed views [38]. Drawing up pre-orders or a statement of Will in relation to intervention in the Terminal stage is seen as a morally justified way out in these situations [39]. During the period of preparation of orders, the patient's condition should be considered as a real, competent and informative demonstration of the preference for actions in the event of an infection of the respiratory or gastrointestinal tract or the appearance of coma at an incurable stage [40]. This should not be done under the influence of depression or nihilistic despair, feelings of guilt or suicidal thoughts. Since the situation may change, the possibility of changing commands should be given. If such an order provides for the continuation of life, the doctor must ensure the treatment and maintenance of life [41]. This can lead to conflict with the doctor's clinical judgment and moral standards, but there is no law for the doctor that allows you to take the patient's life away. The second is that there is a difference between killing and allowing one to continue dying without interference. A doctor who does not recognize the latter is not only a healer, but also a performer. An alternative is Hospice Care [42]. Thirdly, patients who are in a state of complete dementia should be protected from undermining their self-esteem and being allowed to die. In these cases, discontinuation of treatment and artificial feeding should not be considered illegal or immoral acts. But these last principles do not apply during the course of the disease, but only apply to the last 2-3 years [43]. This idea should be further developed on the basis of widespread judgments about irreversible "brain death" in recent years. It is equivalent to the death of an individual, but this applies only to a long-lasting coma. It has become common for early stage patients to be asked about the decision-making advantages of terminal stage treatment and care (artificial feeding, compression measures, artificial respiration, etc.) [44]. Avoiding this discussion is associated with a depressive state and a fear of generating other fears (fear of aggressive behavior, etc. At all stages of the disease, most patients want to be fully involved in determining their future as much as possible and in the life of the family. Opposite feelings are



characteristic of family members. Without prior orders, they must deal with these morally difficult issues [45]. As long as patients are qualified, psychiatrists take a paternalistic position and encourage patients to discuss these issues with relatives, making sure that this discussion does not injure the psyche. It is necessary to discuss the experiences that arise with the patient, this is self-psychotherapy. There are extreme positions-on the one hand, to continue life in the stage of deep dementia, on the other hand, to give the opportunity to stop a meaningless being [46]. The intermediate position-the desire to continue life-becomes clear until it is accompanied by Joy and suffering. The psychiatrist should know that even if patients have given prior instructions, their benefits can vary significantly depending on the outcome of the disease. Finally, it is not always clear when to stop discussing with the patient his instructions at the end of his life. If this is a mental trauma, you should definitely do it [47]. The question of ethics is also whether a psychiatrist and family members should forcibly hold on to the integration of their relationship with the patient. The situation at the end of the life of individuals who have not left an order in advance and whose preferences are unknown should be discussed at the meeting of the Ethics Committee [48]. When the disease progresses and the ability to understand and choose information is lost, clinical, ethical and legal issues of informed consent are differentiated in clinical and research institutions. The international Alzheimer's Association's ethical guidelines regarding the terminal stage provide for the rejection/cessation of pre-given treatment and adherence to hospice care guidelines [49]. This is such medical, psychological and social assistance to a dying person when his death becomes a "death by Dignity". In the works of modern bioethics researchers [50] it is noted that F. Bacon formulated the essence of modern palliative medicine 350 years before the opening of the first hospice in 1967. At the end of its life, care for patients with dementia gradually shifts to a palliative approach similar to that of the last stage of cancer [51]. Ataraxia (Greek. ataraxia-equality) - the term ancient ethics, means the state of mental peace, the transfer of attention from external conditions to internal ones, the focus on the "most common and fundamental", which helps to abandon thoughts about death in the first place. In a generalized form, the morally sound actions of a practicing psychiatrist are reduced to the following rules [52]; - in the early stages of dementia, keep in mind that it is important for these patients to be under control and participate in family life as much as possible. Moral priority consists in properly informing about the disease, involving it in the treatment and assistance plan, discussing the preparation of orders in advance; - as the deterioration continues, this position of honesty may not be the best [53]. The goal is to relieve stress, and a moral attitude should meet the emotional needs of patients. Allowing falsehood to manifest or maintain honesty is individually variable. A psychiatrist should also support caregivers; – at the last stage of ad, with the possibility of death in the near future - discussing artificial feeding issues with relatives, sometimes speech and the desire to live can be preserved, it is important to maintain the absence of pain and contact with loved ones [54]. That is, both possibilities are considered – to allow to die and start life-saving measures. The role of the psychiatrist is not to make decisions for the patient, but to help the patient and family members make decisions. Clinical research ethics is an area of biomedical ethics that defines the relationship between the subject and the object in the process of conducting clinical research (CI) in human participation [55]. Ki provides for compliance of the conditions of transfer with generally accepted moral standards, requirements for compliance with the rights, interests and personal dignity of ki participants, subordination of the interests of Science and other interests to the priority of the rights and freedoms of the individual. The CI is regulated by the GCP (good clinical practice) rules,

compliance with which is considered as a public guarantee for the rights and health of the subjects, as well as the protection of their privacy and the reliability of the collected clinical data [56]. The ethical issues of conducting clinical research in patients with dementia are an independent problem. In clinical studies conducted in patients diagnosed with dementia, it has already been mentioned that the use of placebo is rarely resolved outside 3 months [57]. The main issues are the involvement of dementia patients in research and the protection of their well-being, informed consent, risks, benefits and burdens, brain and tissue donation, publication and dissemination of research results, end of life and various aspects related to medical research (clinical studies, epidemiological and genetic studies) [58]. The main thing is to get informed consent of the patient. In the United States, the government established 8 General informed consent rules to participate in research. Patients with cognitive decline cannot cover these complex data, so researchers and control groups should carefully consider the risks and benefits for these patients and consider protocol modifications to protect patients. Finally, family members or surrogate caregivers must be involved in the consent process [59]. It is interesting that in 1971, the United States Department of health was transformed into the Department of Health and human welfare. He founded the public council for the supervision of modern-type ethics committees, specifically scientific institutions, which in the United States is a public body. The basic principles of his activities are largely repeated in the activities of all ethics committees. The committee must assess compliance with the ethical principles of research projects, especially the procedure for obtaining consent informed in writing to participate in experiments from subjects, monitor the progress of experiments and, if necessary, suspend them. It is known that the requirements for biomedical ethics when conducting clinical research are based on the 10 rules of the famous Nuremberg Code, a type of ethical code for conducting medical and biological experiments in humans. The Geneva Declaration adopted by the World Medical Association is a modern analogue of the "Hippocratic Oath", a series of moral documents created later regulate the activities of doctors and researchers. Education is considered necessary to receive education in ethics.

**Conclusions.** Such training of specialists should be aimed at recognizing the ethical aspects of decision-making and assistance planning, knowing the rules and laws and applying them in certain situations, supporting people with dementia, their families and non-professionals. The objectives of optimizing this process should consist of the following steps recommended by the author: - development of morally adequate care standards based on the UN Convention on the rights of persons with disabilities; - provide specific strategies and mechanisms to achieve these standards; - prevent abuse of dementia patients, make decisions, provide end-of-life care and create legal restrictions and relationships in human rights issues; - professional clinicians, care of family members, and Human Rights training programs for non-professional caregivers. in all civilized countries, today National Associations of physicians interested in the development of Bioethics, the development and appropriate level of support for professional medical ethics standards in health care institutions. Biomedical ethics is the most important Institute of modern society, one of the tasks of which is the development of measures to protect the rights and health of the adult population as a whole, and an increase in the number of elderly people with various degrees of cognitive decline.

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## INFLUENCE OF AGROTECHNICAL FACTORS TRITICALE TO IMPORTANT ECONOMIC SYMPTOMS

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**Abstract.** *This article presents the analysis of the data obtained in the scientific research work on the agrotechnology of growing a new, promising variety of triticale belonging to the group of grain crops. The experiments were conducted in the soil and climate conditions of the experimental farm of the Tashkent State Agrarian University.*

**Keywords:** *triticale, variety, seed, planting time, rate, development phases, tuber, earing, flowering, period of validity.*

**Introduction.** From the first years of our independence, the government of Uzbekistan paid great attention to the radical reform of the agrarian sector, the development of production focused on deep processing of agricultural products, and the provision of high-quality food products to the population. The transition to the farming movement, which is efficient in management, has proven itself in the world experience, ensures that agriculture will improve. These measures are bearing fruit. In particular, during the reform years, grain cultivation was 1 mln. 8 million per ton. reached tons. The volume of agricultural production has more than doubled.

According to the decree of the President of the Republic of Uzbekistan No. PD-3281 of September 15, 2017: for the harvest of 2018, grain crops will be grown on an area of 1 million 107.1 thousand hectares, a total of 6 million. It is envisaged to grow 604 thousand tons of grain crops. It can be seen that, by taking care of grain crops, in 2018, a high and high-quality grain crop was grown from them.

At a time when the population growth in Uzbekistan is increasing dramatically, it is important to choose high-protein and high-energy grain crops adapted to every climatic conditions of our Republic and with high potential yield, and to cultivate them taking into account their biology and important economic characteristics, as well as applying them to the production of high-yielding varieties. there are urgent, responsible tasks.

The reforms carried out in the agriculture of our country are aimed at providing the population with food products, raw materials for industry, and fodder for livestock. In this regard, grain growing is one of the main sectors, and triticale, a grain crop with spikes - Triticale L., occupies an important place.

In the age of advanced science and technology, it is clear to all of us that measures against the financial crisis have been developed in our country, and the use of advanced modern innovative technologies in the agricultural sector has been highly effective. We consider it a great happiness that grain independence was achieved by the initiative of our President and the government of Uzbekistan in the last two decades, and that the citizens of our country are living a prosperous life in a peaceful and prosperous country, with plenty of food and a rich table.

Nowadays, ensuring food security is an important area in all countries, because the increase in the world's population leads to an even greater demand for food. Therefore, the contribution of grain crops to the sustainable development of the agricultural sector is of great importance.

Triticale is a plant resulting from the crossbreeding of wheat and rye. For the first time in history, in 1875, the Scottish scientist A.S. succeeded in creating a sterile plant by crossing wheat and rye. Wilson is noted in scientific sources.

By 1888, the first fertile hybrid of wheat and rye was obtained in Germany by the German scientist W. Rimpau.

In 1918, thousands of hybrids were created by crossing wheat and rye at the Saratov Scientific Experiment Station. This plant got its name "Triticale" only in 1935 when the German scientist Tshermak founded (*Triticum* (wheat) + *Secale* (rye) = Triticale). Currently, the international scientific name is *Triticosecale*.

According to scientific sources, in recent years, octoploid 56-chromosomal triticale was created by crossing autumn or spring soft wheat with rye, and hexaploid 42-chromosomal triticale was created by crossing durum wheat with rye. In the following years, hybrids of 3 types (soft, hard wheat and rye) were created, which combined the genetic characteristics of hard, soft wheat and rye.

*The purpose of the scientific work is to study the effect of planting time and rate on the productivity of new triticale varieties under the conditions of irrigated typical gray soils of Tashkent region.*

*Results of the experiment:* Table 1 below shows the analysis of the data obtained on the duration of the development phases of triticale varieties. According to the table, the first planting date is on September 20, that is, in the options planted in the early period, the planting rate of the "Sardor" variety is 4 million units/ha, compared to the experimental option. The transition to the germination phase was on September 27, the transition to the tuberization phase was on March 10, the earing phase was on April 12, the flowering phase was on April 24, and the ripening period was on June 8. It was observed that the transition to the germination phase was on September 29, the transition to the tuber phase was on March 13, the earing phase was on April 14, the flowering phase was on April 26, and the crop ripening period was on June 8.

The first planting period is on September 20, i.e., in the early-planted options, in the "Sardor" variety, the planting rate is 5 million units/ha. phase on April 26 and the ripening period of the crop on June 10, in the "Armug'on-60" variety, these parameters, i.e., the transition to the budding phase on September 27, the transition to the tuber phase on March 14, the spike phase on April 15, flowering It was observed that the phase coincided with April 27 and the period of crop ripening coincided with June 11. As it can be seen from the analysis of the obtained data, it was found that the seeds sown on the same day have a partial effect on the development phases depending on the sowing rate.

When analyzing the above data, the first planting period is on September 20, i.e., in the early-planted options, the planting rate of the "Sardor" variety is 6 million pieces/ha. If the spike phase is on April 13, the flowering phase is on April 28, and the crop ripening period is on June 11, then in the "Armug'on-60" variety, these indicators, i.e., the transition to the budding phase is on October 2, the transition to the tuber phase is on March 14, It was observed that the spike phase was on April 15, the flowering phase was on April 30, and the crop ripening period was on June 12.

Data were obtained when triticale cultivars were sown in the second sowing period, i.e. on October 10, and the duration of development phases from seed germination to harvest maturity was determined.

According to the analysis of the data obtained on the duration of the development phases of triticale varieties, the second planting date is on October 10, i.e., in the options planted in the middle term, in the experimental option with a planting rate of 4 million units/ha in the "Sardor" variety, the transition to the sprouting phase is on October 20, the transition to the tuber phase March 16, the spike phase on April 17, the flowering phase on May 2, and the ripening period on June 14, in the "Armugon-60" variety, these indicators, that is, the transition to the budding phase, on October 20, the transition to the tuber phase It was observed that on March 18, the earing phase was on April 19, the flowering phase was on May 4, and the ripening period of the crop was on June 14.

In our field experiments, the second sowing period is October 10, i.e., in the options planted in the middle term, the planting rate of the "Sardor" variety is 6 million pieces/ha, the period of lateral germination of seeds is on October 24, the period of transition to the tuber phase is on March 19, and the spike phase is on April 19, the flowering phase is on May 5, and the crop ripening period is on June 16, in the "Armugon-60" variety, these parameters, i.e., lateral germination of seeds is on October 24, the period of transition to the tuber phase is on March 20, and the earing phase is on April 20. it was observed that the flowering phase coincided with May 7 and the period of crop ripening coincided with June 16.

***1-table***

***Duration of development phases of triticale varieties, day and month***

№	Varieties	Sowing rate, million units/ha	Transition periods						
			Weeding	Tubing	Spike	Flowering	Ripe	The duration of the validity period, days	From planting period until ripening, days
20 september									
1	Sardor	4,0	27.09	10.03	12.04	24.04	08.06	253	260
2	Armugon-60		29.09	13.03	14.04	26.04	08.06	251	260
3	Sardor	5,0	28.09	12.03	13.04	26.04	10.06	254	262
4	Armugon-60		27.09	14.03	15.04	27.04	11.06	256	263
5	Sardor	6,0	30.09	13.03	13.04	28.04	11.06	253	263
6	Armugon-60		02.10	14.03	15.04	30.04	12.06	252	264
10 oktober									
7	Sardor	4,0	20.10	16.03	17.04	02.05	14.06	236	247
8	Armugon-60		20.10	18.03	19.04	04.05	14.06	236	247
9	Sardor	5,0	22.10	18.03	18.04	04.05	16.06	236	249
10	Armugon-60		22.10	18.03	20.04	05.05	16.06	236	249
11	Sardor	6,0	24.10	19.03	19.04	05.05	16.06	234	249

12	Armugon-60		24.10	20.03	20.04	07.05	16.06	234	249
1 november									
13	Sardor	4,0	12.11	20.03	22.04	05.05	20.06	219	232
14	Armugon-60		13.11	22.03	24.04	06.05	20.06	218	232
15	Sardor	5,0	14.11	22.03	24.04	07.05	22.06	219	234
16	Armugon-60		14.11	24.03	26.04	09.05	22.06	219	234
17	Sardor	6,0	16.11	24.03	25.04	08.05	22.06	217	234
18	Armugon-60		17.11	26.03	26.04	09.05	22.06	216	234

The data analysis shows that the differences between the first and second planting periods and the planting rates are significant during the development phases, and the ripening of the second planting period is 6-8 days later than the first planting period.

Triticale cultivars were planted in our third planting period, on November 1, and the duration of development phases from seed germination to harvest maturity was monitored.

According to the analysis of the data obtained on the duration of the development phases of triticale varieties, the third planting period is on November 1, i.e., in the variants planted in the late period, in the experimental variant with a planting rate of 4 million units/ha in the "Sardor" variety, the transition to the sprouting phase is on November 12, the transition to the tuber phase March 20, the spike phase on April 22, the flowering phase on May 5, and the ripening period on June 20, in the variety "Armugon-60" these parameters, that is, the horizontal germination of seeds on November 13, the period of transition to the tuber phase on 22 it was observed that the spike phase was on April 24, the flowering phase was on May 6, and the crop ripening period was on June 20.

In our field experiments, the third sowing period is November 1, i.e., in the variants planted in the late period, the planting rate of the "Sardor" variety is 5 million pieces/ha. , the flowering phase is on May 7, and the crop ripening period is on June 22, in the "Armug'on-60" variety, these parameters, that is, lateral germination of seeds on November 14, the period of transition to the tuber phase on March 24, and the spike phase on April 26, it was observed that the flowering phase coincided with May 9 and the period of crop ripening coincided with June 22. In our experiment, the differences between the first, second, and third planting periods were significant throughout the development phases, as is evident from the analysis of the obtained data.

In our field experiments, the third sowing period is November 1, i.e., in the options planted in the late period, the sowing rate of the "Sardor" variety is 6 million pieces/ha. April, the flowering phase is on May 8, and the crop ripening period is on June 22, in the "Armugon-60" variety, these indicators, i.e., lateral germination of seeds are on November 17, the period of transition to the tuber phase is on March 26, and the earing phase is on April 26. per day, it was observed that the flowering phase coincided with May 9 and the ripening period of the crop coincided with June 22.

*Conclusion:* Differences between planting dates and rates were significant throughout the development phases, and it was noted that the third planting period was 10-14 days later in maturity than the first planting period.

It was observed that planting triticale varieties late in the third period, i.e. on November 1, caused these varieties to ripen by the third ten days of June. This is the late ripening period for grain crops in the agriculture of our country. Therefore, it is recommended to plant triticale varieties in the first and second planting periods in our country in order to optimally plant repeated crops and get a good harvest from them.



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## DEPENDENCE OF THE DURATION OF THE VEGETATIVE PERIOD OF PEANUTS FROM MINERAL NUTRITION

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**Abstract.** *Mineral fertilizing was one of the main agro-technical measures for increasing the yield of peanuts. Field experiments carried out in conditions in the typical gray soils of the Tashkent region and the result have shown that scientifically based application of mineral fertilizers positively affects the yield of peanut grains.*

**Keywords:** *oilseed, oilseed, peanuts, organic fertilizers, Calcium.*

**Introduction.** At present, it is observed that the world's population is increasing rapidly, which causes people's demand for daily food products, including edible oil and protein, and the growth rate of food shortage to increase day by day.

The edible oil and protein content of peanut seeds can compensate for such deficiencies and is of high importance in terms of economic efficiency. In the case of India alone, groundnut is mainly an oilseed crop (*because about 78% of the cultivated crop is for oil production*) is taken care of. In our country, this crop is grown every year on an average of more than ten thousand hectares in an amount that can fully satisfy the demand of our population. Not only in our country, but also in all countries that grow peanuts, the incomparable role of mineral fertilizers in obtaining abundant and high-quality harvests from peanuts has been proven in scientific sources.

Scientist G. Narasimhulu [4], who conducted scientific research on feeding peanuts with mineral fertilizers, said that a high yield of peanuts can be achieved only when the soil contains enough basic nutrients. Each quantal is a centner (*ing. = 50,8 кг; amer. = 45,36 kg*) 4.38 kg N, 0.40 kg P and 2.60 kg K are required for pod formation. R.V. Raghavaiah [6], C.Ranganayakulu, A.Raju and G.Sankara Reddy [7] found that 4.38 kg of N in the formation of one quantal of pods; 0.40 kg P; In addition to 2.60 kg of K, 1.23 kg of Mg and 4.0 grams of Zn are required.

According to F.J.Stevenson [8], the use of large amounts of organic fertilizers can be an additional source of nutrients for the optimal growth and development of the peanut crop. Organic matter reduces the density and hardening of the soil and improves its structure. Also, organic matter is a source of nutrients for the peanut crop and helps to accumulate nitrogen in the root of the plant with the help of microorganisms.

According to Y.Sollins, H.D.Morris [3], peanut is a demanding plant for various nutrients. According to scientists, for every 1 ton of beans and 2 tons of plant straw, 63 nitrogen; 11 kg of phosphorus, 46 kg of potassium, 27 kg of calcium and 14 kg of magnesium elements are absorbed from the soil, and on average 50% of nitrogen and phosphorus and 80-90% of potassium, calcium and magnesium elements are retained in plant straw.

M.Amanova, A.Rustamov, L.Allanazarova, J.Khudaykulov [1] stated that when peanuts are given more than normal nitrogen fertilizer, the yield increases by 0.2-0.4 t/h, but the accumulation of nitrogen bacteria in the root is observed in the experiments. Calcium, magnesium, boron, and zinc are also important for obtaining a high yield of peanuts, along with macroelements.

Lack of calcium in the soil causes blackening of the first leaf buds of the plant, very slow growth of grass, decrease in viability of grass, and stunting of plants. Microelements also act as catalysts in the absorption of other nutrients in the soil. The microelements in the soil are less than the norm, which has a negative effect on the growth and productivity of the plant.

The coefficient of absorption of nutrients from soil and fertilizer depends on the type of soil, temperature, amount of precipitation, type of fertilizer, form, and irrigation system.

According to A.V.Peterburgsky, field crops absorb 10% of NPK from soil, 25-30% of N, 30% of R2O5, 60% of K2O from manure in the year of fertilization. 40-88% of nitrogen will die. Especially in irrigated conditions and when the weather is hot, there is a lot of nitrogen loss.

The absorption of phosphorus and potassium depends on the moisture of the soil and the activity of symbiosis. If Typpoqni is in a neutral or slightly acidic environment and contains 80-140 mg/kg of moisture, 18-22% of phosphorus and 20-25% of potassium are absorbed. The absorption of phosphorus from mineral fertilizer is 35-40%, and potassium is 65-80%. If the conditions for biological symbiosis are not good, if there is not enough nitrogen, the absorption of phosphorus and potassium can be 3 - 7 and 5 - 10%.

*Time and method of feeding with mineral fertilizers.* When designing a fertilization system, it is necessary to determine the method and timing of fertilization. In general, fertilizers are applied in 4 periods.

*1. The main fertilizer is applied before plowing.* This fertilizer is intended to supply the crop with nutrients throughout the growing period. At the same time, organic and mineral fertilizers are used. It is necessary to mix certain fertilizers deeply into the soil with a harrow. Surface application of phosphorus fertilizers is useless, because phosphorus fertilizers are stored in the same layer as the depth of the soil. Fertilizer applied on the surface is not absorbed by the crop, because the upper part of the soil is always dry, so the root does not develop in this layer. If phosphorus fertilizers are in liquid form, they can be absorbed into the soil up to 10 cm.

Compared to phosphorus, potassium penetrates into the deep layer of the soil, the main part is absorbed in the absorbent complex of the soil, and part of it goes down with water. When the weather is hot, potassium remains in the soil layer. It is advisable to use potassium fertilizers as the main fertilizer before plowing the land.

*2. Fertilize before planting.* Phosphorus and potash fertilizers are applied before planting at a depth of 12-15 cm. This is done along with pre-sowing cultivation.

*3 Fertilize at the same time as planting.*

*4. Fertilizing after planting.* Fertilizing after planting is used only when the soil is not rich in nutrients, in crops planted in wide rows, when working between the rows, fertilizer is applied to a depth of 8-12 cm. Additional feeding with nitrogen fertilizers gives good results in the peanut crop.

Object and method of experiment

Scientific research work was carried out in the field of Agricultural Scientific Research and Educational Experimental Farm of Tashkent State Agrarian University. The experimental farm is located in the upper reaches of the Chirchik River, at an altitude of 481 m above sea level, 41° 11' in the northern latitude and 38° 31' It is located in the eastern distance in Qibrai district of Tashkent region.

The experimental farm is 1500 meters away from the university yard, it is bordered by the Salar stream on the east side, the Boz water channel on the west side, the hospital of Tashkent PTI on the south side, and the residential area on the north side.

The soil of the experimental farm is a typical gray loam that has been irrigated for a long time. This soil contains about 0.8-1.0% humus, about 0.058-0.089% nitrogen, about 0.141-0.184% phosphorus and about 0.154-0.148% potassium. The soil is not saline. It differs in soil water permeability, softening complexity.

Conducting field experiments: planting, crop care, harvest, calculation and analysis of the field developed by scientists of the State Commission for Testing New Varieties of Agricultural Crops, Plant Science ITI, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) conducted on the basis of methods and methodical manuals of conducting experiments [1;2;5]. The statistical analysis of the results obtained in the field experiments was calculated using the WinQSB-2.0 and Microsoft Excel programs according to the B.A.Dospekhov method.

#### Experimental results

For the good growth of the peanut plant, softening the crop rows, avoiding excess moisture, raising the soil temperature, improving air exchange and eliminating weeds are very important agrotechnical measures. In our field experiments, the first mowing was carried out after the grasses had fully emerged to eliminate weeds and soften the rows. Special attention was paid not to damage the plant and not to bury it with soil.

Description of varieties studied in the experiment: "TASHKENT-112" variety belongs to the group of botanical varieties Fastirjiata, mid-early (vegetation period 140-150 days), average yield (15-17 t/ha), small red seeds (1000 seeds weigh 350-400 g). Suitable for consumption as a dry fruit and for oil production.

"MUMTOZ" variety description. The collection specimen "L-5 x ICGV-94088" (India) was created by gross selection.

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Belongs to the Virginia variety, the plant is semi-erect, moderately branching. The pods are large, the shape of the pods is wavy, the surface is slightly deep, pale yellow, the skin is medium-rough, the middle is slightly narrow, and the seam is medium. The color of the seed is dark red, oblong oval shape. The variety is medium, ripens in 138-145 days. The average yield is 27-28 ts/ha. The weight of 1000 seeds is 686.0-710.0 gr. Suitable for mechanical assembly. Pod adhesion is high 5.0 points, ripeness is 80.0%. Fat content of grain is 48.5%, protein is 18.0%. The variety is resistant to agricultural diseases and insects. Entered into the State Register in 2006.

Fertilization. The rate of fertilizing the field was determined based on the results of the agrochemical analysis obtained from the selected field. According to the methodology of the experiment: option 1 control (fertilizer not applied); Option 2 background –  $N_0P_{150}K_{100}$ ; 3-option –  $N_{100}$  + background; 4-option –  $N_{150}$  + background; 5-option –  $N_{200}$  + background; 6-option –  $N_{250}$  + background The use of mineral fertilizers at the rate of kg/ha was studied in field experiments. In this case, the annual rate of phosphorous and potash fertilizers was applied to the field by spraying methods before the preparation of the field for planting, i.e. chisel-fertilizing measures. Different standards of nitrogen fertilizers were applied twice during the growth and development periods of peanut cultivars, i.e. the first feeding was carried out after full germination of seedlings until flowering, and the second feeding with nitrogen fertilizer was carried out after peanut cultivars entered full bloom.

The following phenological observations were made during the growing season: 10% germination, 75% germination, 10% flowering, 75% flowering, 10% nut formation, 75% nut formation (by digging peanut bushes planted in protected areas determined by vision), harvesting (biometric measurements on isolated plants).

In the experiment, the "Tashkent-112" variety, which has been widespread in our country for several decades, was studied as a control variety, as well as important economic characteristics of the "Mumtoz" variety.

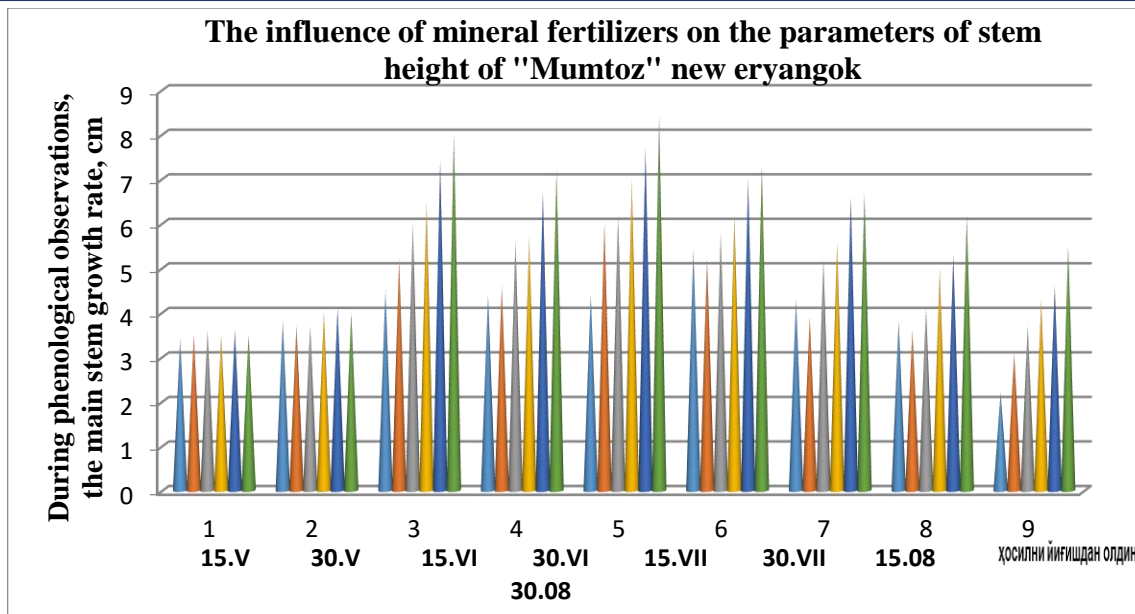
According to the methodology of the experiment: option 1 control (fertilizer not applied); Option 2 background –  $N_0P_{150}K_{100}$ ; 3-option –  $N_{100}$  + background; 4-option –  $N_{150}$  + background; 5-option –  $N_{200}$  + background; 6-option –  $N_{250}$  + background. It was found that the difference in the period of seed germination was close to each other in all the studied variants of application of mineral fertilizers at the rate of kg/ha, while the effective effect of phosphorus and potassium fertilizers was not observed. The seeds of "Tashkent-112" and "Mumtoz" varieties planted in the experiment were planted on April 20 in the 70x10x1 scheme. Seed water was given in order to produce similar seedlings. It should be noted that the large or small size of the seeds in the peanut crop affects the duration of seed germination in field conditions. In the variety "Tashkent-112", the average weight of 1000 grains is 360-400 grams, according to the studied varieties, on average 8-12% of the seeds germinated in the field by May 2nd, while the large-seeded variety, that is, the average weight of 1000 seeds is 620-645 grams. It was found that 2% of seeds germinated in the "Mumtoz" variety.

When the period of horizontal germination of seeds was observed, it was observed that by May 8-10, 62-74% of seeds planted in "Tashkent-112" variety and 64-82% of seeds in "Mumtoz" variety had germinated. According to the results of the continued phenological observation on May 10-12, 78-80% of the seeds planted in the "Tashkent-112" variety and 86-88% of the seeds in the "Mumtoz" variety have germinated. It can be seen that during the initial germination process, the large-seeded peanut variety "Mumtoz" germinates slowly, but at the end of the full germination period, when compared to the "Tashkent-112" variety in terms of germination duration and indicators, the germination rate is 8-10%. was a high indicator. In general, groundnut seeds germinate 12-14 days after planting due to adequate soil moisture and temperature.

Data obtained on the effect of mineral fertilizer feeding rates on main stem height parameters of peanut cultivars are presented in Table 1 below.

Although the growth of the peanut plant is slow compared to other types of crops, it was observed that the first flowers appeared in 25-30 days of vegetation. In the climatic conditions of our republic, plants belonging to the group of erect and semi-erect growing varieties produce on average 150-200 flowers during the growing season, and 60-65% of them form gynophores. However, 60-70% of these gynophores do not form nuts due to poor soil-climate conditions and low-quality cultivation between the rows (when the rows are not softened well, when the humming works are not carried out, the soil dries out for a long time, etc.).

In our field experiments, such negative conditions occurred received. Irrigation was carried out in the evenings on the day of feeding. In our experiment, 5-6 days after the flowering process, it was noted that a gynophore was formed as a result of the acceleration of cell division in the fruit node. The length of the gynophore is one of the main biological characteristics of varieties or samples.



#### Complete formation of gynophores

After the gynophore lengthens and penetrates the soil to a depth of 2-3 cm, the tip of the gynophore thickens and forms a nut.

And the number of seeds in the nut develops depending on the number of buds in the fruit node. The formed young nut is fed in several ways, through the leaves of the plant, with organic matter formed in the process of photosynthesis, and through the roots and the shell of the nut, with mineral substances dissolved in the soil. For this reason, soil moisture and fertility are very important during the growing season.

After 4-5 days after the gynophore is pricked into the soil, the tip of the gynophore begins to thicken, and after 60-70 days (if the soil moisture and temperature are sufficient), the nuts ripen. According to the experimental methodology: option 1 (control-fertilizer not applied) and option 2 (background- $N_0P_{150}K_{100}$ ) Nitrogen feeding was not carried out in the options. 3 (option- $N_{100}$ +background; 4 (option- $N_{150}$ +background); 5(option- $N_{200}$ +background) and in the 6th option ( $N_{250}$ +background kg/ha), feeding works were carried out in the amount of 50% of the nitrogen fertilizer application rate. The second additional feeding at the same rate was carried out during the flowering-pod formation period of the development phase. According to the experiment, it was found that the control plants of the "Tashkent-112" variety entered the flowering phase by May 30, pods began to form by June 14, and ripened by September 10. The increase in the rate of application of mineral fertilizers leads to the extension of development periods, option 6 -  $N_{250}$ +background kg/ha in the researched version of fertilizer application, it was observed that by June 4th, sorghum entered the flowering phase, by June 20th, pods began to form, and by September 24th, it entered the ripening period. It can be seen that by the time of ripening, the difference between the options was 12-14 days.

When the duration of development periods was observed in the "Mumtoz" variety, it was observed that, according to the variants, it went into the flowering phase from June 4-10, pods began to form by June 20, and it entered the ripening period by September 24.



Seedlings were pollinated 5-6 weeks after flowering. By this time (50-60 days after seed germination), plant gynophores were strongly developed and it was observed that they were pricked into the soil. In the experiment, peanut varieties were fertilized 2 times during the growth period.

Burying of gynophores with soil during the humming process plays an important role in the formation of nuts in the underground part of the plant (Fig. 1).

**Figure 1. The situation where the first humming was carried out in the peanut field**

#### Conclusions

Based on the results of the experiment, the following conclusions were reached:

- Maintenance of soil moisture during the growth period of peanut varieties fed with different rates of mineral fertilizers (preventing kernels from drying out and cracking) and keeping them free from perennial weeds has a positive effect on the even development of nuts on the plant, yield and product quality, as well as harvesting with the help of a harvesting mechanism made it possible to implement in short periods without losses.

- When comparing the varieties, it was found that the development period of the "Mumtoz" variety is 10-12 days later than the "Tashkent-112" variety studied in the control option.

- It was observed that increasing the rates of feeding with mineral fertilizers had an effect on the development periods of peanut varieties and extended the period of action by 4-6 days.

- 4 in terms of the appearance, growth and all morphological characteristics of the plants of peanut varieties studied in the control option; It was noted that it performed poorly compared to options 5 and 6.

- Local peanut cultivars in the option 6 -  $N_{250} P_{150} K_{100}$  kg/ha fed with fertilizers led to an increase in vegetative mass and stunting of the plant. Also, a delay of 2-4 days of development periods was observed.

- It is recommended to use mineral fertilizers at the rate of  $N_{150} P_{150} K_{100}$  kg/ha for the growth and development of the "Tashkent-112" variety and at the rate of  $N_{200} P_{150} K_{100}$  kg/ha for the "Mumtoz" variety.

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## PATHOPHYSIOLOGY OF PAIN AND TREATMENT APPROACHES WITH CHRONIC PANCREATITIS

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**Abstract.** *This article will focus on some peculiarities of pancreatitis concerning pain and treatment processes.*

**Keywords:** *chronic pancreatitis, pancreatology, abdominal pain, precordial region.*

Clinical manifestations of chronic pancreatitis (CP) are very variable, they are different during remission and exacerbation of the disease, depend on the clinical form, course, stage of CP and a number of other factors. The dominant symptom of CP, especially at the onset of the disease and in the first years after diagnosis, is pain. Pain syndrome occurs in most patients with CP and serves as the most striking manifestation of the disease. There is no pain in patients with CP, which is partly observed against the background of a progressive decrease in the exocrine function of the pancreas (pancreas) [1]. Most experts in the field of pancreatology tend to believe that the abdominal pain syndrome in CP is not very specific, since it has a multifactorial nature and changes over time, however, a thorough analysis of the literature still allows us to identify the main clinical features of pancreatic pain. The origin of pain in patients with CP is not fully understood and is most likely due to multifactorial effects, including inflammation, ischemia, obstruction of the pancreatic ducts with the development of pancreatic hypertension with the continued secretion of pancreatic enzymes. This opinion is confirmed by observations of patients with external pancreatic fistulas, in which the introduction of fluid (isotonic sodium chloride solution or contrast agent) through the fistula into the ducts of the pancreas immediately causes typical pains that disappear after evacuation of the injected fluid from the ducts [2]. The mechanism of pain is explained by their intensification after ingestion food and other stimulators of pancreatic secretion that increase pressure in the ductal system, partially or completely blocked due to cicatricial and inflammatory strictures, concretions. The use of drainage operations in the treatment of CP is based on the recognition of this mechanism. According to R. Ammann, the genesis of abdominal pain syndrome in CP is due to 2 mechanisms [3]:

The first mechanism is associated with inflammation, while the pain syndrome may be pronounced, resembling that of acute pancreatitis, but more often it is less significant, periodically recurs and is accompanied by pain-free periods of varying duration. The pain syndrome is more pronounced in the first 6 years from the onset of the disease, with time the pain decreases, after 10 years this syndrome persists in less than 50% of patients. According to G. Cavallini et al., after 15 years since the diagnosis, more than 25% of patients with CP continue to suffer from recurrent pain abdominal syndrome, however, the frequency of pancreatitis attacks on average, as a rule, does not exceed 1 episode of exacerbation of CP per year [4].

The second mechanism of abdominal pain syndrome, according to R. Ammann, is due to the development of complications, in particular pseudocysts, capable of having a compression effect on the duodenum (duodenum), virsung duct, biliary tract and other organs at certain locations and sizes [3]. It is assumed that progressive fibrosis in the areas of sensory nerves leads

to their compression and the development of neuropathy, increasing the tropicity of pancreatic sensory nerves to various exogenous influences (alcohol, drugs and other factors). In addition, there are other factors – peripancreatic inflammation involving the duodenum and retroperitoneal space, stenosis of the distal choledochus, irritation of the peritoneal leaf covering the anterior surface of the pancreas, the presence of pseudocysts and pathology of neighboring organs. Concomitant pathology of the stomach and duodenum, the component, together with CP, 40% of cases and more, also plays a significant role in the severity of abdominal pain syndrome [1]. There is an opinion that mechanical allodynia of central origin (perception of pain with non-painful irritation) is one of the mechanisms for the formation of abdominal pain syndrome in patients with CP. With the simultaneous implementation of 2 or more mechanisms, a persistent pain syndrome develops; it is expressed even after the acute exacerbation of CP has subsided [1]. Pain disappears with the appearance of calcifications in the pancreatic parenchyma, steatorrhea and diabetes mellitus, i.e. on average, 5-18 years after the clinical manifestation of CP. These data are confirmed by A. Girdwood [5], who found that 31% of patients with pain-free forms of CP had pronounced external secretory pancreatic insufficiency. The number of patients with CP with severe external secretory insufficiency and persistent abdominal pain syndrome is significantly less – only 3%. With CP, the pain does not have a clear localization; arising in the upper or middle abdomen on the left or in the middle, it radiates into the back, sometimes assuming a shingling character. In some cases, the pain is initially localized in the back. Such a most common symptom as shingles in the upper abdomen (considered, perhaps, an "unavoidable" sign of an exacerbation of CP) is a consequence of paresis of the transverse colon or an independent pathology of the colon [1]. Sometimes patients complain of "high" pains, interpreting them as pain in the ribs, in the lower parts of the left half of the chest. With the progression of extracorporeal pancreatic insufficiency in patients with CP, secondary enteritis is associated with excessive bacterial growth in the intestine, especially pronounced in alcoholic and biliary variants of the disease. At the same time, the pain in the epigastrium, the left hypochondrium subside somewhat; cramping pains in the umbilical region begin to dominate. Patients with alcoholic pancreatitis often experience pain in the right hypochondrium due to concomitant cholecystitis, hepatitis, cirrhosis of the liver, duodenitis [1]. The most characteristic is the irradiation of pain in the left half of the chest cap from behind, in the left half of the waist (according to the type of "left half-belt" or according to the type of "full belt"). Irradiation is also possible in the left arm, under the left shoulder blade, behind the sternum, in the precordial region, the left half of the lower jaw. At the same time, patients are often hospitalized in cardiology departments with suspected acute coronary syndrome.

More than half of the patients have a painful abdominal syndrome of high intensity and (or) persists for a long time, often leading to the development of secondary mental disorders. As a rule, the pain increases against the background of eating, usually after 30-0 minutes (especially with stenosis of the pancreatic ducts), which is associated with the beginning of evacuation of food from the stomach to the duodenum, when the pancreas experiences secretory tension. Relapse of pain is provoked by abundant, fatty, fried, smoked (to a lesser extent – spicy) food, alcohol and carbonated drinks, i.e. increased stimulating effects on the pancreas.

Most often, patients report an exacerbation CP with the combined effect of the above factors and smoking. In some patients, the appearance of pain is not associated with food. The pain can be paroxysmal, the duration of attacks – from several hours to 2 days; constant monotonous or constant with paroxysmal intensification. With the development of pancreatic necrosis, pain

decreases due to the death of the endings of sensitive nerves. Pain relief is the most important task in the treatment of patients with CP. At the same time, the following fundamental measures are necessary (in the absence of a part of these, treatment may be unsuccessful): the elimination of alcohol and tobacco smoking, therapeutic nutrition, drug therapy (analgesics, antispasmodics, enzyme preparations that do not contain bile acids, antisecretory drugs, neuroleptics, etc.), surgical and endoscopic treatment. First of all, with a relapse of abdominal pain syndrome in a patient with CP, especially with its atypicality and lack of effect from standard therapy, it is necessary to evaluate "fresh" structural changes of the pancreas (inflammation, pseudocyst, papillitis, stricture or stone, volumetric formation), which in general and it will determine the further tactics of the patient's management: continuation and (or) modification of pharmacotherapy, endoscopic or surgical treatment. In the complex therapy of abdominal pain syndrome in CP, strict adherence to a diet, the elimination of alcohol and tobacco smoking are necessary. With the cessation of alcohol intake, the frequency and severity of abdominal pain syndrome decrease in 75% of patients with alcoholic CP [1]. Patients with painful forms of CP who continue to smoke react worse to therapy aimed at correcting pain, which also needs to be taken into account when selecting therapy. The use of analgesics remains one of the main methods of pain relief in patients with CP. In many patients without edematous changes in the pancreatic parenchyma, without the phenomena of pancreatic obstruction and complications of pancreatitis (large pseudocysts, fistulas, duodenal obstruction, etc.) often persist pronounced abdominal pain caused by ischemia and progressive fibrosis in the areas of sensory nerves. In such cases, even outpatient analgesic therapy may be required. The analgesics of the 1st choice are paracetamol and metamizole, which must be taken before meals to prevent postprandial pain enhancement. Doses of analgesics are selected individually, and the lowest effective dose should be used.

If non-narcotic analgesics are ineffective, their use in the maximum permissible daily therapeutic doses, a change in the regimen and route of administration, or an attempt to replace the drug with another of the same group is possible. The additional inclusion of psychotropic drugs (neuroleptics, antidepressants, tranquilizers), which have both direct analgesic and potentiating effects against non-narcotic analgesics, also allows to increase the effectiveness of analgesic therapy. In addition, the own effects of these drugs are also important, since many patients have borderline mental disorders, anxiety-depressive and other neurotic disorders. In case of resistance to non-narcotic analgesics, opiates and their synthetic analogues can be used. The main limitation to the widespread use of narcotic analgesics is the development of drug dependence. When working out the tactics of treating abdominal pain syndrome in patients with CP, it is necessary to take into account the presence of hypermotor disorders of the motility of the gallbladder and duodenum, modification of which by prescribing antispasmodics will ensure normal passage of pancreatic secretions. The outflow of bile and pancreatic secretions may be hindered due to inflammation in the area of the large duodenal nipple, which requires the appointment of anti-inflammatory and (or) antibacterial therapy (semi-synthetic penicillins, tetracycline preparations, cephalosporins released in sufficient concentrations with bile). With dysfunction of the Oddi sphincter after cholecystectomy, which, as is known, plays a significant role in the genesis of abdominal pain syndrome in patients with biliary CP, the administration of analgesics in combination with myotropic antispasmodics (mebeverin, etc.) gives a good effect [1]. Thus, it is quite logical in patients with CP to use combined drugs containing analgesic and antispasmodic components (Spasmalgon), which will provide a pronounced direct (analgesic effect of

metamizole) and indirect analgesic effect due to the anti-inflammatory effect of metamizole and the antispasmodic effects of pitofenone hydrochloride and fempiverinium bromide (papaverine-like and m-holinoblocking action). Thus, the combination of components. Spasmalgon leads to a mutual enhancement of their pharmacological action. The release form is also convenient, containing 1 and 5 ml of the drug solution (500 and 2500 mg metamizole), which allows individual dosing of the drug. The maximum daily dose for adults is 10 ml / day (5000 mg of metamizole). Usually, 3-5 days of administration of the drug in a hospital are enough to reduce or relieve pain, which allows you to switch to oral administration in the future or limit yourself to other approaches (pancreatic enzymes, antisecretory drugs). Almost 40 years ago, experimental studies showed that intramuscular administration of trypsin or chymotrypsin inhibits the secretion of pancreatic enzymes [6]. Thus, it seems logical that in patients with CP, decreased secretion of pancreatic enzymes with external secretory insufficiency can lead to hyperstimulation of the pancreas with high levels of cholecystikinin in blood plasma and, consequently, to abdominal pain syndrome.

These facts allowed G. Isakson and I. The authors, based on the results of a double-blind cross-sectional study, reported that the severity of abdominal pain in CP decreases by 30% against the background of taking poly-enzyme preparations. At the same time, the number of pain attacks decreased in 15 out of 19 patients [7]. However, it should be noted that this approach proved to be effective only with moderate pancreatic insufficiency. 2 subsequent double-blind placebo-controlled studies [8, 9], it was possible to talk about a good overall result when using poly-enzyme preparations in patients with a painful form of CP - pain relief in 73% of cases (in 36 out of 49 patients) [7-9]. herefore, in the future, the opinion was strengthened that in order to relieve pain in patients with CP, it is necessary to use tablet preparations of pancreatin that do not have an acid-proof shell begin to activate in the stomach and upper parts of the duodenum. Somatostatin is a natural hormone, one of the effects of which is inhibition of pancreatic secretion. The effects of somatostatin include cytoprotective effect and beneficial effect on the reticuloendothelial system, which theoretically can be useful in the treatment of CP. In addition, the antinociceptive activity of somatostatin in humans and animals has been shown. However, to protect pancreatin from hydrochloric acid, these drugs must be taken with gastric secretion blockers. Somatostatin is a natural hormone, one of the effects of which is inhibition of pancreatic secretion. The effects of somatostatin include cytoprotective effect and beneficial effect on the reticuloendothelial system, which theoretically can be useful in the treatment of CP. In addition, the antinociceptive activity of somatostatin in humans and animals has been shown. Short 3-day studies using 100 and 150 mcg of octreotide 3 times a day did not demonstrate any effect in relieving pain in patients with CP [11]. In a randomized multicenter 4-week placebo-controlled study, octreotide was used at a dose of 40-100 mg 3 times a day to evaluate its effectiveness in CP with severe abdominal pain syndrome.

Although no statistically reliable results were obtained in this study, octreotide at a daily dose of 600 mg was the most effective for pain relief (65% compared to 35% in the placebo group). In addition, the authors noted that octreotide is more effective in patients with persistent pain syndrome than in patients with periodic pain [12]. Despite the optimistic results of studies on the use of octreotide in patients with painful forms of CP, the prospects of such studies are limited by a significant increase in side effects the effects of the drug with prolonged use. It is known that with prolonged treatment with octreotide, maldigestion is aggravated due to a sharp decrease in the secretion of pancreatic enzymes in the duodenum, the development of intestinal paresis and

deterioration of blood supply in the pancreas is possible. Octreotide is used especially cautiously in cholelithiasis due to an increase in the likelihood of stone formation when hypotension of the gallbladder is created against the background of treatment. Since in a number of patients abdominal pain syndrome is caused by secretory tension in the pancreas with an increase in the volume of pancreatic juice and the concentration of enzymes in it, a decrease in the exocrine function of the pancreas should lead to the creation of a "functional rest" of the gland, a decrease in ductal and tissue pressure and, consequently, a reduction in pain. This can be achieved indirectly, by inhibiting the synthesis of hydrochloric acid, which would lead to a decrease in the formation of secretin and, to a certain extent, cholecystokinin. The presented pathogenetic mechanism and the effectiveness of the addition of antisecretory drugs to the complex treatment of CP led to the inclusion of CP in the number of acid-dependent diseases. In other words, the attribution of CP to the group of acid-dependent diseases is due to the fact that effective treatment of CP is possible only with a fairly long decrease in the acidity of gastric juice. Among the blockers of histamine H<sub>2</sub>receptors, the drugs of the III generation are of the greatest interest (famotidine belongs to them), since they have fewer side effects than their predecessors and a more pronounced antisecretory effect. Although the question of the expediency of introducing histamine H<sub>2</sub>receptor blockers into basic therapy CP has been repeatedly discussed, controlled studies have not yet been conducted either in Russia or abroad.

Nevertheless, the available individual uncontrolled studies on the use of drugs of this group indicate their effectiveness. The use of these drugs is limited not only by their low effectiveness compared to proton pump inhibitors (PPIs), but also by a number of other disadvantages: reversible connection with receptors, the presence of a "ricochet flash" of secretion after withdrawal; the dependence of the effect on the maximum concentration of the drug in the blood. According to pilot studies, the most effective secretion inhibitors are currently considered to be PPIs that inhibit the operation of the system that directly secrete hydrochloric acid [13]. For the treatment of chronic abdominal pain In recent years, minimally invasive and endoscopic techniques have been increasingly used in patients with CP. Indications for endoscopic treatment are mainly obstructive forms of CP, which arose against the background of strictures of the main pancreatic passage, ductal and ampullary concretions, stenosis of the large duodenal nipple and other causes. It is believed that an alternative to narcotic analgesics is the neurolysis of the abdominal plexus (percutaneous injection under the control of imaging techniques) of ethanol and other substances into the zone of the abdominal plexus. Only if all possible conservative methods used for pain relief have been exhausted, including minimally invasive interventions, and surgical treatment options should be considered. The variant of the operative manual is chosen depending on the etiology of pancreatitis, the clinical and instrumental picture of the disease and the alleged pathomechanism of pain.

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# REHABILITATION AND PREVENTIVE MEASURES OF THE LATE COMPLICATIONS OF COMBINED INJURIES OF THE SOFT TISSUE INJURIES OF MAXILLOFACIAL REGION

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**Abstract.** *Combined soft tissue injuries of maxillofacial region can lead several early and late complications. Prolonged-inflamed, late deformed scarred, defects of the facial organs and tissues are among them. Certain effective measures have to be implemented in the process of diagnostic and rehabilitation period.*

**Keywords:** *effective measures rehabilitation, prolonged-inflamed, defects of the facial tissues.*

## INTRODUCTION

Combined injuries of the soft tissues of the maxillofacial region and their complications have different general features and clinical manifestations, therefore, the complications of such injuries differ from other injuries in particular aspects of examination and treatment methods. Oral and maxillofacial surgeon, otorhinolaryngologist, neurosurgeon, ophthalmologist, surgeon, traumatologist and resuscitators can participate in the examination and diagnosis of soft tissue injuries of the maxillofacial region and their complications [2,3]. In order to analyze the complications observed in patients before hospitalization, the above table did not include the complications of the joint injuries of the soft tissues of the face and jaw area observed during the treatment of patients in the hospital. In the following tables, this group of patients is studied separately. Complications observed during the period of receiving specialized treatment procedures in the maxillofacial surgery departments in the hospital were found in 54 (7.8%) patients. Most of these complications were observed as a result of operations performed for the treatment of injuries caused by fractures of the facial bones. [1,2,4]. Purulent-inflammatory complications were observed in the wound area as a result of surgical procedures, osteosynthesis of bone fragments, mainly due to face-jaw joint injuries. Also, specific complications after surgical procedures, complications of suppuration of postoperative wounds were observed. Also, keloid scars that occur after a facial injury, opening of sutured wounds, non-acceptance of metal constructions by the body. Salivary fistula was observed in a small percentage of patients, caused by damage to the preauricular salivary gland after osteosynthesis in a patient with a mandibular coronoid fracture.

## THE PURPOSE OF THE STUDY

The purpose of the study is to implement the rehabilitation and preventive measures of the late complications of combined injuries of the soft tissue injuries of maxillofacial region

## MATERIALS REVIEW AND METHODS

In period the study, 168 patients were included in inpatient departments of the Samarkand City Medical Centre, and the Samarkand Branch of the Republican Specialized Traumatology and Orthopedic Scientific and Practical Medical Center multidisciplinary clinic of the Tashkent



Medical Academy, in 2019 and 2023 with early and late complications of maxillofacial injuries. (17 years and older) treated patients were recruited. Patients included in the study were divided into 3 groups:

In the first control group, patients with complications of combined maxillofacial soft tissue injuries were treated traditionally;

in the second main group, the same patients were treated with ozone and low-intensity laser rays;

and the third group included patients who underwent low-intensity laser and ultraphonophoresis with the help of Contraktubex (Contraktubex) anti-scar drug.

### **DISCUSSION OF THE STUDY**

The duration of surgical treatment of patients with combined injuries of the face-jaw area was carried out in different periods in different patients. This period was carried out in 1 day in 7.4% of patients, in 2-3 days in 24.1% of patients, in 4-5 days in 43.8%, and in 7 days or more in 25.7% of patients. It should be noted that the difference in the period before the operation and the delay of osteosynthesis can be observed in the cases of early immobilization of the fractured jaws, complete fixation of the teeth on the fracture line, continuous cleaning of the oral cavity and adequate antibacterial treatment. Such a high rate of soft tissue complications of the face-jaw area is explained by the fact that soft tissue complications are admitted to the hospital at an early stage of injury complications. Uncomplicated soft tissue injuries of the face were mainly treated on an outpatient basis, sometimes in district conditions in the residential area. Among these complications, purulent-inflammatory complications of the soft tissues of the face took the place. These are suppuration of wounds and hematomas, and late complications were manifested in the form of post-traumatic scar deformations. These complications were observed in patients who did not seek primary medical care at all or who were treated by general practitioners. This is because there are specific principles of providing primary surgical care when facial injuries are observed. Failure to adequately follow the rules of primary surgical treatment of injuries in the maxillofacial region causes complications of the upper facial soft tissues. Purulent-inflammatory complications of the soft tissues of the face took place among these complications. These were manifested in the form of suppuration of wounds and hematomas, and late complications in the form of post-traumatic scar deformations. These complications were observed in patients who did not seek primary care at all or were treated by general practitioners. This is because there are specific principles of providing primary surgical care when facial injuries are observed. Insufficient adherence to the rules of primary surgical treatment of injuries in the maxillofacial region causes complications of the upper soft tissues of the face.

### **CONCLUSION**

So, to sum up is necessary to say that from the beginning to correct diagnosis of the combined soft tissue injuries is important. Because if in the primary diagnosis of these complicated injuries started the next unexpected complications of combined injuries of the soft tissue injuries of maxillofacial region can create difficulties of the recovering patients. Therefore, certain effective measures have to be implemented in the process of diagnostic and rehabilitation period.

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# PREDICTION AND PREVENTION INFLAMMATORY COMPLICATIONS OF COMBINED SOFT TISSUE INJURIES OF THE MAXILLOFACIAL REGION

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**Abstract.** *Combined soft tissue injuries of maxillofacial region can lead several early and late complications. Prolonged-inflamed, late deformed scarred, defects of the facial organs and tissues are among them. Certain effective measures have to be implemented in the process of diagnostic and rehabilitation period.*

**Keywords:** *effective measures rehabilitation, prolonged-inflamed, defects of the facial tissues.*

## INTRODUCTION

Prevention, diagnosis and treatment injuries to the maxillofacial area (MFA), their complications and consequences are one of the most relevant modern medical and social problems, the importance of which increases from year to year in all countries. This is determined by the constant increase in the level of maxillofacial traumatism and the increasing severity of maxillofacial injuries and combined injuries [1,3]. Despite significant progress, treatment of patients with fractures bones of the facial skeleton and prevention of complications is a most difficult and far from solved problem. Severity of the problem due to a significant proportion of elderly and senile patients age, patients with chronic concomitant diseases, patients with low social status [2,3,4]. It should be noted that to date there is no common approaches and application standards have been developed immunocorrective drugs for maxillofacial trauma. Due to this, development of indications and effective methods of immunocorrection in groups of patients with a high risk of developing inflammatory complications, is certainly an important component in improving the system therapeutic and rehabilitation measures for maxillofacial injury. Issues of traumatology of the maxillofacial area continue remain one of the most relevant modern medical and social problems, the significance of which due to intensive urbanization, mechanization, increasing the pace and rhythm of life, increases from year to year in all countries. The increasing intensity of injuries allows consider that its danger for people under 60 years of age is higher than cardiovascular diseases and malignant tumors.

## THE PURPOSE OF THE STUDY

The purpose of the study is developing a forecasting algorithm and effective methods for preventing inflammatory complications in patients with injuries of the maxillofacial region.

## MATERIALS REVIEW AND METHODS

138 patients with combined soft tissue injuries maxillofacial region were initially hospitalized, which accounted for 27.2% of the total number of hospitalized surgical dental patients for the analyzed period of time. In 94 cases, patients were re-hospitalized due to various reasons - due to developed complications or planned for the next stage of treatment (mainly for plastic and reconstructive surgeries in the aftermath of injury).

patients with injuries to the maxillofacial area. Among the victims, men predominated, and their share was account for 83.5% of all injuries, women - 16.5%, i.e. for the subject period of time, 5 times more men were hospitalized than women. Among the victims, men predominated, and their share was made up 83.5% of all injuries, women - 16.5%, i.e. for the subject period of time, 5 times more men were hospitalized than women. Clinical examination of patients upon admission included study of complaints, medical history, identification of general and local symptoms of the disease. To clarify the factors contributing to the occurrence of secondary immune deficiency, collection was carried out anamnesis and its analysis.

### **DISCUSSION OF THE STUDY**

In most cases, injuries to the maxillofacial area are accompanied by traumatic complications that occur at different times with moment of injury. Analysis of hospitalization materials showed that complications in the post-traumatic period occurred in 546 patients with trauma of the maxillofacial area, which amounted to 40.8% of those initially hospitalized patients - the rate is undoubtedly high. Such a high frequency complications in the post-traumatic period that arise both in prehospital stage of treatment, and in the process of specialized treatment, suggests the need to study the factors contributing to their development. When studying the factors determining the development, volume and nature complications from facial trauma, one of our priority areas is determined the analysis of organizational aspects - timing and quality provided medical care - as one of the main factors development of complications. It is known that fractures of the facial bones in most cases are open. This causes infection of the bone wound with moment of fracture occurrence; the mechanism is so fast infection is caused by both anatomical and functional structural features of the jaws and soft tissues of the face. Therefore, than later, the patient receives specialized medical care, the more inflammatory complications develop more often, and therefore the main a measure that prevents the entry of infectious agents into fracture gap, is to provide specialized care in the early deadlines. Despite significant improvements in the organization of care victims with a maxillofacial injury, untimely treatment is noted patients to medical institutions and their hospitalization. When analyzing the reasons for late hospitalization, it turned out that the main one was the late presentation of patients for medical care help due to the reluctance of victims to be treated for injury, which to some extent may be due to underestimation of the severity of injuries received and lack of ideas about the consequences of maxillofacial injuries. About 10% of patients were admitted to the maxillofacial hospital in periods exceeding 20 days after unsuccessful inpatient treatment maxillofacial injuries in surgical departments of central district hospitals and outpatient treatment in dental clinics at your place of residence. Attempts to carry out treatment at the place of residence does not always provide favorable outcomes, in 73.1% the outcome of such treatment was complications inflammatory and non-inflammatory nature. Only after development complications, these patients were transferred to treatment in specialized department. In 31.1% of cases, a multi-stage movement of rural patients in the maxillofacial hospital. The patients were forced contact 2 or more medical institutions before receiving referral to the maxillofacial department for specialized medical care.

The duration of surgical treatment of patients with combined injuries of the face-jaw area was carried out in different periods in different patients. This period was carried out in 1 day in 7.4% of patients, in 2-3 days in 24.1% of patients, in 4-5 days in 43.8%, and in 7 days or more in 25.7% of patients. It should be noted that the difference in the period before the operation and the delay of osteosynthesis can be observed in the cases of early immobilization of the fractured jaws,

complete fixation of the teeth on the fracture line, continuous cleaning of the oral cavity and adequate antibacterial treatment. Such a high rate of soft tissue complications of the face-jaw area is explained by the fact that soft tissue complications are admitted to the hospital at an early stage of injury complications. Uncomplicated soft tissue injuries of the face were mainly treated on an outpatient basis, sometimes in district conditions in the residential area. Among these complications, purulent-inflammatory complications of the soft tissues of the face took the place. These are suppuration of wounds and hematomas, and late complications were manifested in the form of post-traumatic scar deformations. These complications were observed in patients who did not seek primary medical care at all or who were treated by general practitioners. This is because there are specific principles of providing primary surgical care when facial injuries are observed. Failure to adequately follow the rules of primary surgical treatment of injuries in the maxillofacial region causes complications of the upper facial soft tissues. Purulent-inflammatory complications of the soft tissues of the face took place among these complications. These were manifested in the form of suppuration of wounds and hematomas, and late complications in the form of post-traumatic scar deformations. These complications were observed in patients who did not seek primary care at all or were treated by general practitioners. This is because there are specific principles of providing primary surgical care when facial injuries are observed. Insufficient adherence to the rules of primary surgical treatment of injuries in the maxillofacial region causes complications of the upper soft tissues of the face.

### **CONCLUSION**

Based on the clinical and statistical research, it seems appropriate to propose this prognostic table for practical use for predicting the likelihood of developing inflammatory complications in patients with fractures of the lower jaw and maxillofacial region.

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## CHANGES IN THE POSTPSYCHOTIC PERIOD AFTER ACUTE POLYMORPHIC DISORDER

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**Abstract.** *An important aspect of the study of acute polymorphic disorders is the resolution of the issue of remission (recovery) after a psychotic episode. Acute cases of acute polymorphic diseases are actively observed in a psychiatric hospital, they are described by foreign and domestic authors and are currently characterized by a new wave of interest in this topic. However, after discharge, most patients with acute polymorphic disorders are left out of the attention of psychiatrists if they do not develop a recurrent attack or the need to undergo a psychiatric examination.*

**Keywords:** *acute polymorphic diseases, postpsychotic period, psychiatric hospital.*

**Introduction.** Despite the obvious advances of modern clinical psychiatry in schizophrenia spectrum disorders, some departments still remain the subject of confrontation. One such area is the group of acute polymorphic diseases. In addition to classification issues, K. Although Westphal in 1876 showed the existence of specific forms of psychotic pathology, ending with an acute onset and complete recovery, the problem of recovery in this pathology is very relevant [1-4].

In our opinion, there are the most obvious criteria for recovery in acute polymorphic diseases [5]. They include the absence of any, including residual, signs of the disease with criticism and complete socio-labor recovery. Of course, the first sign of improving the situation and the possible recovery as a result is the elimination of psychotic symptoms [6]. Next, the dominant indicator that characterizes the preservation of the personal motivational sphere [7], as well as one of the important criteria for remission [8] is the dynamics of criticality. An important indicator that determines the strength of remission or complete recovery is the indicator of social adaptation. The study of the adaptability of patients with schizophrenia and schizophrenia spectrum disorders is closely related to the study of remission and the manifestation of a defect in their structure [9]. Thus, in this mental pathology, the issue of evaluation criteria that determine and characterize the resilience of remission or complete recovery has not been resolved. It should also be noted that at this stage there is not enough information about the long-term stability of the diagnosis of acute psychosis [10]. In our opinion, the most obvious criteria for recovery in acute polymorphic diseases are Zenevich G. V. (1964), which include criticism and residual signs of illness with complete socio-labor recovery, including no absence. Of course, the first sign of improvement and the resulting and possible recovery is the cessation of psychotic symptoms. The dominant indicator that characterizes the preservation of the personality and motivational sphere in the future is the dynamics of criticality and the severity of negative diseases. An important criterion that determines the strength of remission or complete recovery is the indicator of social adaptation [11-16].

Vague criteria for the completeness of a psychotic episode, the lack of prospectus studies on the formation of remission after a manifest psychotic attack in adolescence determine the relevance of the study in this area. Development of a research problem [17-22]. The image of psychopathological phenomena observed at the stage of formation of remission is heterogeneous, expressed both by the effective components that shape the attack and by the reduction of leading symptomatology with affective fluctuations, a complex of procedural determined personality and cognitive disorders, and events with a high risk of suicide. At the same time, the phenomena observed during the formation of remission are studied piecemeal, and only a small part of the researchers focus on the age factor [23-28].

Significant changes in the process of forming an endogenous psychotic attack and remission led to a long-term use of antipsychotic therapy, and the pathomorphosis of the disease was influenced by the introduction of ordinary antipsychotics into practice, which in many patients allowed to transfer the clinical form of the disease from a permanent state to a paroxysmal state. and the prevalence of atypical antipsychotics in recent decades, which also reduces the severity of cognitive disorders, are deficiency symptoms [29-33].

However, recommendations for changing the therapy regimen depending on the completeness of the reverse development of the attack have not finally been formed. Some authors note that therapy does not change until the patient's condition is fully stabilized, others recommend a gradual reduction in doses at the first signs of improvement; views differ on the adequacy of the use of deposited forms of neuroleptics and the frequency of their use [34-37]

The purpose of this study: is to analyze the postpsychotic period of acute polymorphic diseases in terms of the criteria described above.

**Materials and methods.** We examined 146 male and female patients aged 18 to 58 with acute polymorphic diseases. Patients were in an acute psychotic state, which first developed for 2 weeks or less. The presence of the following criteria was taken into account: loss of critical attitude towards the disease to patients; delusional, hallucinatory, pronounced affective and other behavioral disorders; absence of organic causes, pronounced intoxication with alcohol or drugs. The catamnestic study period was from 3 to 10 years.

The severity of negative disorders was assessed in the discharge of patients from the hospital on negative symptoms of positive and Negative Syndrome Scale (PANSS). In order to comprehensively assess awareness of certain aspects of mental illness common to all patients, the "mental disorder awareness disorder scale" (SCHNOPR) method was used – a translation of the English scale "scale for assessing the inferiority of the mind" (SUMD). Clinical-dynamic, clinical-catamnestic and statistical research methods have been used.

**Results and their discussion.** The first of the recovery criteria we have chosen includes residual symptoms of the disease, including no absence. We did not include in such symptoms the manifestation of the prodromal period (sleep disorders, anxiety, depressed mood and decreased activity).

In patients with acute polymorphic disorders, the psychotic period lasted an average of  $10,12 \pm 5,06$  days in a 2-to 27-day interval. Against the background of inpatient therapy, symptomatology decreased in 5 (3,42%) in 2-3 days and in patients with 49 (33,56%) samples in 3-7 days. In most cases: 64 (43,84%) of patients lost the manifestation of acute psychotic disease in the first two weeks. 28 (19.18%) lasted much longer than psychosis with a symptomatic decline of 15 to 27 days.



In an average of  $6,63 \pm 2,9$  days, delusional symptomatology was most rapidly discontinued. The reverse development of psychosis was less rapid in cases where catatano-paranoid ( $13,6 \pm 3,9$  days), paraphrenic ( $14,6 \pm 5,22$  days) and polymorphic (27 days – 1 observation) variants of acute polymorphic disorders prevailed.

After withdrawal from psychosis, 45 (30,82%) patients experienced residual events in the form of an identified and discontinued astheno depressive syndrome within a month. Similar symptoms caused by the analysis of painful experiences in patients, their critical assessment, do not apply to the acute period.

Before the patient was discharged from the hospital, negative symptoms were assessed to assess signs that were not sufficient for normal mental state. In the case of negative symptoms of PANSS, this indicator was  $10,15 \pm 3,32$ . In conducting this Test, 38 (26,03%) of patients did not find that there were any signs of the presence of negative symptoms (7 points), indicating that there were no specific personality changes.

In 48 (32,88%) patients, the rate ranged from 11 to 22 points. Thus, in a number of patients, negative symptoms can be considered secondary due to previous psychotic disorder, while in others it is possible to predict the formation of a personal defect that excludes the possibility of recovery.

When conducting a psychometric examination using the SCHNOPR scale, the indicator obtained in all respects is in the range from 2 to 2,18, which indicates an almost complete critical attitude to the disease. However, in a detailed review of each aspect and criterion of this technique, according to the severity of criticism violations, the full understanding indicator (1 point) is 32,19-39,04%, partial understanding (2-3 points) – 30,13-65,75%, and complete lack of understanding (4-5 points) – 8,9-32,19%. The findings show that patients are aware of their presence, as well as that they have mental disorders and reject them altogether.

In the course of subsequent catamnestic observation of these patients with acute polymorphic diseases, we found that in 36 (24,66%) of patients, the diagnosis remained the same, no recurrence of psychotic symptoms was observed. In 110 (75,34%), the diagnosis was changed:

- 92 (63,01%) cases where the exact diagnosis is as follows:
  - paranoid schizophrenia,
  - 6 (4,11%) - schizoaffective disorder,
  - 4 (2,74%) - low progressive schizophrenia,
  - 2 cases - manic-depressive psychosis,
  - 2 cases - organic schizophrenia-like disorder,
  - 1 case - chronic delusional disorder in the involutional period,
  - also 3 cases in which the diagnosis has been changed several times, but the final diagnosis is paranoid schizophrenia.

In terms of social adaptation aspect assessment, availability and employment sources, the final phase of the study showed that the status of 65 people (44,52%) did not undergo significant changes, 12 (8,2%) patients graduated from higher and secondary institutions and were subsequently employed. Due to frequent exacerbations, about a third of patients – 48 (32,88%) - became disabled 3-5 years after the first psychotic episode due to Group II or III mental disorders. 21 of the patients (14,38%) were faced with declining service, loss of qualifications.

**Conclusions.** During this study, we examined the postpsychotic period after acute polymorphic diseases from different sides. As a result, we received data confirming the clinical

heterogeneity of the group of patients diagnosed with "acute polymorphic disorder". Some clinical, dingamic and socio-adaptive features of the postpsychotic period characteristic of this mental pathology have been identified.

Solving the problems of predicting acute polymorphic diseases at different stages of the disease, including after stopping the acute period, in the future, in our opinion, contributes to solving the problem of early differentiation of the debut of schizophrenia and transient psychosis, later forming more accurate treatment tactics.

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## MODERN METHODS OF DIAGNOSING DEPRESSIVE DISORDERS IN NEUROTIC AND AFFECTIVE DISORDERS

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**Abstract.** *In modern psychiatric literature, it is argued that the diagnosis of adaptation disorders is one of the most controversial nosological forms in the structure of neurotic pathology. This is primarily due to the insufficient development of the concept of anxiety and depressive disorders in modern psychopathology. In this regard, the development of new approaches to the diagnosis of depression in neurotic pathology is one of the urgent tasks of psychiatry.*

**Keywords:** *depressive disorders, diagnostics, neurotic pathology, Affective Disorders.*

**Introduction.** Depression is a psychopathological phenomenon characterized by a pessimistic assessment of oneself and its position in the surrounding reality, inhibition of intellectual and motor activity, a decrease in motives and pathologically reduced mood (hypothymia) with somatovegetative disorders [1-3]. The concept of depression covers a wide range of psychopathological manifestations that differ both in the typological structure and in the duration and severity of Affective Disorders. The specificity of the clinical picture of depressions also affects the nosological affiliation of mental pathology [4-7].

Depressive conditions are among the most common among mental disorders and have stable growth in the population. According to WHO (2006), as of 2020, depression is ranked number one in the world, surpassing cardiovascular disease. Currently, up to 20% of the population of developed countries suffer from them. Among patients in the Polyclinic network, about 60% identify depressive disorders of varying degrees [8-11].

It is known that depressive disorders are observed not only in affective disorders, but also in a number of other diseases: reactions to severe stress and adaptation disorders, symptomatic depressions, disorders due to degenerative-dystrophic and atrophic processes of the brain, pathology of addiction, etc. the clinical polymorphism of the manifestation of Affective Disorders often makes it difficult to form a diagnosis, especially by specialists from the General Medical Network [12-16]. At the same time, the nosological connection determines the peculiarities of therapeutic tactics: the need to choose methods for treating mental disorders, as well as when there is an underlying disease that is the etiopathogenetic basis of depressive disorders [17-22].

In this regard, the differential diagnosis of Affective Disorders is of particular importance in the depressive episode (as a manifestation of endogenous mental pathology) and adaptation disorders.

In this case, depending on the nosological relationship, the volume of pharmacotherapy, as well as the direction of psychotherapeutic work, is determined. Thus, the issues of studying the features of psychopathological diseases and their timely effective diagnosis in depressive disorders of various etiologies are of particular importance [23-26].

But, despite the significant period of study, there is no single point of view in modern Russian literature that can be taken as the basis for the classification of Affective and primarily depressive disorders [27-30].

Thus, in a study devoted to the study of the phenomenology of Affective Disorders, it was proposed to use three "basic" parameters as the basis for the classification of Affective Disorder syndromes: affective Polar, the structure and severity of the syndrome [31-35]. Accordingly, a typical depressive syndrome involves an equally expressed triad of compulsive symptoms: impaired emotion (longing), willpower (hypobulia), and slowing down of the associative process. At the same time, the leader among them is the emotional component [36-40].

The purpose of the study: was to investigate various approaches to diagnosing depressive disorders in neurotic and Affective Disorders.

**Materials and methods.** In the ethological part of the study, 85 men and 38 women with schizophrenia spectrum disorders (median age  $33,2 \pm 11$  years) were examined. In the biochemical part of the study, 20 patients (sample 2) with moderate-weight depressive episode (de) (F32,1), 20 long-term depressive reaction (F43,21) and 25 short-term mixed anxiety and depressive reaction (F43,22) were examined.

The serotonin concentration of platelets was determined by serotonin Elisa reactive bundles using a set of "Steroidif - cortisol" reagents, an enzyme-coupled solid-phase immunosorbent analysis (Elisa) method using the cortisol-Elisa method.

The pictopoligraphic research method is based on the technology of automatic documentation of the actions of the subject and ensures that psychodiagnostic studies are carried out on a tablet with a special graphic touch, which allows you to obtain profiles (EIZ) of semantic-emotional significance based on the analysis of the psychomotor indicators of the subject when performing the research scenario. In addition to the standard test results.

The material for this part of the work is adaptation disorders according to the ICD-10 criteria (ra) (F43,2), the results of the study of 18 military personnel with an average de of 18 and an average de of 20 with donosological forms of psychological reactions (DFPR) (sample 3). In addition to the clinical-psychopathological method, Hamilton scales (Hamilton Rating Scale for depression, HDRS) and anxiety (Hamilton anxiety rating scale, HARS) and anxiety and depression hospital scale (Hospital Anxiety and depression scale, HADS) were used to assess depression. Patients with Ra and moderate de were also provided with a psychophysiological stress test (NPCF by an Mtdm doctor) for the reactor agro-industrial complex. Video and audio materials approved for healthy military personnel have been used as stress stimuli.

The reference stress stimulus was electrical stimulation of the back surface of the wrist. During the procedure, heart rate (HR), galvanic skin reaction (Kgr), photoplethysmogram, respiratory recursion were measured.

The study of the morphofunctional properties of the brain was transferred to 302 patients with depressive disorders of reactive (F43), endogenous (F20, F25, F31–33) and organic (F06.3) Genesis (sample 4), who performed positron emission tomography (PET) and MRI in various structural and functional neuroimaging regimes: voxel morphometry (VBM), diffusion-tensor imaging (DTI), functional MRI (fMRI) and magnetic resonance spectroscopy. With FMRI, 20 people with opioid addiction syndrome (in the case of opioid poisoning and remission up to 1 month, the average age of patients is  $28,3 \pm 3,7$  years, the experience of addiction is more than 9 years) and 18 healthy individuals (control group) were examined.

PET was performed on ECAT Exact 47, Ecat Exact HR± and Biograph (Siemens, Germany) tomographs, MRI scans on a Magnetom Symphony (Siemens, Germany) scan with magnetic field induction of 1,5 Tesla.

Statistical data processing was carried out in the software environment using Statistical Parametric Mapping 12 and fmrib's Diffusion Toolbox protocol. The results of the study were compared with clinical and psychometric (HDRS) case assessment data. The differences were considered statistically significant- $r < 0,05$ .

**Results and their discussion.** During the study, no reliable differences were found between the severity of depressive disorder assessment by a mental health physician (HRDS scale) in depressive episodic patients, the patient's self-assessment (HADS), and the severity of an objective indicator of semantic-emotional significance. All three assessments showed a clear level of depression. Also, Paul Chen had a strong positive correlation relationship between these indicators ( $p < 0,05$ ).

In the group of individuals with adaptation disorders, reliable differences between the patients' self-assessment of the severity of depressive disorders and the objective indicator of the semantic-emotional significance of HADS questions, as well as the psychiatrist's assessment and the objective indicator of the semantic-emotional significance of questions, have not been identified. It should be noted that the results of medical (hrds scale) and subjective assessment (HADS) differed in the degree of trend, but there were no significant differences ( $p > 0,05$ ). A positive correlation relationship was also established between the assessment by a psychiatrist and the self-assessment of patients with severe depressive symptoms ( $R = 0,72$ ,  $p < 0,05$ ). All three assessments corresponded to the average level of depression.

Special attention is paid to the neurophysiological objectification of psychopathological diseases when observing the mental health of military personnel. Thus, in the process of comparing the severity of Affective Disorders with the results of subjective (HADS) and objective (Hamilton's psychometric expert on depression and anxiety measures), these indicators were found to be comparable in groups of patients with ra and de.

At the same time, they did not differ from people with DFPR, as in subjective assessment, or found statistically significant differences in Group level (in expert assessment), which makes it difficult to interpret individual values one by one and does not allow for accurate identification the diagnostic limit for these scales.

At the same time, the pictopoligraphic study found the most obvious differences between the values of the EIZ index in individuals with DFPR, on the one hand, de and ra, on the other: in the first, it did not exceed almost 2 relative units due to the minimum severity of sympaticotonic reactions, but, on the contrary, with de and ra, on the contrary, the EIZ values

These data show prospects for using eiz as a specific cognitive biomarker of Affective pathology that examines the subjective significance of complaints. The biochemical part of the study involved comparing psychometric and neuroendocrine indicators. Thus, examination of individuals in sample 2 using HADS found no significant differences in anxiety and depression levels in patients in the three groups ( $p > 0,05$ ). Cortisol levels in people with short-term ra turned out to be much lower ( $p < 0,05$ ) compared to those with de and long-term depressive reactions ( $258,6 \pm 23,7$  nmol/L,  $360,5 \pm 42,7$  nmol/L and  $401,9 \pm 21,3$  nmol/L, respectively), with no significant differences in cortisol concentration between them.

In the first group of patients, the serotonin content of platelets ( $324,7 \pm 43,1$  ng/billion Cl.) approached the lower range of reference values, with the third group of participants in the upper range ( $753,5 \pm 63,3$  ng/billion Cl.) and in the second group-in the middle range of reference values ( $539,7 \pm 74,7$  ng/billion Cl.).

Thus, the use of neuroendocrine marker data allows, on the one hand, to study the causal mechanisms of mental disorders in the diagnosis of depressive disorders with a superficially similar phenomenological picture, on the other hand, to assess the pathophysiological consequences and severity of mental pathology, which helps to better understand the pathogenetic mechanisms of Affective Disorders and predict the development of.

Stress-test data from patients with various depressive pathogenesis showed that in patients with endogenous depression, the reactive response to stress stimulus was more pronounced, manifested by a decrease in heart rate and kgr (before and after stress stimulus Kgr:  $0,27 \pm 0,13\%$  and  $-0,14 \pm 0,09\%$  respectively; stress stimulus before and after heart rate:  $1,79 \pm 0,68$  mmhgr and  $-0,93 \pm 0,46$  mmhgr ). In addition, patients with endogenous depression took longer for the above indicators to return to the background ( $24,7 \pm 4,3$  s and  $15,5 \pm 6,1$  s, respectively).

The results of a study of neuroimaging signs of depressive disorders in sample 4 showed that in endogenous depression in pet, the metabolic rate in caudate nucleus heads was 20-40% above normal in moderate depression (up to 25 points in HDRS) and more than 40% - severe (over 26 points in HDRs) (compared to  $p < 0,05$  control group), which was not observed in reactive depression.

**Conclusions.** Thus, the results of objective (psychometric medical, pictopoligraphic) and subjective assessments of the severity of depressive disorders were appropriate in patients with adaptation disorders and depressive episodes. The use of the pictopoligraphic method (an indicator of semantic-emotional significance) in the diagnosis of depressive disorders makes it possible to increase the accuracy of diagnostic conclusions.

Devoted to the phenomenological properties of depressive episode and Affective Disorders in the RA, it testifies to the uncertainty of views on the characteristics of psychopathological disorders of the affective (in particular, depressive) circle. In this regard, further study of the issues of phenomenology of anxiety and depressive manifestations of diseases described above will help to increase the accuracy of diagnostic conclusions, prescribe adequate treatment and reduce the time of hospitalization of these patients.

The practical implementation of the described approaches allows us to personalize the provision of medical and psychological assistance to military personnel, improve the quality of early diagnosis of mental disorders, addictive and suicidal behavior, which means the effectiveness of all psychoprophylaxis work in the troops.

At the same time, the further prospects for the objectification and prognosis of mental disorders in military personnel are determined not only in the listed areas, but also by interdisciplinary efforts on the problems of both combat and non-combat pathology in the field of Neurogenetic, neurobiological (in a broad sense) and neurophysiological research. means of solving the problems of pure organizational and clinical diagnostics of Information Technology in conditions of time, power and power limits.

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## FEATURES OF ELECTROENCEPHALOGRAPHIC DISORDERS IN PATIENTS WITH MENTAL DISORDERS DUE TO BRAIN DAMAGE OR DYSFUNCTION

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**Abstract.** According to statistics from recent years, 43.7% of mental pathologies in the structure are mental disorders caused by damage or dysfunction of the brain. Currently, neurofunctional research methods are widely used to diagnose this pathology. However, since most of them (CT, MRI, PET) are very complex and expensive to use, electroencephalography (EEG) is the most optimal, which allows you to identify large-scale disorders of bioelectric activity of the brain.

**Keywords:** electroencephalographic diseases, mental disorders, brain dysfunction.

**Introduction.** Cognitive impairments (CRs) are one of the most discussed problems nowadays, attracting the attention of researchers from different specialties. The presence of cognitive disorders in patients leads to increased severity of the disease, rapid onset of dementia and is accompanied by an increase in mortality rates [1-5]. The safety of cognitive functions is the key to the successful treatment of the disease, high patient compliance.

Cognitive disorders are one of the main and initial manifestations of brain damage of various etiologies. A number of cardiovascular diseases can contribute to a large number of small-focus, diffuse lesions of brain tissue with the development of cognitive disorders. According to the literature, cognitive disorders often occur against the background of coronary artery disease (CAD), Sir dek deficiency, arterial hypertension, and cardiac arrhythmias [6, 7].

Early diagnosis of cognitive disorders is a complex, now unresolved problem, since initially observed disorders are subclinical in nature and are only identified by neurophysiological examination [8].

Modern research methods such as multichannel computer electroencephalography (EEG) allow the identification and quantification of disorders in bioelectric brain activity that are accompanied by cognitive disorders. electroencephalography is a sensitive indicator of the state of the brain in the development of normal and pathology [9-12]. The use of computer processing methods (calculation of spectral power indicators and spatial synchronization of brain biopotentials) increases the informative content of electroencephalography.

For patients with dementia, an increase in slow wave activity compared to relatively healthy subjects of a similar age was previously indicated [13]. Electroencephalography-the picture of patients with moderate cognitive disturbances in dysirculatory Encephalopathy has been characterized by disorganization, hypersynchrony of electrical activity, increased slow wave

activity (mainly the Theta range). The most obvious deviations in electroencephalography have been observed in the dominant hemisphere, mainly in parietal occipital hooks with reduced a-rhythm strength. At the same time, cognitive impairment of vascular Genesis was higher in patients with moderate Theta rhythm strength than in patients with "probable" Alzheimer's disease (AD) [14]. In the works of other authors, the change in electroencephalography in ad is diffuse, manifested by an increase in slow wave activity (Delta and theta ranges) and a decrease in the alpha range [15, 16].

Despite the information available in the literature on the state of electroencephalography-activity in patients with moderate cognitive impairment of various etiologies, there is very little data on their characteristics in cardiovascular pathology, in particular coronary artery disease.

Currently, there are many data on the unequal importance of the activity of the left and right hemispheres of the human brain. This applies not only to the structural functional organization of the brain, but also to psychopathological manifestations in focal organic diseases, including epilepsy [17-20].

Research in recent years has shown the ineffectiveness of the "left and right hand" indicator to predict the psychological and physio logical characteristics of an individual. At the same time, a connection between the complex of lateral signs in the emotional and motor areas was established (functional sensorimotor asymmetry profile) and personal characteristics, as well as the possibility of the occurrence of some neurotic and cardiovascular diseases [21-25].

It is clear that there is a continuation of the change of psychophysiological indicators from the group of absolute left-handed to the absolute right-handed through the group of mixed profiles. At the same time, the proportion of individuals with an "incorrect Profile" of functional asymmetry can reach 30-40% of the total number of patients in a psychiatric hospital [26-29], which assumes the need to study the problem separately.

In domestic and foreign special literature, there are data on schizophrenia and an increase in the number of left lateral signs in patients with epilepsy. Specifically, functional interhemispheric asymmetry of the brain has been shown to modulate the severity of depressive states in epilepsy [30-32], various signs of lateralization in focal epilepsy, and Greater left hemisphere vulnerability to epileptogenesis [33-36]. At the same time, there is still no clear and statistically confirmed data on the connection of the profile of functional sensorimotor asymmetry with specific psychopathological signs in epilepsy. A number of clinical data are interpreted in terms of interrelationships between the cerebral hemispheres, but they are treated ambiguously by various researchers, making it difficult to integrate literature data [37-41].

In this regard, the participation of interhemispheric functional asymmetry in the pathogenesis of paroxysmal syndrome and the issue of the development of psychopathological diseases in epilepsy are of both theoretical and practical interest, which predetermined the purpose of this study [42].

The purpose of the study: was to analyze the characteristics identified using electroencephalography in patients with mental disorders due to brain damage or dysfunction, taking into account the above.

**Materials and methods.** The study involved 95 patients (65 men and 30 women, with an average age of 58,5+9,2 years). The leading methods of research were clinopsychopathological, neurofunctional and clinical-archival analysis of medical documents.

Psychiatric diagnosis was carried out according to the ICD-10 criteria. Mental disorders have been classified as "mental disorders due to brain damage or dysfunction" and their individual clinical variants are represented by affective, cognitive, and personality disorders. 38 (45,2%) patients had Affective Disorders. In such cases, ICD-10 has been diagnosed with "organic affective disorder" (F. 06.3 title); "organic anxiety disorder" (F. 06.4). 35 (41,6%) patients had cognitive impairments - "mild cognitive impairment" (F. 06.7). 34 (40,5%) patients were diagnosed with personal changes - "organic personality disorder" (F. 07.0).

Neurological pathology has been assessed on the NHS3 scale (national hospital severity scale of seizures), which includes 7 criteria including duration of seizures, features of post-criminal status, level of trauma, etc. at the beginning of the observation, the weight of the eclipses averaged  $19,8 \pm 7,73$  points. The progredience of paroxysmal syndrome was assessed in scores (0 to 3), taking into account the frequency, severity and rate of growth of polymorphism of seizures.

Violation of the personality-psychopathological framework was assessed using the SCL-90R clinical self — assessment scale, the Munich personality test (MLT), the multiple mental status scale-MMSE (Mini-mental State Examination) cognitive test, and the Hamilton Scale anxiety (nam-A) and depression (nam-D). A Wisconsin Card Sorting Test-WCST-was used to assess disorders in the neuropsychological field.

**Results and their discussion.** Clinical and psychopathological examination data show that all patients were characterized by cerebroasthenic symptoms, emotional lability, cognitive disorders and changes in the Mnestic area. Electroencephalography was performed on each patient while in hospital.

Analysis of its results showed that moderate (50,8%) and mild (33,4%) disorders of bioelectric activity of the brain were most common. Severe changes were observed in 15 patients (15,8%). Characteristic is that all patients have been found to have instability of the general functional state of the brain. Patients with mild lesions were more involved in the pathological process with non-specific median (38,5%) and diencephalic structures (23,4%). In patients with moderate disorders: diencephalic (42,3%), nonspecific median (35,6%), mesodienseal (18,9%), limbic-reticular (3,3%).

In patients with severe diseases: diencephalic (50,1 %), nonspecific median (32,1%), mesodienseal (10,4%), limbic-reticular (5,3%) and root (2,1%). It was also found that patients with moderate to severe disorders of bioelectric activity of the brain have significantly altered functional activity of limbic structures of the brain, observed dysfunction of regulatory systems, altered amplitude-frequency characteristics of Alpha rhythm, and increased index of slow oscillations.

According to the results of our study, patients with coronary artery disease and moderate levels of cognitive impairment show an increase in spectral capacity of the Theta range associated with cognitive impairment. There is evidence of increased strength and amplitude of slow rhythms such as Delta - and theta- (or "deceleration") in resting electroencephalography, disinhibition of subcortical structures, may be a sign of cortical inhibition caused by acute or chronic cerebral ischemia.

A slowdown in electroencephalography rhythm was found when cerebral blood flow dropped below 22 ml/100 g/min the same effect was found in the temporary deletion of the carotid artery with a catheter balloon during endovascular intervention.

In addition, an increase in slow wave electroencephalographic activity was previously detected in a variety of Genesis in patients with Alzheimer's type dementia. The slowing of electroencephalography rhythm is thought to reflect a decrease in inhibitory control of the frontal cortex over other cortical zones. In addition, in patients with AD, with the predominance of frontal symptoms and pronounced severity of the slow sensorimotor rhythm, there is simultaneously inhibition of low and medium-frequency components of the occipital Alpha rhythm, paradoxical, at first glance, an increase in the spectral power of the high-frequency component of the alpha rhythm and a general increase in beta activity. That is, they have a traditional electroencephalography-signs of activation, "disinhibition" of the cerebral cortex. The above symptoms of cortical dysfunction in our work are cognitive disorders found already in a moderate phase in patients with coronary artery disease.

It is known that the formation of diffuse damage to brain tissue is facilitated, first of all, by a long-term lack of blood supply to the brain or chronic ischemia of the brain. According to the results of our study, patients with coronary artery disease and moderate levels of cognitive impairment had lower ejection fraction levels, as well as higher severity of coronary artery injury in objective indicators (SYNTAX scale) compared to those without cognitive impairment. These facts indicate that in patients with coronary artery disease, even in the absence of clinically significant damage to the cerebral arteries, there is a lack of cerebral blood supply, which leads to dysfunction of cortical neurons.

**Conclusions.** Thus, in patients with coronary artery disease, electroencephalography-symptoms of cortical dysfunction associated with a deterioration in cognitive function and an increase in anxiety levels are already observed in a moderate phase cognitive disorders. The findings support the feasibility of using quantitative methods of electroencephalography for early detection and Prevention of cognitive impairment in patients with cardiovascular disease. Electroencephalography is the most common and affordable research method for diagnosing neurodynamic diseases. Studies determine the peculiarities of electroencephalography-disorders in patients with mental disorders due to brain damage or dysfunction. Several types of violence (mild, moderate and severe) are recorded in these patients, for each of which the specificity of electroencephalography was determined-disturbances in the form of changes in the alpha rhythm, involvement of certain structures of the brain in the pathological process.

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## PSYCHOLOGICAL PECULIARITIES OF SOCIAL ADAPTATION IN PARANOID SCHIZOPHRENIA

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**Abstract.** *The high prevalence of schizophrenia in combination with the progressive course of this disease leads to a gradual increase in the specific cognitive, emotional motivational and voluntary changes of the individual, a significant decrease in the social adaptation and quality of life of patients, and at the same time an insufficient study of psychological factors affecting the level of social adaptation in the initial*

**Keywords:** *paranoid schizophrenia, social adaptation, psychological factors.*

**Introduction.** Among the various forms of mental illness, schizophrenia rightfully occupies a special place, which is due not only to the peculiarities of clinical manifestations, but also to the high disability of patients (40%) and large economic costs for their treatment and rehabilitation. All this determines the undoubted social significance of this disease [1].

Despite efforts by health professionals and the social services and the public at large, issues related to social Labor rehabilitation (adaptation) of patients with schizophrenia remain one of the most important problems in modern psychiatry and continue to attract the attention of various professionals [2, 3].

The first psychotic episode of schizophrenia, as a rule, is an independent mental trauma and severe biological and social stress for the patient and those around him, affecting important aspects of his life, leading to deep inner experiences and in many ways marking his further life [4].

According to some authors, after the first psychotic episode in the pathogenesis of schizophrenia, in addition to endogens, reactive mechanisms also occupy a leading position [5]. In this regard, active psychological support of the patient in the form of psychotherapy and psychosocial therapy seems the most important [6].

In this regard, the first years of the disease are usually considered a "critical period", in which the most important changes occur in all areas of the patient's life [7]. Thus, the vast majority of patients have the ability to build interpersonal relationships, decreased interest in life, decreased self-esteem and desire for personal growth, loss of interest in previous hobbies and new types of activities [8].

According to the concept of psychopathological diathesis [9], a significant decrease in the personal resource was noted in the early stage of schizophrenia, which hinders successful social adaptation [10]. To date, the decline in social adaptation by Western psychiatrists is seen as one of the diagnostic criteria for schizophrenia [11]. According to some data, a decrease in social and psychological activity is observed in 14% of patients with schizophrenia [12, 13].



In most cases, it is associated with psychiatric hospitalization, prescribing drug therapy, stigmatization effects of diagnosis [14], decreased ability to work, family problems, emotional discomfort and other unwanted manifestations. According to [15] only 40% of patients maintain the same level of social activity after their first hospitalization.

The social adaptation of patients with schizophrenia, from the point of view of psychology, includes three components: coping, psychological protection and the internal appearance of the disease [16, 17] and depends not only on the specific nature of the disease and the therapy being carried out [18, 19], but also largely on supporting the patient's microsocial environment [20, 21].

Some gender characteristics of social adaptation of patients with schizophrenia. Thus, according to the author, the biological factor, which includes the duration of the disease, is a decisive factor for men. Also, the painful experiences of men feeling their inferiority associated with the presence of stigmatizing disease are characterized by the expectation of self-neglect by others, so they often prefer to avoid society and cling to themselves. In addition to the duration of the disease, the possibility of achieving social well-being is also important for women. However, in women, the reaction to the disease is often manifested by pronounced confusion, unstable emotional fluctuations, which often disrupt their behavior and reduce stress resistance [22-26].

Thus, for most patients diagnosed with schizophrenia, a decrease in labor and social adaptation is an urgent problem, which is primarily due to the emergence of difficulties in solving personal and interpersonal problems, i.e. problems with activities in society [27-30].

One of the main factors determining the social adaptation of the patient is a critical attitude to the disease and adequate compliance. As you know, despite the undoubted benefit of drug treatment, a low level of adherence to the prescription regimen is characteristic for people with mental disorders. The degree of conformity of patients with schizophrenia also depends on a number of factors. First of all, according to some authors, high compliance is associated with the patient's ability to realize the presence of mental illness with all psychopathological signs [31-35].

Other authors believe that for conformity, it is not the fact of realizing the existence of the disease that is more important, but the ability to recognize changes in its mental state in time, which helps to consent to therapy by the patient [36].

In turn, the ability to critically perceive and assess the symptoms of the disease in patients with schizophrenia largely depends on the premorbid personality characteristics of the patient. It has also been found that less violent psychotic symptoms can help increase the patient's ability to critically perceive their condition [37].

**The purpose of the study:** to study the characteristics of the cognitive sphere at the initial stage of paranoid schizophrenia, as well as personal characteristics, including the characteristics of the protective, stress management and nervous behavior of patients; to determine the prognostic significance of the studied individual-individual characteristics.

**Research materials and methods.** Patients with clinical diagnoses of "schizophrenia, paranoid form" defined according to diagnostic criteria of the F20.0 "paranoid schizophrenia" section of ICD-10 were selected to participate in the study. At the same time, the duration of the disease did not exceed 1 year from the moment the first psychotic episode began until an examination was carried out for each patient. In total, 80 patients between the ages of 18 and 39 (39 women, 41 men) were examined (median age  $32 \pm 6.23$  years). The comparison group comprised 50 mentally healthy people (25 men, 25 women) between the ages of 20 and 40 (average age  $29 \pm 6.63$  years).

Clinical-Psychological, experimental-psychological and statistical research methods were used.

The clinical and psychological method involves obtaining an expert assessment of the level of social adaptation on the scale we have developed.

The experimental-psychological method involved the implementation of the following psychodiagnostic methods: pathopsychological tests: "Shulte tables", "10 words", "fourth supplement", "comparison of concepts" (Bleicher V. M., 2006); methods for diagnosing cognitive style characteristics: the "included numbers" technique (Gottschaldt K. B., 1926), the technique of "verbal-color interference" (Stroop J. R., 1992), the "comparison of similar pictures" technique (Kagan J., 1966), the "free sorting" technique (Gardner R. W. et al., 1959) V. A. In the Kolgi modification (Kolga V. A., 1986); "Lifestyle Index" methods have been used to determine the characteristics of an individual's protective and stress-coping behaviors (Wasserman L. I. etc., 2005) and "behavioral strategies" (Wasserman L. I. etc., 2009); to determine the characteristics of despair response - the despair response test (Rosenzweig S., 1945; Yanshin P. V., 2004); a multilevel "flexibility" questionnaire for studying personality traits (Maklakov A. G., Chermyanin S. V., 1993), socio-psychological adaptation questionnaire (Osnitsky A. K., 2004).

Statistical processing of the resulting data was carried out using a Russified version of the IBM SPSS Statistics package. Separate primary descriptive statistical descriptions (mean arithmetic, dispersion, mean square deviation, asymmetry and excess indicators) have been calculated for the comparison group and the experimental group; on the basis of these data, normal and asymmetrically distributed variables are highlighted.

Variables whose distribution is not unusual are included in a multi-regression analysis procedure performed separately for the comparison group and the experimental group. At the same time, the indicator "expert assessment of the level of social adaptation" was identified as a dependent variable. Significance levels  $P < 0,001$ ;  $p < 0,01$ ;  $p < 0,05$  were taken into account.

**Research results and their discussion.** According to multiple regression analysis, the most important thing to achieve an acceptable level of social adjustment in mental health conditions is high concentration ( $\beta$ -coefficient:  $(-0,330)$ ;  $p < 0,01$ ), "distance retention" ( $0,332$ ;  $p < 0,01$ ), and high levels of emotional comfort (socio-psychological adjustment technique) ( $0,243$ ;  $p < 0,05$ ).

It is known that the struggle strategy in the form of moving away from a stressful situation involves trying to overcome negative experiences associated with the problem by subjectively reducing its importance and the level of emotional attraction to it. Obviously, in this way, a person tries to prevent the development of strong emotional reactions to despair and maintain the state of emotional comfort to the level noted before the appearance of a stressful situation. Maintaining self-control and emotional balance in problem situations allows a person to use cognitive, including attentive, processes as a resource to cope with a stressful situation.

In the early stage of Paranoid schizophrenia, the formation of satisfactory levels of social adaptation is most significantly influenced by the following individual psychological characteristics: high yield of memorization ( $\beta$ -coefficient:  $0,294$ ;  $p < 0,001$ ), cognitive style characteristics: utility ( $-0,448$ ;  $p < 0,001$ ), high accuracy of Information Analysis ( $-0,211$ ;  $p < 0,01$ ), latitude equivalence range ( $-0,343$ ;  $p < 0,001$ ) - "switching" mpz activity ( $0,169$ ;  $p < 0,05$ ) and "reactive formations" ( $0,410$ ;  $p < 0,001$ ), in the form of a positive reassessment of the problem

situation (0,146;  $p < 0,05$ ), as well as behavioral predisposition in the form of extrapunitive (0,158;  $p < 0,05$ ), intrapunitive (0,527;  $p < 0,001$ ), and need-resistant frustration response (0,443;  $p < 0,001$ ).

The greatest contribution to the decline in social adaptation in chronic mental illness (paranoid schizophrenia) conditions was noted for the high severity of personality traits assessed by the hypochondria scale ( $\beta$ -coefficient: (-0,242);  $p < 0,01$ ), hysteria (-0,534;  $p < 0,001$ ), excitability (-0,441;  $p < 0,001$ ), and paranoia (-0,368);  $p < 0,001$ ), as well as "regression" mpz intensity (-0,802;  $p < 0,001$ ), high predisposition to the type of prevention of coping behavior (-0,178;  $p < 0,01$   $p < 0,01$ ), and object-dominant frustration response (-0,293;  $p < 0,001$ ).

In this regard, E. L. Korobova's data note that the most favorable for successful social adaptation of patients with a long – term illness (from 1 to 15 years, on average 10,74 years), which is a simple and paranoid form of schizophrenia, is the dependence on the mobile log, flexibility of cognitive control and cognitive-methodological features of reflectivity. According to other authors, usefulness in prolonged schizophrenia is associated with a high level of social adaptation of patients. Our study, conducted at an early stage of Paranoid schizophrenia, has a positive effect on the success of social adaptation of cognitive style characteristics, for example: utility, high accuracy of Information Analysis, breadth of equivalence range.

**Conclusions.** It should be noted that the data obtained in our study on the prognostic significance of a number of psychological characteristics in relation to the likelihood of maintaining a satisfactory level of social adaptation in paranoid schizophrenia allows us to determine the expansion of the set of methods of protection and stress coping as tasks of psychocorrectional work, as well as the response to.

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# NEUROBIOLOGICAL INDICATORS OF CLINICAL STATUS AND PROGNOSIS OF THERAPEUTIC RESPONSE IN PATIENTS WITH PAROXYSMAL SCHIZOPHRENIA

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**Abstract.** *Modern ideas about the involvement of neuroinflammation and neuroplasticity processes in the pathogenesis of endogenous mental disorders determine and clarify various aspects of their pathogenesis, determine the need for multidisciplinary clinical and neurobiological studies of their brain mechanisms to objectively assess the acuity and severity of pathological processes in the brain in these diseases., as well as to individually predict the effectiveness of the treatment of these socially significant diseases personalized approach.*

**Keywords:** *schizophrenia, neurobiological indicators, endogenous mental disorders, predicting the effectiveness of therapy.*

**Introduction.** The problem of diagnostic assessment of mental disorders, which is decisive in the choice of therapy, remains one of the most pressing issues in modern psychiatry and, in particular, is associated with differences in the interpretation of psychopathological conditions and the content of terms, which applies to the concept of negative diseases in schizophrenia. Terms such as "negative disorders", "defect", "deficiency states" are often used as synonyms [1-4]. Ideas about deficits and negative symptoms have varied over a wide range, from considering it in terms of non-specific symptoms in a variety of contexts to identifying deficiency disorders as a key sign of the endogenous schizophrenia process [5-8]. In domestic psychiatry, it was proposed to distinguish between two types of defects: "fershroben", which is accompanied by "pathological autistic activity", and "asthenic autism", which is a simple deficiency with phenomena [9], and to check for deficiency disorders, use a chronodynamic criterion that implies the stability of symptoms during schizophrenia remission. Meanwhile, S. N. in the opinion of Mosolova, the criteria for resilience and non-reversion of deficiency diseases, as well as the specificity of initial conditions, are not generally accepted today, and deficiency symptoms should be understood as relatively constant specific diseases that continue throughout the disease from premorbid to remission and resistance to therapy [10-14].

Emphasizing the importance of differentiating the negative signs and residual manifestations of the disease, residual disorders were examined in the form of schizophrenia reactions, phases and post-procedural development of residual effective psychopathological symptoms and relatively permanent cases in which the procedural changed individual had a life together [15-17].

Proposed a dichotomic approach to the classification of schizophrenia, distinguishing type 1, characterized by the presence of positive symptoms (hallucinations and delusions), a positive

response to antipsychotic treatment against drugs, maintaining good cognitive function, and increased activity of D2 dopamine receptors; and Category 2, where negative symptomatology is noted (blurred effect, poor speech and loss of control), which is characterized by a weak reaction to antipsychotics, disorders and neuroanatomic pathologies. At the same time, the dichotomic approach is limited to diagnostic instability and low prognostic value, not consistent with the factor analysis of schizophrenia psychopathology, which consistently demonstrates more than two factors [18-22].

Currently, an agreement has been reached to include five components in the concept of negative symptoms: flattened effect, speech impoverishment (alogia), weakening of social ties (asociality), anhedonia and Abulia [23]. This restructuring takes into account the phenomenological correlation of negative symptoms with cognitive, depressive, and disorganization symptoms.

Negative symptoms occur in patients with schizophrenia spectrum disorders at the same frequency as hallucinations (60%) [24]. A high proportion of rapid progressive formation of negative changes among young individuals after the first attacks [25]. Negative symptoms are associated with a decrease in social activity and quality of life [26], regardless of the presence of depression or positive symptoms (especially those associated with a sense of motivation and pleasure), with a decrease in the positive emotional response to communication and a decrease in the ability to socially influence [27].

It is recommended to distinguish negative symptoms as primary and secondary [28]. Primary negative symptoms are manifestations of a schizophrenia process that exists for a long time or continuously. They can appear before the start of therapy, in the early psychotic period, and with the onset of stabilization after the manifestation of psychosis, they are preserved and become a component of remission. Primary negative symptoms are assessed by patients and their loved ones as changes in character rather than symptoms of the disease; they are mainly manifested by a decrease in motivation, initiative, decision-making, planning ability; find a weak response to resistance to treatment, torpidity or antipsychotic therapy [29].

Primary negative symptoms are characterized by a stable structure that lasts at least a year when it excludes diseases such as depression, anxiety, delusions and hallucinations or side effects of treatment [30]. At the same time, irreversible symptoms corresponding to the classic concepts of schizophrenia defect occur only in a small percentage of patients.

Secondary negative symptomatology is not part of the schizophrenia process, but is positioned as a treatment or a secondary effect of the disease; the residual can be the result of effective symptoms, depression, side effects of antipsychotics (extrapyramidal disorders), hospitalization and Social Communication Disorders. A decrease in the speed of emotional reactions, motor inhibition, slowing down of speech, a social barrier are characteristic. These symptoms are transitorial and can disappear when the factors that cause them are leveled, adequate therapy is carried out [31].

For example, secondary negative symptoms compared to positive symptomatology may respond to effective antipsychotic therapy. Primary negative symptoms included permanent changes in the form of irreversible breakdown of various areas of mental activity: affective-stimulating, cognitive, emotional-voluntary, personal; secondary — mobile, temporary diseases such as thymopathy and disorders due to the influence of psychopharmacotherapy and social deprivation of patients [32].

To determine whether negative symptoms are primary, clinicians must rule out the 4 most common causes of secondary negative symptoms: (1) Depression, (2) psychotic symptoms, (3) side effects of pharmacotherapy (4) substance abuse [32].

Differential diagnosis of negative, cognitive, depressive and Parkinsonian symptoms is the main task of scientific and practical psychiatry. It should be borne in mind that during the remission phase, psychopathological manifestations such as autistic behavior, emotional smoothness, decreased initiative and others can serve as an expression of positive diseases, in particular depression, anxiety, akinesia, delirium [33].

ICD-11 shows that if symptoms are not associated with affective disorder, drug or drug use, negative symptoms such as emotional flattening, speech impoverishment, Abulia, social barrier, or anhedonia can be detected. According to our data, there is a correlation between S100B protein levels and postschizophrenic depression ( $R=0,047$ ,  $p<0,001$ ) [34], which is consistent with literature data on increased S100B protein concentrations in affective disorders of varying degrees [34]. At the same time, no correlation was found between S100B protein levels and severity of negative symptoms, which makes it possible to consider an increase in S100B protein levels as one of the parameters for differential diagnosis of negative symptoms and depression in schizophrenia [35].

Primary and secondary negative symptoms have common external signs (low speech, reduced facial expressions), which makes them difficult to distinguish in clinical practice. W. From Carpenter's point of view, the ability to revert is the primary discriminatory factor of primary and secondary negative diseases [36].

Negative symptoms are found in 87,5% of patients (according to sans results), including primary – 47% and secondary – 40%. The most common symptom turned out to be emotional blunt (in 72% of cases). Low levels of social activity and significant levels of depression have been reported in patients with negative symptoms [37-39].

According to our data, in 52% of patients, more than a year before the manifest attack, the main negative symptoms of different degrees were observed and prevailed in male patients with the first episode of schizophrenia [40].

Primary and secondary negative symptoms can be permanent and temporary, but it is not always possible to distinguish primary and temporary negative symptoms from secondary negative symptoms. Primary persistent negative symptoms in foreign literature are called deficiency symptoms and are considered as a component of deficiency disorders, on the basis of which the deficiency and non-deficiency subgroups of schizophrenia are distinguished, which differ in clinical appearance, neuroimaging, neuropsychological and neurological characteristics, risk factors and pharmacological response profiles [41-44]. It is important to distinguish primary / secondary ALB symptom, [45] the formation of deficient schizophrenia I included to identify a completely homogeneous subgroup of patient, but the presence of primary and persistent ALB symptoms since the di EA e, poor premorbid performance and a weak response to treatment [46]. Carpenter concept, deficiency disorders include the following symptoms: flattened affect, limiting the range of emotional reactions, poverty of speech, loss of interest, decreased goal setting, restriction of social interaction. Subsequent studies have confirmed the hypothesis that defective schizophrenia is a specific form of the disease [47].

The purpose of the study: is to determine the correlation of quantitative clinical, neuroimmunological and neurophysiological indicators from the point of view of an objective



assessment of the severity of pathological processes in the brain and determine the possibility of an individual prognosis of a therapeutic response in the treatment of manic and hallucinatory-delusional conditions within paroxysmal schizophrenia.

**Materials and methods.** The study, carried out in compliance with the standards of modern biomedical ethics, included 80 patients of the SOPB clinic with paroxysmal schizophrenia (F20.01-02 on ICD-10) (all women, 20-50 years old, with an average age of  $36,3 \pm 11.4$  years). manic-delusional diseases (30 patients) and hallucinatory-delusional (50 patients). All patients received syndrome psychopharmacotherapy. In all patients, quantitative clinical, neurophysiological (EEG) and immunological indicators are listed twice – before the start of the course of therapy (on visit 1) and at the stage of formation of remission (on visit 2). The clinical status of patients was determined by the positive and negative symptom scale (PANSS), taking into account both the total amount of PANSS scale scores and the sum of scores on lower measures of positive, negative and general psychopathological symptoms.

Von EEG (10 channels: F7, F3, F4, F8, c3, c4, T3, T4, P3, P4, O1 and O2, 10-20 system-wise, compared to Ipsilateral ear references A1 and A2) was recorded in a state of calm wakefulness with eyes closed. EEG spectral analysis was conducted in narrow frequency sub-bands: Delta (2-4 Hz), Theta-1 (4-6 Hz), Theta-2 (6-8 Hz), Alpha-1 (8-9 Hz), Alpha-2 (9-11 Hz), Alpha-3 (11-13 Hz), beta-1 (13-20 Hz), and beta-2 (20-30 Hz).

These days, blood was selected and used laboratory technology "neuro-immuno-test" (Klushnik T. P. et al., 2014) measured the activity of plasma leukocyte elastase (Le) as an inflammatory marker, as well as levels of autoantibodies to the primary myelin protein (AAT-OBM). as a sign of destructive neuroplastic processes.

In the processing of mathematical data, the neurobiological indicators determined before the start of the course of therapy (in case of Visit 1) were compared with the clinical assessments of patients obtained before the start of the course of therapy (in case of Visit 1) and at the stage of formation of remission after the course of therapy (in case of Visit 2).

To do this, the correlation coefficients between all clinical and neurobiological indicators were first calculated. Then two groups of multiple regression equations were constructed describing the correlation of quantitative clinical, neuroimmunological and neurophysiological indicators.

In the first group of equations describing the neurobiological correlation of the severity of the initial (before the start of the course of therapy) condition of patients, clinical evaluations obtained in case 1 (on the PANSS scale) were used as dependent variables, and the values of neurobiological indicators of Case 1 were used as independent variables. reliable (at  $p$  level  $< 0,05 \div 0,01$ ) and most associated with the relevant clinical indicators of Visit 1. In the second group of equations describing mathematical models for predicting therapy effectiveness, clinical evaluations obtained in the remission formation phase (on the PANSS scale) were used as dependent variables, and the values of neurobiological indicators of Visit 1 were used as independent variables. reliable (at  $p$  level  $< 0,05-0,01$ ) and most associated with the relevant clinical indicators of Visit 2.

Research results and their discussion. Regression models, which include only 3-4 of the EEG spectral parameters obtained before the start of the therapy course (visit 1) and one of the neuroimmunological indicators (Le or AAT-OBM), explain the change in starting (before the start of the therapy course) clinical indicators by 89% to 92% with a high confidence level. the amount

and small size of the panss scale) in the group of patients with manic-delusional diseases and in the group of patients with hallucinatory-delusional diseases, the change in initial clinical indicators from 65% to 77%, that is, they adequately reflect the initial sharpness and severity of pathological processes in the brain.

Mathematical models of the prognosis, which include the same number of neurobiological indicators obtained before the start of the course of therapy, explain the change in the values of clinical indicators at the stage of formation of remission (visit 2) from 72% to 87%.) in the group of patients with manic-delusional disorders and in the group of patients with hallucinatory-delusional disorders, 65% to 77% of the values of clinical indicators in the 2nd visit.

This allows you to predict the individual quantitative values of the total sum of panss scale scores and the sum of small table scores of positive, negative and general psychopathological symptoms reflecting the state of patients after the syndrome therapy course at the stage of forming remission, according to the complex of neurophysiological and neuroimmunological indicators obtained before the start of the therapy course.

In patients with manic-delusional diseases, an individual prognosis of the effectiveness of the syndrome therapy course was more favorable (in the form of small values of the PANSS scale scores in case 2), the stronger the EEG symptoms were initially expressed-the activation of the temporal region of the right hemisphere and the maintenance of inhibition processes in the frontal region of the left hemisphere.

In patients with hallucinatory-delusional disorders, the therapeutic response was relatively worse (in the form of large values of PANSS scale scores in case 2), EEG symptoms are "hypofrontal", that is, a decrease in the functional state of the frontotemporal regions of the cortex (especially the left hemisphere).

In both groups of patients, the therapeutic response was relatively worse, the higher the number of autoantibodies to the total myelin protein in the blood plasma, which reflects the activation of destructive neuroplastic processes.

**Conclusions.** The findings highlight the role of the lack of neurophysiological inhibition processes (especially in the frontal and Central zones of the left hemisphere) in the pathogenesis of manic-predicative diseases and the role of "hypofrontal", that is, a decrease in the functional state of the frontotemporal regions of the cerebral cortex (especially the left hemisphere) supports the pathogenesis of hallucinatory-predicative diseases, as well as the involvement of neuroinflammation and destructive neuroplastic processes. processes in the pathogenesis of delusional states within paroxysmal schizophrenia.

The complexes of neurophysiological and neuroimmunological indicators obtained before the start of the course of therapy reflect not only the initial sharpness and severity of pathological processes in the brain, but also adaptive resources of the brain in terms of the possibility of responding to therapy.

This makes it possible to individually predict the effectiveness of standard syndrome course therapy for manic-delusional and hallucinatory-delusional disorders in the future, to timely adjust complex therapy to achieve satisfactory quality remission, and thus optimize the treatment of socially significant mental illness, such as paroxysmal schizophrenia.

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## THE IMPORTANCE OF THE TUTSAN OR SWEET-AMBER WHICH BELONGING TO THE HYPERICACCEAE FAMILY

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**Abstract.** Presidential Decree of the Republic of Uzbekistan No. PD-4670 of the dated April 10, 2020 "On measures to protect medicinal plants growing in the wild, cultured cultivation, processing and rational use of available resources" and No. PD-4901 dated November 26, 2020 "Cultivation of medicinal plants and processing, on measures to expand the scope of scientific research on the development of their seed production" were adopted. According to the decree of the President of the Republic of Uzbekistan No. PD-4901 dated November 26, 2020, to study the areas of medicinal plants growing wild in the territory of the republic and identify their reserves, to preserve the gene pool of existing bioresources, to establish mother plantations; A wide range of scientific and practical researches related to cultivation and preparation of seed materials, breeding, establishment of collective nurseries and processing of their raw materials were carried out.

**Keywords:** digoxin, theophylline, indinavir, cyclosporine anticoagulant, gingivitis, stomatitis, Alzheimer's

**Introduction.** Tutsan or sweet-amber (Hypericaceae) It is used to collect and dry the grass of field grass, a wild growing perennial herbaceous plant belonging to the family. Tutsan or sweet-amber species are found in all regions of Uzbekistan. These plants grow on roadsides, ditches, meadows, meadows, gardens, bushes, from the slopes of the mountains to the middle part, in small stone-soil areas.

Tutsan or sweet-amber species is a perennial herb, 30-35, sometimes 100 cm tall. The stem is one or more, erect, smooth, hairless, two-edged, the upper part is branched. The leaf is wide or oblong-ovate, flat-edged, and opposite on the stem. The flowers are golden, clustered in a shield-shaped raceme or peduncle. The fruit is a three-digit capsule. It blooms in June and August, the fruit ripens in July and September. During the flowering period, field species are cut 15-20 cm long from the tip of the upper part of the ground, and the shade is dried on the ground. Then it is burned and taken out of the galvir. Large stems are discarded.

Tutsan or sweet-amber species contain flavonoids, essential oil, vitamins, resins, sugars, dyes, and flavoring agents. Abu Ali ibn Sina used the field plant as a pain reliever, diuretic and to treat various wounds. In folk medicine, tincture made from field species is used in the treatment of kidney, bladder, and gastrointestinal (diarrhea) diseases. In addition to these, the tincture prepared from the plant is used as a hemostatic drug (for bleeding from internal organs or spitting up blood). A fresh leaf is chopped, crushed and applied to the wound.

To prepare a tincture from the field species, pour a glass of boiling water into a container with a closed mouth, add 10 grams of the ground upper part of the plant and infuse it. Then it is washed in gauze. The infusion is drunk 2-4 times a day after meals in a tablespoon. In scientific medicine, medicinal preparations of the field plant (tincture, nastoyka, liquid extract) are used in the treatment of gastrointestinal diseases (colitis, diarrhea, oral cavity (gingivitis, stomatitis) and burns of II and III degree. Tincture prepared from the above-ground part of the plant are used in urine and It is recommended to use as an anthelmintic drug.

Decoctions made from the above-mentioned diseases are also used in folk medicine for the treatment of the above-mentioned diseases. In folk medicine, patients with urinary incontinence

are advised to drink the tincture of dalchoi. To do this, put 10 g of the ground part of the plant in a glass of boiling water and leave it for a while. Strain and drink one tablespoon 2-4 times a day. Fenugreek decoction can also be used in the treatment of gastrointestinal diseases.

Pour 1 cup of boiling water on 1 tablespoon of crushed plant and boil for 15 minutes on low heat. After straining, drink a quarter glass three times a day. Fenugreek oil is also useful. To prepare the oil, 1 part of dalchoi is added to 2 parts of olive (almond or peach) oil and left to stand for 3 weeks. It can be used as a compress to treat burns or wounds (for example, trophic ulcers). To treat alcoholism, put 2 tablespoons of dried field tea in 250 ml of boiled water and put it in a water bath for 20-30 minutes. Strain and drink 2 tablespoons before breakfast and lunch.

To prepare the tincture, put 20 g of the herb in an enameled container, pour 200 ml (1 glass) of boiled water at room temperature, cover with a lid and heat in a boiling water bath for 15 minutes and cool at room temperature for 45 minutes. The infusion is filtered through cheesecloth and the remaining raw materials are squeezed. The volume of the obtained tincture is brought up to 200 ml with boiled water. The tincture can be stored in a cool place for up to 2 days. Tincture is taken 2 tablespoons 3 times a day 30 minutes before meals. When used in high doses, digoxin, theophylline, indinavir, cyclosporine, oral anticoagulants may have side effects. Tutsan or sweet-amber medicinal plant is yellow, star-shaped and has been used as a medicinal herb for hundreds of years. Fenugreek oil is widely used in skin cleansing. Its decoction can also be used to relieve depression and treat a number of diseases.



### **Conclusion**

It relieves insomnia, helps to restore skin cells, removes acne scars on the face and skin. Fights against microbes and bacteria, ensures the disappearance of various inflammations occurring in the body, normalizes the digestive system, helps in appetite, normalizes thyroid hormones. Tutsan or sweet-amber also acts as a natural pain reliever.

It relieves muscle pain, prevents the proliferation of cancer cells, helps to clear sputum in case of flu and cold, reduces headache and reduces fever.

It is not recommended in the following cases:

1. To pregnant and near-pregnant women;
  2. People suffering from attention deficit disorder, hyperactive, schizophrenic, as well as people with Alzheimer's (memory loss) disease;
  3. For people taking anti-depressants, blood thinners, and asthma medications;
- It is necessary to stop drinking tea two weeks before surgical procedures that lead to anesthesia. Drinking tea without a break and more than the specified period can cause headache, dizziness, weakness, nausea, dry mouth, skin rashes.

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## FEATURES OF DIAGNOSIS OF PERIODONTAL DISEASES IN PATIENTS WITH CHRONIC HEPATITIS

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**Abstract.** *The current stage of development of clinical dentistry is characterized by a high level of fundamental and applied work related to the diagnosis, prevention and treatment of periodontal diseases. At the same time, despite the scale of research conducted in our country and abroad, many aspects of this complex pathology remain not fully understood.*

*Periodontal disease (periodontal disease) involves infectious and inflammatory processes that affect the tissues that support the teeth. These include gingivitis (inflammation of the gums) and periodontitis (inflammation of the tissues that support the teeth).*

*Periodontal disease is a serious disease that can lead to tooth loss if left untreated. Gingivitis is characterized by inflammation and bleeding of the gums, while periodontitis causes the destruction of the bone tissue that supports the teeth.*

*The article discusses the peculiarities of diagnosing periodontal diseases in patients with chronic hepatitis.*

**Keywords:** *periodontium, gingivitis, chronic hepatitis, diagnosis, patient.*

**Introduction:** Periodontal diseases occupy a leading place in dentistry (85-90%), of which periodontitis is the most common, about 70-80%. Periodontitis is an inflammatory-dystrophic disease that occurs as a result of general factors, such as deficiency of vitamins C, B1, A, E, endocrine imbalances, and local ones - an imbalance between bacterial symbiosis and oral tissues, against the background of decreased reactivity of the body. Inflammation can be limited to the gums (gingivitis) or affect all periodontal structures. The clinical manifestations of this disease are varied. They range from bleeding gums to destruction and loss of teeth, due to the destruction of all tissues of the periodontal complex [1].

Diagnosis of periodontal disease in patients with chronic hepatitis may be challenging due to potential changes in the immune system that may affect oral health.

Indeed, people with chronic hepatitis may have changes in the immune system, which can have an impact on their oral health. Patients with chronic hepatitis may be more susceptible to developing periodontal disease due to decreased immunity and possible impairments in tissue regeneration. They experience decreased immunity, which may make them more vulnerable to developing periodontal diseases such as periodontitis and gingivitis. Additionally, decreased immune function can slow down tissue healing and worsen gum health. Therefore, it is important that patients with chronic hepatitis receive regular dental care and monitor their oral health to prevent the development of periodontal disease.

When diagnosing periodontal disease in such patients, consideration should be given to their general health, level of immunity, and possible changes in the blood, such as thrombocytopenia. It is also important to consider the possible use of medications that may affect oral health and gum health.

Therefore, it is recommended to conduct a comprehensive assessment of the oral health of patients with chronic hepatitis, including a clinical examination, assessment of the level of



inflammation and bleeding of the gums, examination of radiological data and other necessary studies. This approach will help identify potential periodontal health problems and develop an appropriate treatment plan.

Let's consider what special features in the diagnosis of periodontal diseases may arise in patients with chronic hepatitis:

1. Impaired immunity: Chronic hepatitis can lead to weakened immunity, making patients more susceptible to periodontal infections. Diagnosis should include an assessment of the general condition of the immune system and the level of inflammation in the periodontal area.

2. Relationship with other diseases: Patients with chronic hepatitis may also have other medical problems that may affect the status and diagnosis of periodontal disease. It is important to conduct a comprehensive examination and take into account possible relationships between diseases.

3. Features of treatment: The use of certain medications for the treatment of chronic hepatitis can affect the condition of the periodontium and require a special approach to diagnosis and treatment. Therefore, it is important to consider the possible influence of drugs during diagnosis.

To effectively diagnose periodontal disease in patients with chronic hepatitis, it is necessary to take into account these features and conduct a comprehensive examination, taking into account the state of the patient's immune system and possible interactions with other medical problems.

Diagnosing periodontitis is an important step in assessing oral health and determining the necessary treatment. There are several options for diagnosing periodontitis, including clinical methods and instrumental studies.

Clinical diagnostic methods include examining the oral cavity, measuring the depth of gum pockets, assessing bleeding gums, and analyzing the degree of mobility and displacement of teeth. Also, clinical diagnostic methods may include radiography, computed tomography and other educational methods that allow a more detailed study of the condition of teeth and oral tissues. Instrumental methods include radiography to determine the level of bone loss, the use of ultrasound machines to measure pocket depth and determine the presence of plaque. Instrumental methods also include the use of computed tomography for a more detailed study of the condition of teeth and bone tissue, as well as the use of special diagnostic tools to determine the condition of plaque, gum pockets and other indicators of dental health.

Clinical needs for the diagnosis of periodontitis include the need for more accurate methods of determining the extent of bone tissue destruction, identifying hidden areas of inflammation, and developing individualized treatment plans for patients.

To meet clinical needs for the diagnosis of periodontitis, various methods can be used, such as computed tomography to more accurately assess the extent of bone destruction, the use of special imaging techniques to identify hidden inflammation in periodontal tissues, and the development of individual treatment plans based on multimodal diagnostics, including data from various instrumental methods, and not just one method. Such approaches make it possible to more accurately determine the degree and nature of the patient's periodontal damage, which in turn facilitates the development of the most effective and individualized treatment plan for each specific case.

In recent years, new methods for diagnosing periodontitis have been developed, such as the use of biomarkers and genetic tests, which can help to more accurately diagnose and determine an individual's risk of developing the disease.

Today, there are several promising methods for diagnosing periodontitis:

1. Genetic analysis: Research suggests that genetic factors may influence the development of periodontitis. Genetic testing can help determine an individual's risk of developing the disease, facilitating early prevention.

2. Use of biomarkers: the emergence of biomarkers (for example, enzymes, cytokines and DNA molecules) allows for more accurate diagnosis and assessment of the degree of inflammation in periodontal tissues.

3. Methods of educational diagnostics: new methods, including digital radiography, tomography, laser diagnostics, make it possible to more accurately determine the degree of damage to periodontal tissues with high accuracy and safety for patients.

4. Telemedicine: the development of Internet technologies allows for remote diagnosis of periodontitis using online consultations and specialized applications for self-diagnosis.

These methods allow early detection of the disease, more accurate diagnosis and assessment of the course of periodontitis, which contributes to the development of an individualized approach to the treatment and prevention of this disease.

The use of biomarkers, such as cytokines, growth factors and other molecules, can help in early diagnosis and assessment of the activity of the inflammatory process in periodontal tissues. Genetic tests may also be useful in determining an individual's genetic risk for developing periodontitis or its severity. The search for new diagnostic methods can have a significant impact on improving pre-screening, more accurately determining the severity and successful treatment of periodontitis.

New methods for diagnosing periodontitis, such as the use of biomarkers and genetic tests, do present great potential for improving pre-screening and determining the severity of the disease. By more accurately diagnosing and determining an individual's risk for developing periodontitis, physicians will be able to develop more personalized treatment plans for their patients and improve the effectiveness of interventions to prevent and treat the disease. This, in turn, can significantly improve the prognosis and quality of life for people suffering from periodontitis.

These methods for diagnosing periodontitis hold significant promise as they can provide more accurate determination of disease severity and improve pre-screening. This in turn can contribute to more successful treatment of periodontitis and increase the chances of complete recovery. They can also help in early detection of the disease, which will allow treatment to begin at earlier stages of development. This will prevent the progression of the disease and reduce the risk of complications. Promote a more individualized approach to the treatment of periodontitis, allowing therapy to be tailored to the specific needs of each patient, taking into account the severity of the disease.

Finally, the use of new diagnostic methods is an important step in reducing the prevalence of periodontitis, as more accurate diagnosis will prevent its further spread and effectively combat this disease.

**In summary**, current diagnostic capabilities for periodontitis already include a variety of methods, but there is a clinical need for more accurate and individualized approaches to diagnosis and assessment of patients.

**In conclusion**, it can be noted that the development of clinical dentistry at the present stage is indeed associated with intensive scientific research aimed at increasing the efficiency of diagnosis, prevention and treatment of periodontal diseases. However, despite significant efforts, there are still many unexplored aspects of this complex pathology. Continued research in this area is essential to improve clinical practice and improve the standard of dental care.

In general, when diagnosing periodontal disease in patients with chronic hepatitis, their immune system and general health should be taken into account in order to ensure effective treatment and prevent complications.

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## FEATURES OF DOPPLEROGRAPHIC STUDIES IN THE DIAGNOSIS OF CHRONIC KIDNEY DISEASE

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**Abstract.** *The most pressing problems facing modern pediatrics and nephrology are chronic kidney disease (CKD), which is associated with the early onset of disorders in patients in childhood, a constant increase in the frequency of chronic progressive kidney disease and the occurrence of chronic renal failure (CRF). Despite recent advances in nephrology, reducing the risk of problems associated with delayed formation of CRF and decreased kidney function remains a difficult task in the early detection and prevention of kidney diseases of various etiologies.*

**Keywords:** *kidney, laboratory diagnostics, complex echography, dopplerography, chronic kidney disease.*

Relevance. Abnormalities in creatinine levels over a period of several months to several years are called chronic kidney disease (CKD). CKD is based on the degree of kidney damage calculated from a reduced glomerular filtration rate (GFR) (ie  $<60$  ml/min per  $1.7\text{ m}^2$ ) for more than three months [1, 2].

Ultrasonography is a non-invasive and inexpensive method of examination with sufficient anatomical details necessary for the diagnosis of kidney diseases without irradiation or contrast of the patient, and, therefore, has replaced standard radiography in our country and abroad [3-5]. All these factors contribute to the early detection and prognosis of renal dysfunction necessary for making therapeutic decisions.

In B-mode echography are studied the length of the kidney, thickness and echogenicity of the renal parenchyma; in addition, this mode makes it possible to detail the pyelocaliceal system [6]. This information helps to determine the extent of damage to the renal parenchyma and the possibility of its reversibility [7, 8], as well as to make a decision on whether to perform a kidney biopsy [9].

In interstitial fibrosis and glomerulosclerosis, due to fibrosis, the echogenicity of the parenchyma increases [10], and an increase in echogenicity can also occur with interstitial inflammation. There is a significant correlation between kidney length, parenchymal echogenicity, glomerular sclerosis or tubular atrophy [2].

Kidney morphology can be determined using a number of methods, including measurement of kidney length and volume, and renal cortical thickness. Renal function can also be assessed by kidney length and cortical thickness, and important clinical decisions can be made based on this. Therefore, dynamic echographic studies are carried out to detect the progression of renal failure or its recovery. Although renal parenchymal volume is a fairly accurate measurement in patients with end-stage renal disease, in healthy patients, measuring the longitudinal length of the kidney is sufficient.

Therefore, ultrasound is an informative method for confirming renal failure and disease progression.

Purpose of the study. Improving the diagnosis of chronic kidney disease (CKD) through the use of Doppler ultrasound.

**Material and research methods.** Complex ultrasound examinations were carried out at the Republican Specialized Scientific and Practical Medical Center of Nephrology and Kidney Transplantation using Sonoscape S22 and Aplio 500 ultrasound diagnostic devices using a 3.5-5.0 MHz convex sensor. The study was carried out on 35 patients, of which 19 (54.3%) were male and 16 (48.7%) female. The mean, median and quartile range of speed indicators were calculated.

Patients with acute kidney injury, a transplanted kidney, hemodialysis, chronic liver disease, and a solitary kidney were excluded from the study.

Complex echography of the kidneys was performed using a standard Aplio 500 ultrasound device (Japan) in gray scale, color Doppler mapping (CDC) and pulsed wave Doppler modes using a convex sensor with a frequency of 3.5-5.0 MHz. The echogenicity of both liver and kidney parenchyma was assessed using low tissue harmonic imaging and speckle reduction to reduce intertissue offset. Gain and time gain compensation were manually adjusted. Volume and thickness were measured in a segment perpendicular to the estimated longitudinal axis of the kidney, according to longitudinal imaging. There was no need to hold the ultrasound transducer perpendicular to the skin, but the level of this cross-section was placed fairly close to the renal hilum while still clear of the pelvis.

**Research results.** When distributing patients with CKD, were used the 2012 KDIGO criteria, with group 1 consisting of 15 (42.8%) patients with stage 1 CKD who were of active working age from 20 to 45 years (mean age  $32.5 \pm 4.5$  years); 11 (31.5%) patients with stage 2 CKD made up the 2nd group aged from 22 to 65 years (average age was  $43.5 \pm 7.2$ ) and 9 (25.7%) patients with 3 and Stage 4 CKD patients were included in group 3, the average age of which was  $46 \pm 11$  years.

The term <CKD> refers to progressive kidney damage that can worsen over time and is caused by structural or functional problems. Kidneys stop functioning as damage worsens, whether GFR declines or not. This is evidenced by histology, changes in markers of kidney damage, or variations in imaging tests. During the study, we studied the functional capacity of the kidneys in CKD using complex ultrasound methods and determining GFR using serum creatinine.

The mean serum creatinine level in our study was 1.25 mg/dL for grade 0, 1.85 mg/dL for grade I, 2.5 mg/dL for grade II, 3.27 mg/dL for grade III and 5.03 mg/dL for grade IV.

The main ultrasound criteria in the gray scale mode were an uneven increase in the echogenicity of the renal parenchyma, with a decrease in the thickness of the renal parenchyma. As the pathological process progressed, a decrease in the anteroposterior size of the kidneys was determined, as well as unevenness and tuberosity of the contours, which meant fibrosis of the cortex. This study showed that the average thickness of the renal parenchyma was 8.3 mm. As echogenicity increased, a decrease in mean parenchymal thickness was observed.

Changes in ultrasound parameters in the color Doppler mapping (CDC) mode with stage 1 CKD were characterized by asymmetry of hemodynamic parameters, diffuse depletion of the intrarenal vascular pattern due to the reduction or absence of small branches of segmental arteries, turbulence of blood flow, location of rare, thinned and deformed vessels. It has been proven that in patients with CKD stage 2, compared with CKD stage 1, intrarenal hemodynamics were characterized by significantly more pronounced disturbances in the parameters of central circulation: blood flow turbulence, asymmetry of hemodynamic parameters, location of rare,

thinned and deformed vessels, diffuse depletion of vascularization. In addition, a statistically significant difference was revealed between groups of stages 3-4 compared with stages 1-2 in terms of speed indicators, namely Vmax - 49.6 cm/s (Q=35.6; Q3=53 ,1, p<0.001), Vmin (12.5 cm/s vs 15.2 cm/s, respectively, at p<0.001), TAMX (21.3 cm/s vs 25.5 cm/s, respectively, at p<0.001) at the level of the renal artery and Vmax - 22.1 cm/s (Q=17.4; Q3=23.5, p<0.001), Vmin (8.6 cm/s vs 10.4 cm /s, respectively, at p<0.001) and TAMX (11.2 cm/s vs 14.1 cm/s, respectively, at p=0.001) at the level of the arcuate artery. There was also an increase in resistance indicators (RI, PI) as the disease progressed at all levels of the renal vascular bed. In general, higher renal resistivity index values (>0.7) reflected more severe CKD stage. There were significantly significant differences between the groups when comparing renal RI at the level of the renal artery 0.72 (Q1=0.7; Q3=0.73, p<0.001), at the level of the arcuate artery 0.69 (Q1=0.68; Q3 =0.71, p<0.001).

**Conclusions.** Thus, the best echographic parameter that correlates with serum creatinine level is the echogenicity of the renal cortex and its gradation in comparison with the longitudinal length, parenchymal thickness and cortical thickness in patients with CKD, also Doppler ultrasound replaces x-ray angiography and the advantage of this method over other imaging modalities is that it provides real-time assessment of blood flow.

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## THE ROLE OF ULTRASOUND DIAGNOSTICS OF ACUTE ADHESIVE INTESTINAL OBSTRUCTION IN CHILDREN

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**Abstract.** *Acute intestinal obstruction is one of the most common diseases in emergency surgery. This paper presents the results of a survey of 47 children with acute adhesive intestinal obstruction. All patients were treated at the clinic of the Tashkent Pediatric Medical Institute from 2020 to 2022. Of the total number of patients, 43 were operated on for early adhesive intestinal obstruction. Surgical interventions are represented by two methods of operation: open 12 children and laparoscopic 31 children. Conservative measures were successful in 11 cases. Ultrasound is also widely used for dynamic monitoring of children undergoing conservative treatment, which allows to assess the wall, the structure of the intestine, as well as the restoration of peristalsis. Ultrasound plays an important role as the first screening study to confirm or exclude acute adhesive intestinal obstruction, which allows timely diagnosis and inclusion of the patient in the treatment process.*

**Keywords:** *acute adhesive intestinal obstruction, diagnosis, children, ultrasound, computed tomography, informativeness.*

Relevance. Acute intestinal obstruction (AIO) is one of the most common diseases in emergency surgery. Acute intestinal obstruction accounts for 9.4 - 27.1% of all surgical diseases. According to literature data, in 85%-90% of cases, acute adhesive intestinal obstruction develops in patients who have previously undergone surgery. From 40% to 75% of all intestinal obstruction is associated with the formation of adhesions, and the mortality rate in acute adhesive intestinal obstruction is (AAIO) 6-10% and does not tend to decrease [5, 6, 9].

Imaging methods used in the examination of a patient with suspected AAIO are radiography, ultrasound, computed tomography (CT) and magnetic resonance imaging (MRI). Overview radiography of the abdominal cavity in the supine and standing position has diagnostic accuracy in the range of 50-70% and has low specificity; moreover, radiographs may seem normal in patients with complete, closed or strangulation obstruction. CT is the gold standard of imaging in the diagnosis and determination of the stage of small bowel obstruction, but has some contraindications associated with high radiation load on the child's body. MRI is a reliable method, but it has some limitations that prevent its wider use in this area, such as a long time of emergency care, reduced image quality during breathing and defecation.

The use of CT and MRI is not feasible in all cases, especially in remote areas where it is not advisable to purchase expensive equipment and there are no surgeons with experience in interpreting CT and MRI data.

One of the methods of diagnosis of acute intestinal obstruction is laparoscopy, which has specific contraindications [7,10] During laparoscopy in patients with adhesions, there is a high probability of damage to the intestinal wall. Ultrasound examination (ultrasound) occupies a leading position in the diagnosis of acute surgical diseases of the abdominal cavity. To date, ultrasound examination occupies a leading place among all methods of diagnosis of acute intestinal



obstruction, due to: accessibility, speed of implementation, manifestation of signs of AIO in earlier stage, high informativeness, non-invasiveness, unlimited repeated examinations, absence of side effects for the patient and medical workers.

The aim of the study was to study the possibilities of the ultrasound method in the diagnosis of acute adhesive intestinal obstruction in children.

**Material and methods of research.** This paper presents the results of a survey of 47 children with AIO. All patients were treated at the clinic of the Tashkent Pediatric Medical Institute from 2020 to 2022. Of the total number of patients, 43 were operated on for early adhesive intestinal obstruction. Surgical interventions are represented by two methods of surgery: open 12 (25.5%) children and laparoscopic 31 (65.6%) children. Conservative measures were successful in 11 (23.4%) cases. A predisposing factor in the formation of AAIO is the existence of an adhesive process in the abdominal cavity (in most cases due to previously undergone surgery on the abdominal organs). So, out of 47 children, 43 (91.4%) had a history of some kind of abdominal surgery.

Only 4 (8.6%) children had not been operated on before. Chronic inflammatory diseases of the intestines and pelvic organs were the cause of AAIO in them. According to our data, the average duration of the occurrence of AAIO was 3.2 years after the last intervention. Early adhesive intestinal obstruction occurred 2-14 days after the initial surgical intervention.

Ultrasound diagnostics for all children was performed on devices manufactured by "Sonoscape S 22" (China) and "Aplio 500" (Japan), functioning in real time, gray scale with components of color Dopplerography. Ultrasound examination was performed in the position of the child lying on his back on his own breathing using a convex transducer (2-6 MHz), sequentially moving the sensor from the epigastric, then mesogastric and hypogastric areas to the right and left, examining the loops of the small and large intestines, then the pelvic area was examined. Ultrasound was performed polypositionally. At the same time, the condition was differentiated with other possible acute surgical pathologies of the abdominal cavity. A high-frequency linear sensor (7-12 MHz) was used to better characterize the state of the loop and display the level of obstruction.

Dynamic studies were conducted from 1 to 3 times during the period of conservative therapy, with a control time of 2-4 hours. When positive dynamics was detected in patients with AIO when performing conservative measures, a control ultrasound was performed every 4 hours.

The results of the study. Upon admission, the most persistent complaint in children with acute adhesive intestinal obstruction was abdominal pain of various types, gas retention and/or stool. Vomiting occurred only in 1/3 of children. All children underwent an overview radiography of the abdominal cavity in a standing and/or sitting position. The direct symptoms of acute intestinal obstruction were the determination of the Kloiber bowl in 26 (55.3%) children, the visible intestinal wall 12 (25.5%), intestinal arches 15 (31.9%), and Casey's symptom - transverse striation of the small intestine 9 (19.1%).

Pneumatization of the small intestine was detected in 100% of cases. The first, at first single, Kloiber's bowls on the X-ray were determined after 2 hours from the onset of the disease. After 3-4 hours from the onset of the disease, the number of Kloiber's cups increased. With the predominance of gas accumulations over liquid conglomerates in the lumen of intestinal loops, intestinal arches were determined on the X-ray. Determination of several levels of liquid conglomerates in intestinal arches was a sign of the mechanical nature of intestinal obstruction.

And with the dynamic nature of intestinal obstruction, the surface of the liquid conglomerate in the intestinal arches was located at the same level. At the same time, the pneumatization of the loops of the small and large intestine throughout had a uniform character. With more advanced forms of intestinal obstruction, Casey's symptom was determined, which arose as a result of edema of the Kerkring folds, which became X-ray positive due to the accumulation of fluid in the intestinal wall.

Ultrasound of the abdominal cavity was performed for all children on an emergency basis upon admission. During the study, the degree of dilatation and the thickness of the intestinal wall were noted, the nature of the contents and motor-evacuation activity of the intestine, the presence and amount of free fluid in the abdominal cavity were evaluated. The "general review" made it possible to identify dilated loops of the small intestine in 27 (57.4%) children. After determining the group of expanded intestinal loops, the diameter, kinesis, thickness of the parietal and converged valves was evaluated. Among 35 (74.4%) children who were admitted to inpatient treatment in the first 12 hours from the onset of the disease, in 15 (32.0%) children who made up the majority, the average diameter of the intestine ranged from 2.0 to 2.5 cm. The group of patients who were admitted to inpatient treatment later than 12 hours from the onset of the disease was 72 children or 63.2% of the total number of children. The average diameter of the small intestine ranged from 2.6 to 3.0 cm. In 13 cases, the average diameter of the small intestine ranged from 3.0 to 3.5 cm. In 10 cases, the average diameter of the small intestine ranged from 3.5 to 3.8 cm. And only in 5 children it exceeded 4.5 cm. With intestinal obstruction in 45 (95.7%) patients, the contents in the lumen of the small intestine were anechoic in nature. In 7 (14.8%) cases, there were heterogeneous contents in the lumen of the small intestine. In some cases, it was the presence of a different number of small hypoechoic inclusions or the presence of suspensions of different echogenic density. In 39 (82.9%) children, the contents of the small intestine were almost homogeneous with a minimum number of hyperechoic inclusions. Sometimes hyperechoic inclusions were of a single character. Rarely, only in 2 (1.7%) cases, the contents in the lumen of the small intestine had slightly reduced echogenicity, heterogeneous structure and multiple dense inclusions. It should be emphasized that both of these children were hospitalized in the emergency surgery department in the first hours from the moment of the disease and the diameter of their small intestine did not exceed 2.0 cm. Dynamic ultrasound examination showed that the echogenicity of the small intestinal chyme gradually decreased up to the anechoic state. The mass of the small-intestinal chyme became more homogeneous. The features of the ultrasound picture during primary ultrasound are explained by the short duration of the disease. As well as a satisfactory functional state of the intestine.

With ultrasound in children with acute adhesive intestinal obstruction, the thickness of the intestinal wall ranged from 2 to 5 mm. The structural structure of the intestinal wall was homogeneous, its echogenicity was increased. The structural structure and echogenic characteristics on the altered sections of the intestinal wall in the area of dilated intestinal loops were the same. The thickness of the intestinal wall also had the same values in different parts of the small intestine.

Thanks to ultrasound examination, the majority of patients with acute adhesive intestinal obstruction were diagnosed and treated in the first six hours from the onset of the disease. Radiologically, it is possible to make the same diagnosis only in children with a disease duration

of more than six hours. Consequently, ultrasound examination provides more informative data at an earlier time in comparison with X-ray methods.

**Conclusions.** Ultrasound is a highly accurate imaging method for diagnosing and determining the stage of acute adhesive intestinal obstruction in children. Moreover, ultrasound can be used to assess intestinal motility in real time, which plays a key role in the diagnosis and monitoring of the patient's condition.

Ultrasound is also widely used for dynamic monitoring of children undergoing conservative treatment, which allows to assess the wall, the structure of the intestine, as well as the restoration of peristalsis. Ultrasound plays an important role as the first screening study to confirm or exclude acute adhesive intestinal obstruction, which allows timely diagnosis and inclusion of the patient in the treatment process.

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## COMPREHENSIVE ULTRASOUND DIAGNOSTICS OF GLOMERULONEPHRITIS IN CHILDREN

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**Abstract.** *Glomerulonephritis is a group of immune kidney diseases characterized by primary glomerular lesion and subsequent involvement in the pathological process of interstitium with a tendency to progression, transition to nephrosclerosis and the development of chronic renal failure syndrome. Until recently, there were no highly informative methods of reliable assessment of hemodynamic changes in the kidneys in nephrology. With the advent of Dopplerography methods in medicine, attempts have been made to use them for dynamic assessment of blood flow in the kidneys. Dopplerography methods are used, as a rule, to diagnose lesions of the main arteries having a relatively large diameter. However, the assessment of Dopplerographic indicators at various levels of the renal artery in glomerulonephritis in children is very relevant.*

**Keywords:** *children, kidneys, glomerulonephritis, ultrasound diagnostics, dopplerography.*

**Relevance.** Glomerulonephritis (GL) is a group of diseases with immuno-inflammatory lesions of the glomeruli (Sethi S., 2012; Kronbichler A. et al., 2015; Couser W.G., 2016). The classic representative of the GN group is postinfectious GN (PIGN), which can have both acute and chronic course.

In 1/3 of cases, acute PIGN becomes chronic. Chronic GN is a steadily progressing disease, cases of recovery from it are casuistically rare. In countries with a high socio-economic level of development, chronic GL ranks third among the causes of chronic kidney disease (CKD), and in a number of Asian and African countries - the first, which is due to the high prevalence of infectious diseases in the latter, the lack of conditions for effective treatment of diseases that contribute to the development of GL (Ayodele O.E., Alebiosu C.O., 2010; Jha V. et al., 2013).

In Uzbekistan, GL acts as the leading cause of terminal chronic renal failure, incompatible with life and requiring expensive renal replacement therapy (dialysis, transplantation of a donor kidney) (Bikbov B.T., Tomilina N.A. 2016). Currently, to establish the nature of the clinical course - acute and chronic course of GN, clinical and anamnestic data, general laboratory, biochemical studies of blood and urine, radiation research methods, determination of glomerular filtration rate - GFR (Mukhin N.A. et al., 2011) are used.

However, in clinical practice, difficulties often arise in the timely differentiation of acute GL and exacerbation of chronic GL at an early stage of the disease due to the lack of specific criteria for their diagnosis. It is usually possible to establish chronic GL when significant, irreversible damage to the kidneys has already occurred with the development of nephrosclerosis and the opportunity for timely diagnosis and treatment that prevents the progression of the pathological process in the kidneys has been missed.

**The purpose of the study.** Assessment of renal vascular hemodynamics in various clinical forms of glomerulonephritis in children.

**Material and methods.** To achieve this goal, a study was conducted of 74 children with GL, and 15 practically healthy children aged 3 to 18 years. The National Medical Center's nephrourology department was treating and examining the patients while they were hospitalized patients. Solving the issues of diagnosis, we were guided by the classification adopted at the All-Union Symposium of Pediatricians and Nephrologists [2]. All patients were examined in a state of preserved kidney function and were divided into 3 clinical groups. In Group 1 included children with nephrotic AGN syndrome (22 patients: boys - 16, girls - 6); group 2 consisted of children with nephrotic syndrome with hematuria (89 patients, including boys — 5, girls - 4); and group 3 consisted of children with nephrotic CGN (43 patients: boys - 27, girls - 16). Treatment of patients with CGN was carried out in the conditions of the nephrological department in a differentiated manner, taking into account the clinical form of the disease and the functional state of the kidneys, by traditional methods of pathogenetic therapy. Repeated examination of patients was carried out after reaching remission.

In addition to clinical examination, paraclinical methods were also used. Ultrasound examination (ultrasound) was performed on all patients in dynamics, during various periods of kidney disease activity, and included a complete examination of the abdominal organs in B -mode and a subsequent triplex kidney scan, including a greyscale mode, a flow cartogram and a spectral analysis of blood flow. The study was carried out on an APLIO 500 ultrasound machine using a convex sensor with a scanning frequency of 3.5 and 7.5 MHz.

The peak systolic blood flow velocity (Vps), the end diastolic velocity (EDV) and the time-averaged maximum blood flow velocity (Tmax) in the trunk of the renal artery, in the segmental, interlobular and arc arteries were determined. However, given that the accuracy of determining absolute blood flow rates largely depends on the magnitude of the angle between the long axis of the vessel and the ultrasound beam, and for distal renal arteries it is difficult to control, the assessment of renal hemodynamics was carried out by calculating "almost angle-independent" indices - resistance index RI (norm 0.6-0.7), pulsator index PI (the norm is 1.0-1.5) and the systolic-diastolic S/D ratio (the norm is 2.5-3.5). There was a significant high degree of direct correlation between all three indices of vascular resistance ( $r=0.92$ ;  $-0.96$ ,  $<0.05$ ). The total examination time ranged from 15 to 35 minutes.

We did not find significant age differences among healthy children, so we considered it possible to use the average values obtained in the group.

**The results of the study.** Analysis of pulse dopplerometry indicators showed that with all the nosological forms under consideration, violations of renal hemodynamics are noted during the active period of the disease. The most preserved blood flow was observed in patients with acute GL, nephrotic form. In this group, renal hemodynamic parameters were slightly lower than normal only at the level of the arc artery. They were not disturbed in the larger arteries. When analyzing the parameters of pulse Dopplerometry in the active period of GL without extrarenal manifestations, it was found that with AGN, all indicators of vascular resistance at all levels of the renal artery remained almost within the normal range, with the exception of a slight decrease in PI at the level of the arc artery.

The echo graphic picture of chronic glomerulonephritis in the greyscale mode depended on the phase and duration of the disease, so in the initial stages it was possible to note a slight increase in kidney volume and a slight increase in the echogenicity of the parenchyma. There were also more pronounced violations of CDK indicators: turbulence of blood flow (31.3%), asymmetry

of hemodynamic parameters (34.4%), location of rare, thinned and deformed vessels (6.3%), diffuse depletion of vascularization (31.3%).

When analyzing the velocity parameters of pulse dopplerometry in the active stage of CGN in children, there were no violations in large vessels, but starting from the interlobular artery they decreased, characterized by a significant decrease in diastolic blood flow velocity (Vd):  $7.4 \pm 0.08$  mm/sec and  $9.33 \pm 0.28$  mm/sec, respectively,  $p < 0.05$ . An increase in the resistance index (Ri) (norm 0.6-0.7) was also noted, amounting to in the trunk of the renal arteries ( $0.72 \pm 0.04$ ,  $p < 0.05$ ), in the segmental artery ( $0.65 \pm 0.06$ ,  $p < 0.05$ ), in the interlobular arteries ( $0.60 \pm 0.04$ ,  $p < 0.05$ ) and in the arc artery ( $0.53 \pm 0.04$ ,  $p < 0.05$ ); the pulsator index (Pi) (norm 1.0-1.5) was in the trunk of the renal arteries ( $1.47 \pm 0.15$ ), in the segmental artery ( $1.22 \pm 0.18$ ), in the interlobular arteries ( $1.00 \pm 0.10$ ,  $p < 0.05$ ); the systolic-diastolic ratio (S/D) (norm 2.5-3.5) was in the trunk of the renal arteries ( $3.52 \pm 0.39$ ), in the segmental artery ( $3.08 \pm 0.39$ ,  $p < 0.05$ ), in the interlobular arteries ( $2.41 \pm 0.27$ ,  $p < 0.05$ ) and in the arc artery  $2.24 \pm 0.14$ .

In the absence of extrarenal manifestations, the blood flow suffered mainly in the small (arc) arteries of the kidneys and was characterized by a decrease in vascular resistance indices. During the subsiding of GN, blood flow disorders in the form of a decrease in resistance indices occurred only in the arc artery. During remission, there was also no complete normalization of vascular resistance indicators (a slight decrease in indicators at the level of the arc artery was detected).

Thus, in the active period, with all the considered variants, there were violations of renal blood flow. However, it was most preserved in patients with the hematuria form of GL.

**Conclusions.** Thus, according to pulse Dopplerometry, the state of renal blood flow in GL is disturbed at various levels of the renal artery (in the trunk of the renal artery, segmental, interlobular and arc arteries). The most pronounced hemodynamic disorders are observed in the small arteries of the kidneys - interlobular and, especially, arc. At the same time, blood flow in large arteries can remain normal.

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## FEATURES OF NON-IONIZING RADIATION DIAGNOSTICS OF HYDROCEPHALUS IN CHILDREN

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**Abstract.** *The urgency of the problem of diagnosis and treatment of hydrocephalus in children remains an important socio-medical problem due to the prevalence of pathological conditions in the population, severe manifestations of the disease and the low effectiveness of the treatment methods used. Currently, a wide range of instrumental research methods are used to diagnose hydrocephalus. The possibility of early non-invasive diagnosis of hydrocephalus appeared due to the active introduction into clinical practice of computed tomography (CT), magnetic resonance imaging (MRI), ultrasound methods of investigation, in particular, neurosonography (NSG) and transcranial dopplerography (TCD) of cerebral vessels.*

**Keywords:** *children, hydrocephalus, neurosonography, computed tomography, magnetic resonance imaging.*

**Relevance.** Modern diagnostics of hydrocephalus in children is one of the most important problems in pediatric neurology and neurosurgery. According to the World Health Organization, the incidence of hydrocephalus in newborns is 1:4000. The high proportion in the structure of morbidity and mortality of children with congenital hydrocephalus imposes special requirements for the clinical and instrumental diagnosis of this form of cerebral pathology. To date, neurosonography (NSG) remains an actual method of diagnosing hydrocephalus in children of the first year of life. Advantages of the method: the possibility of multiple, daily examination; absence of X-ray radiation load; examination without transporting the child to the device and depending on the participation of an anesthesiologist in the examination (E.S.Pastukhova, Z.S. Karieva, 2015).

The simplicity and accessibility of performing NSG are an actual advantage over other methods used in elective neurosurgery of children of the first year of life (E.S.Pastukhova, Z.S.Karieva, 2015).

Clinical aspects of studies of children with hydrocephalus (active and passive) require functional verification of the features of vascularization of brain structures during life, which determines the relevance of this study. The first signs of impaired cerebrospinal fluid dynamics can manifest themselves at various stages of a child's development, leading to the formation of neuropsychiatric and motor disorders, and largely determining the prognosis of psycho-neurological development.

Despite the prevalence of perinatal lesions of the central nervous system among children, only 15%-20% of them are detected in the first days and weeks of life. The majority of authors associate the unfavorable outcome of perinatal lesions of the nervous system with the imperfection of prevention, diagnosis, as well as with untimely and inadequate therapy of this pathology, often passive monitoring of such children. The reserve of possible compensation is not only in the search for new means of therapy, but also in the choice of the moment of its application.



**The purpose of the study.** Improvement of the method of neuro sonography in hydrocephalus in children.

**Material and methods of research.** Ultrasound examination was performed in 49 children aged from 1 to 12 months with various cerebrospinal fluid disorders at the TashPMI clinic. The studies were carried out on Sonoscape 5000 and Aplio 500 ultrasound diagnostic devices using micro convex transducer with a frequency of 7.0 – 12.0 MHz. The results of neuro sonography were confirmed by magnetic resonance imaging (MRI) and multispiral computed tomography (MSCT).

Special medical preparation and anesthesia were not required for ultrasound examination of the brain in newborns and young children. The severity of the condition was not a contraindication for neuro sonography. The transducer was placed on a large fontanel of the skull and scanned in the coronary plane. By changing the tilt of the sensor, sections were sequentially obtained through: A - frontal lobes; B - anterior horns of the lateral ventricles; C -interventricular foramen (Monroe's hole) and III ventricle; D - bodies of the lateral ventricles; D - triangle of the lateral ventricles; E - occipital lobes.

The sensor was turned 90 degrees to enable scanning in the sagittal plane. The right and left hemispheres of the brain were captured by adjusting the sensor's inclination: W - median sagittal section through the III and IV ventricles of the brain, corpus callosum, cerebellar worm, brain stem; 3 -parasagittal section through the caudothalamic notch (angle of inclination of the sensor 10° from the median section); And - parasagittal section through the lateral ventricle (the angle of inclination of the sensor is 15°-20° from the median section); K is the parasagittal section through the "island" (the angle of inclination of the sensor is 40°-50° from the median section).

The analysis of the echogram included an assessment of the state of the parenchyma of the brain, ventricular system and cisterns, the severity of convolutions and pulsation of cerebral vessels. When identifying additional pathological foci or structures in the parenchyma, their qualitative characteristics and localization were given. According to the degree of echogenicity, echo-free (anechoic), increased (hyperechoic) and reduced (hypoechoic) echogenicity, homogeneous (homogeneous) and heterogeneous (heterogeneous) formations were distinguished.

**The results of the study.** In 49 examined children, ultrasound revealed various degrees of severity of cerebrospinal fluid disorders. Moderate hydrocephalus was detected in 11, moderate severity - 23 and pronounced degree - 15 patients. They were characterized by dilation of the ventricular system in 5 children, abnormalities of brain development - in 14, subarachnoid cysts - in 2, neoplasms of the cerebellar worm, cavities of the III and IV ventricles - in 13, polycystic brain - in 4, atrophy of the cortex and white matter - in 2, previously suffered inflammatory (6) and hemorrhagic (3) diseases. Periventricular hemorrhage (PVH) revealed the presence of blood clots in the lumen of the lateral ventricles with their expansion, grade IV PVH were characterized by hyperechoic formations with clear contours located above the body of the lateral ventricle (parenchymal hemorrhage), as well as in its lumen. During dynamic observation, an inhomogeneous echo structure of this formation was noted with the formation of a porencephalic cyst in the future. Brain development abnormalities were represented by: Arnold-Chiari type II malformation - 9 cases, a variant of the Dandy-Walker anomaly – 3 cases and Crouzon syndrome in 1 child. All patients underwent repeated dynamic ultrasound examination of the brain, positive dynamics was noted in 43 cases, and in 6 cases there was no improvement in their condition after a course of drug therapy or surgery. After bypass surgery of the cerebrospinal fluid system, patients

underwent neuro sonography and assessed the correct position of the ventricular end of the catheter, the presence of various hematomas and subdural fluid accumulations (pseudo hygromas), ventricular collapse, the development of porencephaly and other complications.

**Conclusions.** Neuro sonography is an informative method in the diagnosis and assessment of the severity of brain damage in young children with various forms of cerebrospinal fluid disorders. Neuro sonography allows us to assess the dynamics of changes after cerebrospinal bypass surgery and their complications.

CT and MRI are of primary importance in objectifying the nature and localization of intracranial hypertension (ICH). However, in children, the use of these methods is associated with many additional difficulties. Therefore, the main method of visualization of CHG is ultrasound examination of the brain – neuro sonography (NSG).

The most recognized was the method of research through a large fontanel, proposed by E. G. Grant in 1986. According to the literature, the overdiagnosis of hydrocephalus is due to the fact that until now, not only among doctors of different specialties, but also among neurosurgeons, there is no common understanding of what pathological process is meant when the diagnosis of hydrocephalus is formed.

Thus, the cause of the development of hydrocephalus is an imbalance between the production and resorption of cerebrospinal fluid, and it does not matter what caused it - as a result of hyperproduction, malabsorption or occlusion of the cerebrospinal fluid pathways. The main thing is that more cerebrospinal fluid is produced than absorbed, and the lingering cerebrospinal fluid, like any additional intracranial volume, leads to an increase in intracranial pressure and a decrease in the volume of brain matter. In addition to the sequence of events, the following main symptoms of hydrocephalus follow from the definition: excessive accumulation of cerebrospinal fluid in the cranial cavity (76%), progressive increase in cerebrospinal spaces (83%), high intracranial pressure (91%), a decrease in the volume of brain matter (61%).

It follows from this definition that hydrocephalus always proceeds with an increase in intracranial pressure, and if so, then there are no such forms as normotensive and, moreover, hypotensive hydrocephalus in children with posthemorrhagic hydrocephalus. Reduction of CSF production occurs only with an increase in intracranial pressure by more than 300 mm of water, but this happens in terminal situations and does not have a significant effect on intracranial pressure, because mechanisms have already been launched that have become self-sufficient and support intracranial hypertension due to the vicious circles that have formed. In other words, if the listed measures to normalize intracranial pressure are insufficient, then decompensation occurs and the process becomes uncontrollable - hydrocephalus develops.

Considering the above, when there is an imbalance between production and resorption (we are talking only about the communicating form of hydrocephalus), the fluid entering the ventricles increases the pressure in them, which, with some delay, is transmitted to all liquor spaces. Which leads to an increase in pressure in them and, as a result, the expansion of all liquor-containing spaces due to compression of the parenchyma of the brain, but for a very short period of time, because the brain is a poorly compressible substance, because it itself consists of almost 80% water.

Neuro sonography is a sensitive method for detecting periventricular hemorrhage, intraventricular hemorrhage, periventricular leukomalacia, meningoencephalitis. Detection of subarachnoid hemorrhage depends on the size and localization of the lesion. Increasing

ventriculomegaly and posthemorrhagic hydrocephalus were observed more often with periventricular hemorrhage III and IV. Occlusion was noted more often at the level of the plumbing and the Monroe hole. With pronounced dilation of the ventricles, the ventricular index increases.

The detection of intracranial hypertension based on clinical, Doppler graphic data and direct measurements of intracranial pressure, the increase in the volume of the ventricular system and compression of subarachnoid spaces made it possible to differentiate hydrocephalus from other conditions similar in clinical and Introscope picture, avoiding overdiagnosis, the appointment of unreasonable treatment.

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## THE ROLE OF TRIPLEX ECHOGRAPHY IN THE DIAGNOSIS OF MALIGNANT KIDNEY FORMATIONS

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**Abstract.** *Diagnosis of kidney neoplasms remains an urgent problem. The aim of the study was to improve the diagnosis of malignant kidney tumors using modern methods of triplex echography. Materials and methods of research. The work is based on the data of a comprehensive study of 70 patients aged 29 to 77 years who were examined on the basis of the Tashkent Pediatric Medical Institute in the Republican Specialized Scientific and Practical Center of Oncology and Radiology in 2014-2022. The light-cell type of renal cell carcinoma was the most common. Much less often there was a granular cell type of renal cell carcinoma, as well as a spindle cell or sarcoma-like type of renal cell carcinoma. Epithelial tumors of the renal pelvis accounted for only 4.3% of the total number of malignant neoplasms.*

**Keywords:** *malignant kidney tumors, diagnostics, modern methods of triplex echography, complex method of ultrasound diagnostics, Dopplerography.*

**Relevance.** Diagnosis of kidney neoplasms remains an urgent problem. In the structure of all oncological diseases, malignant neoplasms of the kidneys occupy more than 3% (Siegel RL, Miller KD, Jemal A. Cancer statistics, 2017). Clinical signs of a tumor lesion of the kidney do not have sufficient specificity, and patients often seek specialized medical care a few months after the appearance of the first symptoms of the disease (Axel E.M., Matveev V.B., 2019).

Despite significant progress in the development of medical technology and radiation research methods, the diagnosis of kidney cancer, especially in the early stages, remains unsatisfactory. Despite the fact that the use of a complex of the latest research methods, such as multilayer spiral computed tomography, dynamic contrast magnetic resonance imaging and positron emission tomography, has an obvious advantage in the accuracy of diagnosis, the ultrasound method of investigation has become the most widespread in wide clinical practice, which has recently been enriched with new unique techniques (Koln A.A., Schmidt S.S., Kupchin A.V., Berdichevsky B.A., 2020).

The introduction of new ultrasound systems into clinical practice, such as Dopplerography, has significantly expanded the possibilities of ultrasound diagnostics in obtaining objective data on the state of the kidneys in their various diseases. The use of ultrasound examination (ultrasound) for the diagnosis of kidney neoplasms distinguishes it favorably from other radiation research methods by the possibility of obtaining a real-time, virtual image with the determination of its volume and structure. The use of Dopplerography techniques allows in one study to accurately assess the degree of blood supply to the neoplasm and impaired blood flow through the main vessels of the kidney (Zarzour JG, Porter KK, Tchelepi H, Robbin ML., 2018).

At the same time, the possibilities of using the latest ultrasound technologies in the diagnosis of kidney neoplasms have not been sufficiently studied.

The aim of the study was to improve the diagnosis of malignant kidney tumors using modern methods of triplex echography.

**Materials and methods of research.** The work is based on the data of a comprehensive study of 70 patients aged 29 to 77 years (average age  $51.5 \pm 1.6$  years) who were examined at the Tashkent Pediatric Medical Institute in the Republican Specialized Scientific and Practical Center of Oncology and Radiology in 2014-2022. All examined patients underwent complex echography.

The most important thing when conducting a kidney examination and for visualization of renal vessels, especially the main trunks, is the choice of the optimal scanning window. Since visualization of the kidneys and renal arteries is most hindered by intestinal loops, it is necessary to look for the optimal scanning angle by moving the sensor. The study of the kidneys was carried out polypositionally and to visualize the kidneys, we used a lateral position, when the patient lies on the left or, respectively, right side and the sensor is located on the lumbar region. By applying compression and adjusting the depth of inhalation and exhalation, you can achieve good visualization of the kidneys. The CD made it possible to visualize segmental arteries (the area of the central echo complex of the kidney), interlobular (pass in the medulla along the pyramids) and arc (bend around the bases of the pyramids at the border of the cortical and medulla) arteries of the kidney.

70 patients with malignant kidney tumors were examined, in whom the diagnosis of kidney cancer was verified morphologically in 67 (95.7%), of them were operated on with subsequent histological examination of the neoplasm in the removed kidney, in 3 patients (4.35%) the diagnosis was confirmed at autopsy.

The results of the study. The light-cell type of renal cell carcinoma was the most common (71.4%). Granular cell type of renal cell carcinoma was much less common (15.7%), as well as spindle cell or sarcoma-like type of renal cell carcinoma (8.6%). Epithelial tumors of the renal pelvis accounted for only 4.3% of the total number of malignant neoplasms. Among all cases of renal cell carcinoma (67), 65 had nodular forms and 5 had infiltrative forms by the nature of growth. In the B-mode, nodular forms of renal cell carcinoma most often represented an exophytic (95.7%) node, always rounded or polycyclic in shape with clear (94.9%) boundaries. In the infiltrative, sarcoma-like variant of renal cell carcinoma, the tumor in all cases did not have a definite shape, its boundaries were vague, the kidney was enlarged in size, but its bean-shaped shape remained (90.9%). In the B-mode, the tumor was difficult to differentiate, its presence could be judged by the thickening of the parenchyma, in which there was no differentiation into cortical and cerebral matter.

The dependence of the structure of nodular renal cell carcinoma (62 observations) on its size was found. Tumors of less than 3 cm in size (17 patients) were homogeneous, mainly hyperechogenic (76.4%) and iso-echogenic (23.6%), a hypoechoic rim was visualized around the node in almost half of the observations, in all cases the acoustic effect of dorsal sound amplification with marginal attenuation was revealed. Small tumors in 100% of cases had a homogeneous echo structure. Tumors larger than 3 cm (45 patients) in most cases were acoustically heterogeneous, with alternating sites of different echogenicity.

Among them, 34 revealed isoechoic tissue with hypoechoic sites and 28 - hyperechoic tissue with isoechoic sites. In some patients, the tumor was homogeneous: hypoechoic - in 11.3% of cases (7 patients) or isoechoic - in 14.5% (9 patients). Small calcifications were sometimes detected inside the neoplasms (7.2%). Renal cell carcinoma often has a glandular structure. Such tumors consisted of acinar, tubular, cystic and papillary structures of various sizes and shapes. It

should be noted that in all 11 patients with the infiltrative form of renal cell carcinoma, the tumor also had a size larger than 3 cm, in 9 (81.8%) it was hypoechoic on echograms, in 2 - isoechoic.

Studies using Doppler techniques in patients with renal cell carcinoma revealed significant changes in the intrarenal angioarchitectonics and hemodynamics of the organ. In all patients of the examined group, we noted the displacement of the renal vascular network by the tumor and the rupture of the lobular and segmental arteries at the border with the tumor.

If in a normal kidney uniform vascularization and abundant microcirculatory bed are manifested in CD by continuous diffuse staining of the cortical substance of the kidney, then a defect of continuous staining occurs at the site of tumor localization due to the absence of a functioning microcirculatory bed. Against the background of this defect, only the newly formed pathological vascular network is visualized.

In our studies using Dopplerography, regardless of the size of the tumor, the phenomenon of diffuse parenchymal staining defect has always been present. Visualization of the vascular network was significantly improved with targeted examination in magnification mode.

To assess the features of vascularization of neoplasms, we divided all observations with nodular forms of renal cell carcinoma into 3 groups.

The first group included 42 patients in whom, with CD and ED, the color signals of blood flow inside the tumor merged during the study and formed a picture of the newly formed pathological tumor vascular network, the second group included patients who had multiple isolated color signals of arterial and venous blood flow, the third group included patients who had color signals inside the tumor there was no blood flow. Branched vascular network, according to the CD, was detected by us in 79.1% of patients, with ED - in 91.0% (the first group).

Less pronounced vascular structure in the form of multiple color signals of blood flow was in 11.9% of patients with CD and only 6.0% of patients with ED (the second group - 8). We found a complete absence of color signals from tumor vessels in 9.0% of patients with renal cell carcinoma with the help of CD and in 3.0% with ED (the third group).

The features of vascularization of infiltrative forms of renal cell carcinoma (11 patients) are: the presence of the phenomenon of displacement and dilation of vessels (100% of observations), rupture of one or more renal vessels inside healthy tissue lying to the tumor (81.8% of cases). In ED, a defect in the staining of the cortical layer is detected in the area of localization of the neoplasm. Pathological intra-tumor vascularization in CD and ED was not detected in any patient. In the majority (72.7%) of patients with sarcoma-like cancer, we also noted a characteristic diagnostic sign: in the area of the affected segment, one or two segmental arteries with CD gave a brighter staining. Analysis of the spectrum of blood flow curves in segmental arteries showed that its maximum systolic blood flow velocity in the arteries supplying the affected segment significantly exceeded the maximum systolic velocity in the segmental arteries feeding the intact parts of the kidney.

The use of pulsed-wave Dopplerography in renal cell carcinoma made it possible to clarify changes in intrarenal hemodynamics. For the majority of patients, the predominance of changes in the peripheral vascular bed of the kidneys was characteristic. Hemodynamics in the main renal arteries suffered in a small number of patients. While 79.7% showed an increase in the diameter of the renal artery, only 29.7% showed a slight increase in the maximum systolic blood flow rate by no more than 20%.

Intracellular hemodynamics was studied in 46 out of 67 patients with renal cell carcinoma. The group under consideration did not include 11 patients with infiltrative tumors and 10 patients with nodular renal cell carcinoma, in whom intracellular vessels were not detected during CD. The analysis of vascular architectonics and velocity distribution is carried out. In 33 patients (71.7%), large intra-tumor vessels with high-speed flows were detected. Since the blood supply to the tumor in the kidney is mainly due to the segmental level arteries, we compared the maximum systolic blood flow rate in the main vessels of the tumor with its level in normal renal segmental arteries.

In the vessels “feeding” the tumor, the maximum systolic blood flow rate was 1.5-2 times higher than in the neighboring segmental artery in 46.7% of cases, in 26.2% the excess was 2.1-3 times. It turned out that a large “feeding” vessel with a high blood flow rate was found with the same and rather high frequency both in patients with infiltrative forms of cancer (8 patients - 72.7%) and in nodular forms of renal cell carcinoma (49 patients - 73.1%).

Peripheral intracellular circulation was studied by us in patients in whom multiple color signals of blood flow, or a branched vascular network, were detected in ED, since the latter technique has a higher sensitivity to blood flow with lower speeds.

We compared the hemodynamic parameters of tumors larger than 3 cm (50 cases) and not exceeding 3 cm (17 observations). A pronounced variety of blood flow rates in small intracellular vessels was noted.

In the majority of patients (68.0%) with large tumors in the intracellular arteries, maximum systolic blood flow rates were recorded, comparable to those in both the arcuate, lobar, and segmental arteries of the intact part of the kidney. In 30.0% of cases of large tumors, as in all other observations, the maximum systolic blood flow rates were comparable to those in the lobular and arcuate arteries.

In addition to patients with renal cell carcinoma, 3 people with epithelial cancer of the renal pelvis were included in the group of patients with histologically verified kidney cancer. All patients were male aged 50 to 65 years. In 2 observations, the echographic pattern did not have tumor-specific features. In another 1 patient, papillary cancer had a focal form and was localized in the cups of the kidney.

During B-mode echography, a rounded area with a structure of lower echogenicity than parenchyma was visualized inside the kidney. Behind him, the effect of acoustic amplification was noted. The formation had a homogeneous structure, was surrounded by a calyx wall of increased echogenicity, a thinned layer of parenchyma was traced around. The use of Doppler methods did not reveal color signals of blood flow inside the described formations. Vascular architectonics of the kidney was slightly changed due to the dilation of the vessels of the affected segment.

Thus, based on the data obtained, it was found that in patients with a light-cell histological variant of renal cell carcinoma, the tumor has a rounded or polycyclic shape, clear boundaries, and non-organ growth prevails.

Malignant tumors smaller than 3 cm had a homogeneous structure, more often they are hyperechoic, in half of the cases - with a hypoechoic outer rim. The use of Doppler methods makes it possible to detect a pronounced intracellular vascular network in almost all patients with nodular forms of renal cell carcinoma (97.4%).

In 72.8% of cases of nodular renal cell carcinoma, the use of Doppler techniques makes it possible to identify the vessels feeding the tumor; the maximum systolic blood flow rate in them is 1.5-3 times higher than this indicator in segmental arteries. Renal cell carcinoma is characterized



by a variety of maximum systolic blood flow rates in intracellular vessels and the absence of a regular decrease in IR from larger vessels to smaller ones.

For patients with a spindle-cell (sarcoma-like) variant of renal cell carcinoma, the infiltrative nature of growth is characteristic, the tumor does not have a definite shape, its boundaries are vague, the kidney is enlarged in size, but its bean-shaped form is preserved, the echogenicity of the tumor is more often reduced. Kidney vascularization in these tumors has features: blood flow is not registered in the tumor itself, although a parenchymal staining defect is detected in ED, the main vessels of the kidney are displaced, in most cases (81.8%) their rupture is detected, quite often (72.7%) a vessel “feeding” the tumor with a high blood flow rate is detected.

The main ultrasound signs of localized kidney cancer in the B-scan mode can be considered: the presence of focal isoechogenic heterogeneous pathological parenchyma formation characterized by exo- or endophytic growth.

Whereas the Dopplerographic picture of kidney cancer is characterized by pathological vascularization of the tumor focus, which in our observations in 75% of patients was hypervascular in nature, with the presence of a characteristic network of pathological vessels.

**Conclusions.** Thus, the complex method of ultrasound diagnostics makes it possible to visualize segmental arteries (the area of the central echocomplex of the kidney), interlobular (pass in the medulla along the pyramids) and arc (bend around the bases of the pyramids at the border of the cortical and medulla) arteries of the kidney. Pathognomonic ultrasound symptoms of kidney neoplasm are the presence of an uneven external contour, as well as a focal formation penetrating to different depths into the renal parenchyma.

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## HISTORY OF HEALTH AND SAFETY OF TEXTILES INDUSTRY

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**Abstract.** *This article analyzes the research conducted on the identification of hazardous effects of textile industry products and raw materials on human health, as well as the possibilities of eliminating safety and health risks.*

**Keywords:** *textile, thread, fabric, dyes, fiber, silk yarn, cotton, synthetic fiber, ecological problems, health and safety.*

**Main part:** Textiles industry: Term textile industry ( Latin texere, to weave for ) initially of fibers gasses in knitting applied if it is, now it is knitting, knitting, felting and others such as wide scope another process own into takes It is also natural or synthetic of fibers yarn preparation as well as fabrics finishing and to paint own into takes.

Thread to make: From history previous in periods of animals hair, plants and seeds fibers preparation for used Silk in China from AD appeared in the previous 2600 years has been and from AD in the middle of the 18th century BC the first synthetic fibers created Cellulose or from petrochemicals prepared synthetic fibers, single himself or another synthetic and natural fibers with different in combinations, increasingly more apply started although they are wool, cotton, linen such as natural of fibers prepared fabrics complete holding could not stand and silk

Silk yarn harvest to do for to each other connection possible has been in filaments harvest has been the only one natural is fiber . Other natural fibers first smoothing, combing to parallelize through and after spinning through continuously to the thread weight need The spindle the most ancient spinning is a tool; He is the first times in Europe from AD rotating in the previous 1400s the wheel invention with mechanized. At the end of the 17th century invention done spinning jenny, one of time in itself one how many spindles manage can Then Richard Arkwright's invention because of rotary frame in 1769 and by Samuel Crompton presentation mule, This is one to the worker one of time 1,000 spindles manage enable gave, yarn work release summer from industry to the mill passed.

From fabric to make: Fabric making is the same so to history have was Ancient of times since hand bench main weaving machine being came Mechanic improvement ancient in times development with started hunting, alternative turning threads connected; in the 13th century AD, leg run, one how many collections collection administration current done of the addition of with to the frame installed board, weaving or filler threads own to the place " Mechanized " machine in Europe and whole the world across original hand machines preserved the rest traditional cultures from this exception, superior weaving to the tool turned.

John Kay invention aircraft in 1733 to the weaver the shuttle weaving of the machine width across automatic respectively dispatch enable giver weaving in mechanization the first step it has been. Edmund Cartwright work came out with steam working bench and in 1788 James Watt with In England by steam working the first textile factory built These mills water with working to cars

from addiction get rid of did and them desired in the place to build enable gave, Another one important development was punch card in 1801 in France Joseph Marie Jacquard by work developed system; this patterns automated way knitting enable gave From wood made previous powerful machine tools little by little steel and another of metals made machine tools with replaced. Since then since technological changes them bigger, faster and high level automated to do directed.

Paint and printing for natural paints initially threads and dyeing fabrics for used, but coal in the 19th century with tar of paints discover to be done and synthetic in the 20th century of fibers development with to paint processes more complicated . Press the block release initially fabrics to paint for used ( fabrics silk screened pressing release in the mid -1800s work developed ), but quickly meanwhile it is rolled print with replaced . Engraved copper rollers the first times in 1785 in England applied, then fast improvements as a result six in color roller printing enable gave Modern roller pressing release 16 or 180 minutes from him more than in color from printed 1 m more than cloth work release can.

Termination: Initial times fabrics brushing or cutting, fabric to fill or measure or glazed effect Create for calendar from the rolls transfer through finished Today's in the day fabrics in advance shortened, mercerized ( cotton threads and gasses strength and brightness improve for caustic solutions with processing is given ) and different finishing processes with processing given, for example, folds durability, folds holding to stand and to water, to fire and to rot durability increases .

Special procedures work is released highly efficient fiber, unusual strength and very high to the temperature endurance because of so named So to nylon similar fiber Aramid steel stronger and From aramid prepared Kevlar fiber heat and chemical to substances resistant bullet impermeable cloth and clothes preparation for is used . Carbon, boron, silicon, aluminum and other materials with combined another synthetic fiber in planes, space on ships, chemical resistant filters and in membranes, protective sports equipment used light, extreme strong structural materials work release for is used .

Safety and health issues: As machines have gotten bigger, faster, and more complex, they've also introduced new potential hazards. As materials and processes became more complex, they made the workplace a health hazard. And as workers were forced to cope with the demands of mechanization and increased productivity, largely unrecognized or ignored job stress became increasingly detrimental to their well-being. Perhaps the greatest impact of the industrial revolution was on social life, as workers moved from the country to the cities, where they had to contend with all the ills of urbanization. These effects are seen today as textiles and other industries move to developing countries and regions, only the changes are faster. The risks encountered in different segments of the industry are summarized in other articles in this chapter. They emphasize the importance of good housekeeping and proper maintenance of machinery and equipment, effective guards and barriers to avoid contact with moving parts, and the use of local exhaust ventilation (LEV) as a supplement to good general ventilation and temperature control. they emphasize. Providing appropriate personal protective equipment (PPE) and clothing if the hazard cannot be completely controlled or avoided by design and/or substitution of less hazardous materials. Continuous education and training of workers at all levels and effective supervision are constant themes.

*Ecological problems:* Textiles industry by raised ecological problems two from the source come comes out: textile work release with depends processes and of products use with depends risks.

Textiles work release: Textiles enterprises by created main ecological problems into the atmosphere and waste to the waters coming out poisonous are substances . Potentially poisonous to substances addition unpleasantly smells most of the time problem is especially building and printing press enterprises residential buildings nearby located Ventilation in waste solvents, formaldehyde, hydrocarbons, hydrogen sulfide and metal of compounds vapors to be can Sometimes solvents caught and re use for distilled to be can Particles filtering through take thrown away can Scrubbing methanol such as in the water soluble the pilot compounds for effective, but it is hydrocarbons of waste a lot part organize which pigmented in publication doesn't work Flammable substances turn on to be sent but it is possible relatively expensive However, the final solution is possible as long as emission free has been of materials use Not only that in the printing house used paints, binders and mutually binder to substances, perhaps of fabrics formaldehyde and also applies to the residual monomer content.

### **Conclusion**

Summary: Textiles in the industry work being released fabrics types increase and productivity in raising technological development continue is doing However, the most the important thing is these developments as well as employees health, safety and well-being to increase directed . But that's it despite these developments financial in terms of limited and necessary investments done to increase able didn't happen old in enterprises, as well as new to industries have to be who wants developing in the regions even health and safety at the expense of done increase problem there is workers However, such under the circumstances, they face coming possible has been risks minimize for employees teaching and teaching through a lot to something reach can.

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## COMPLEX ECHOGRAPHIC DIAGNOSIS OF SOFT TISSUE TUMORS

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**Abstract.** *Differential diagnosis of soft tissue neoplasms remains an urgent problem in oncology. From this position, we analyzed the possibilities of ultrasound tomography using Dopplerography in determining the criteria for the benign and malignancy of soft tissue neoplasms. Malignant tumors are characterized by either a multi-nodular formation, which can reach large sizes, irregular shape, with an asymmetrical outline, heterogeneous structure, with a reflection of reduced intensity and increased vascularization in it and high indices of peripheral resistance index. Benign neoplasms are characterized by the following signs: the presence of one node of small size (up to 3 cm), a regular rounded shape, with a clear outline.*

**Keywords:** *soft tissues, ultrasound, tumors, cancer.*

The problem of early diagnosis of tumors of the musculoskeletal system is still far from being solved. Traditional methods of examination, including a complex of various modifications of X-ray examinations, are associated with high radiation loads, high cost and are limited in their repeated use in terms of both diagnosis or evaluation of treatment results and subsequent dynamic follow-up for the purpose of early detection of disease recurrence. At the same time, already in the first reports on ultrasound examination (ultrasound) of soft tissues, it was noted that tomograms reveal details that are not determined by radiography.

Further studies have shown that the method of echography allows to determine the nature of the pathological process with high differential diagnostic accuracy, and the possibilities of ultrasound in detecting soft tissue tumors (STT) they're not only not less than, but in some cases exceed the sensitivity of the X-ray method, including CT [1,3,4]. Doppler techniques open up completely new prospects in ultrasound diagnostics of volumetric soft tissue formations [5,6].

The publication was motivated by the aim to. Systematize data regarding the potential application of complex ultrasound tomography in the diagnosis of soft tissue neoplasm. Additionally, the goal was to figure out the informative value of the method in evaluating the effectiveness of therapy and early detection of relapses.

**The purpose of the study.** To improve the diagnosis of soft tissue tumors through the use of complex echo graphic studies.

**Materials and methods of research.** In order to clarify ultrasound semiotics, we analyzed the ultrasound results of 174 patients with soft tissue tumors observed from 2019 to 2023. In 126 (72%) patients, malignant neoplasms were detected, in 41 (24%) - benign tumors, in 7 (4%) - non-tumor changes. Modern ultrasound tomographs allow obtaining a detailed image of the tissues and structures of the musculoskeletal system. The use of multi-frequency sensors with the possibility of changing the operating scanning frequencies in the range from 5 to 13.5 MHz makes it possible to determine the presence of pathological changes in soft tissues - mainly when examining large arrays of soft tissues (hip, buttock area) and in overweight patients, convex transducer with low scanning frequencies (2-5 MHz) were used. As is known, the dimensions of the ultrasound image obtained are limited by the width of the sensor used. Therefore, with extensive changes, the

determination of the true boundaries of the tumor process, the ratio of the tumor to the surrounding areas with a length of up to 60 cm. The diagnostic search algorithm for ultrasound of the musculoskeletal system can be formulated quite briefly: a sequential study and analysis of the image from the skin level to the underlying bone structures in order to identify or exclude volumetric formation. When visualizing a volumetric formation, its localization is determined, its shape, size (in three mutually perpendicular planes) and the number of nodes, its outline, the internal structure and intensity of reflection of ultrasonic waves from it, the presence and thickness of the capsule. Be sure to fix the condition of the surrounding tissue neoplasm (edema, infiltration, thickening and / or violation of the integrity of the surface of bone structures) and, finally, study the degree of tumor vascularization and the condition of the main vessels (displacement, deformation, infiltration, the presence of blood clots).

To identify and assess the condition of the main vessels and the degree of vascularization of neoplasms, the energy Dopplerography mode was used. This technique is a modification of the color mapping mode differs from the original one in that it allows you to display a two-dimensional picture of the location and shape of vessels, highlighting them in one color against the background of a conventional image in B-mode. In this sense, it is close to the method of radiopaque angiography and allows you to observe vessels with low blood flow rates and small diameter. The method's benefits include a high frame rate, near total independence from the angle of Doppler scanning, enhanced sensitivity in comparison to other Doppler techniques, and the lack of uncertainty in spectrum measurement.

In order to determine the possibilities of Dopplerographic techniques in the diagnosis of malignant neoplasms of soft tissues and to identify the characteristics of the nature of blood flow, color and energy mapping techniques, as well as pulse-wave Dopplerography were used. The results of Dopplerography of 110 patients were analyzed. In 16 (13%) patients, the blood flow in the tumor was not visualized. Depending on the number of intra-tumor vessels, all observations were conditionally divided into the following groups: type I blood flow - with the presence of a single vessel; Type II blood flow – with the presence of 2 to 5 vessels, type III blood flow - with visualization of more than 5 vessels.

**Results and discussion.** When comparing the histological type of tumor and its size, it was found that synovial sarcoma was more often small (from 0 to 3 cm and from 3.1 to 6.0 cm). The largest number of patients with node sizes from 3.1 to 6.0 cm and more than 15.1 cm was traced in the group with liposarcoma. Patients with malignant fibrous histiocytoma (MFH) were found in all selected groups, but most often with tumor sizes from 6.1 to 9 cm and from 12.1 to 15 cm. A similar trend can be found in the analysis of other, rarer forms of soft tissue sarcomas. Given these data, it is impossible to distinguish any histological variant of the neoplasm by its size. However, malignant tumors of more than 9 cm are significantly more common ( $p < 0.001$ ). The majority of malignant tumors were represented by a single node -51.0% of patients. The multi-node structure of the neoplasm (3 or more nodes) was found in 35.0% of patients. Solid structure was more typical for such neoplasms as synovial sarcoma and rare sarcomas ( $p < 0.001$ ). MFH and liposarcomas represented the largest group in both single-node and multi-node variants of tumor development.

In this manner, malignant neoplasms of soft tissues are significantly more likely to have an irregular shape – 61% ( $p < 0.05$ ), an irregular outline – 78% ( $p < 0.01$ ), an inhomogeneous structure – 84% ( $p < 0.01$ ) and are usually represented by a solid formation – 95% ( $p < 0.01$ ), with a reduced intensity of reflection from the tumor – 75% ( $p < 0.05$ ), the sign of clarity and indistinctness of the



contours of malignant neoplasms had no significant differences, since it occurred in almost the same number of cases – 56 and 44%, respectively. Solid-cystic or cystic structure is not characteristic of malignant soft tissue tumors and was determined only in 3% of patients with MFH and myogenic sarcoma.

Areas of increased intensity were observed in 17% of cases and during morphological examination corresponded to the growth of connective tissue. Calcification were represented by inclusions with an acoustic shadow and were visualized in 14% of observations. In most cases, when assessing the features of the ultrasound picture of various histological variants of malignant neoplasms of soft tissues, pathognomonic ultrasound signs were not detected. Only liposarcomas in 60% of the observations were characterized by an increased intensity of reflections from the structure of the formation.

By ultrasound tomography it is also possible to assess the prevalence of the tumor on the surrounding tissues, bones and the relationship to the main vessels. In our study, in 3 cases, ultrasound revealed the spread of soft tissue tumors to the bone, which was confirmed by morphological examination of postoperative material. In the distribution of patients, depending on the nature of vascularization, it was noted that a single tumor vessel was detected in 7.3% of cases. For most neoplasms, the image of 2 to 5 vessels was characteristic - 63.6%, visualization in the node of more than 5 vessels was noted in 29.1% of patients; type II blood flow was observed in all histological forms of tumors in the vast majority of cases - up to 100% in the group with neurogenic sarcomas; type III blood flow was detected in fewer cases, and its predominance in the group with lymphosarcoma is explained by the significant size of tumor nodes - from 9.1 to 12 cm. Significantly more often in patients with malignant soft tissue tumors, type II and III of blood flow were encountered ( $p < 0,001$ ). During pulse-wave Dopplerography, the velocity indices of blood flow and peripheral resistance indices were calculated and evaluated. In all histological types of tumors, there was a pronounced variation in absolute hemodynamic parameters. Therefore, it is not possible to identify the dependence of a certain histological variant on hemodynamic parameters. All malignant neoplasms were characterized by high numbers of peripheral resistance indices, which, apparently, can be explained by the peculiarity of the structure of tumor vessels, which are convoluted structures with multiple areas of stenosis and occlusion. Perhaps this explains the large variation in the absolute values of blood flow in the intracellular vessels, which does not contradict the literature data. It should be noted that the highest values of speed indicators were recorded in patients with neurogenic and angiogenic sarcomas - up to 68 and 60 cm/s, respectively.

When studying the ultrasound semiotics of benign soft tissue neoplasms in the In-mode, the results of the study of 41 patients were analyzed. It was revealed that benign neoplasms are more characterized by a relatively small size - up to 3 cm (34.3%), which was observed in neurofibroma, myxoma and giant cell tumors ( $p < 0,001$ ). Only desmoid and lipoma reached large sizes - 15 cm or more. The majority of patients with benign tumors were characterized by the presence of a single tumor node – 85.4%. The exception was patients with lipoma, where in one case 2 nodes were observed, and a multi-node form with the presence of three or more nodes was found only with desmoids.

When analyzing the data obtained, we noted a pattern of ultrasound signs characteristic of most benign tumors (excluding desmoid).

The diagnosis of soft tissue tumors causes certain difficulties and therefore requires special consideration with the analysis of errors and difficulties of the diagnostic process. Often, patients who have been diagnosed with a "soft tissue tumor" actually have a non-tumor disease. At the same time, there are quite a lot of pathological processes similar to soft tissue neoplasms. For this purpose, we initially identified the possibilities of ultrasound tomography in the visualization of soft tissue neoplasms with subsequent differential diagnosis of tumor and non-tumor changes.

The group of non-tumor diseases included patients with an inflammatory process (Myositis ossificans, ganglion cyst, villonodular tenosynovitis) and an organized hematoma. The inflammatory process is characterized by the absence of a tumor node, swelling of soft tissues and increased vascularization on ultrasound tomograms. Myositis ossificans, was a site of chronic inflammation of irregular shape, heterogeneous structure with areas of increased intensity and single vessels. Ganglion cyst was defined as a cystic formation with heterogeneous contents, partitions and single vessels in the capsule.

Villonodular tenosynovitis is classified as "non-tumor or doubtfully tumor processes resembling true neoplasms" (WHO). The process often affects large joints and, when morphologically examined, is characterized by a pronounced thickening of the synovial membrane of the joint with nodular and villous growths. On ultrasound tomograms, it is visualized in the form of a solid irregular formation with an uneven contour and an inhomogeneous structure, located in the joint area with a single vessel along the periphery. The organized hematoma on ultrasound tomograms was a rounded formation with a clear, even contour, an inhomogeneous cellular structure and the absence of blood flow in it. Its echogenicity depended on the duration of its existence and the appearance of fibrous and calcified inclusions in it. Of the patients who were examined for soft tissue diseases, in 98% of cases, the volume formation and its tumor and non-tumor affiliation were correctly determined. At the same time, true positive cases were recorded in 96%, and true negative ones – in 2% of cases, when a conclusion was made about non-tumor changes. Patients with non-tumor soft tissue changes (Myositis ossificans, ganglion cyst and villonodular tenosynovitis) were given erroneous conclusions (2%), who were included in the group with false positive results.

Analyzing the errors of the ultrasound results, it should be explained by their combination of atypical ultrasound signs – the presence of irregular nodular formation, heterogeneous structure and visualization of vessels in it, which is characteristic of the tumor process. False negative conclusions were not expressed in any case. Thus, the sensitivity of ultrasound tomography in the diagnosis of soft tissue neoplasms was 100%, specificity – 57%, and accuracy -98%.

Using the described complexes of ultrasound signs, 85% of patients with benign and malignant neoplasms gave the correct conclusion. False positive cases were identified in patients with a newly diagnosed diagnosis of soft tissue desmoid due to the similarity of the ultrasound pattern inherent in malignant neoplasms. False negative data were obtained in observations when small formations of regular rounded or oval shape, with a smooth contour and homogeneous structure, with no blood flow were determined. The presented picture was interpreted as benign, but morphological verification revealed the malignant nature of these tumors. The indicators of diagnostic informativeness of ultrasound tomography in the diagnosis of malignant soft tissue tumors were: sensitivity - 92%, specificity - 65%, accuracy - 85%

**Conclusions.** Complex ultrasound examination is a highly informative diagnostic method in patients with formations in the soft tissues of the neck, trunk and extremities. It allows not only

to identify a tumor node, assess its size, localization, relationship with surrounding structures, but also, when using Dopplerography and elastography, to speak with a high degree of probability about the benign or malignant nature of growth, and in some cases, to approach the morphological characteristics of the neoplasm. Reduced echogenicity of the tumor, false capsule, inhomogeneity of the echostructure, irregular bumpy borders, intensive blood supply, high coefficient of stiffness during elastography, deep location, in our opinion, can be regarded as signs pathognomonic specifically for malignant non-organ neoplasms of soft tissues.

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# THE IMPORTANCE OF 3D GEOMETRIC MODELS OF THE MAXILLOFACIAL REGION IN THE PLANNING OF SURGICAL TREATMENT BASED ON COMPUTED TOMOGRAPHY

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**Abstract.** *The solution to the problem of preoperative planning of surgical treatment of the maxillofacial region is the use of a single MSCT scanning protocol suitable for both diagnosis and subsequent design modeling. The universal the maxillofacial region scanning protocol eliminates repeated examinations, thereby reducing radiation exposure, material costs and preparation time for surgical treatment.*

**Keywords:** *multispiral computed tomography, 3D geometric models, the maxillofacial region, surgical practice, children.*

**Relevance.** Restoration of the maxillofacial area (MFA) in patients with defects and deformities of various origins is an important social, anatomical-physiological and functional aspect of treatment (Kulakov A.A., 2009; Gvetadze R.Sh., 2011; Butsan S.B., 2013).

The need for accurate diagnosis and reconstructive treatment at a higher level is due to the annually increasing severity, quantitative and qualitative growth of maxillofacial pathology of various origins (Kulakov A.A., Chkadua T.Z., 2013).

Injuries, cancer, infectious and inflammatory diseases, congenital deformities and conditions after treatment of pathology are the leading factors in the formation of defects and deformations of the maxillofacial area (Kulakov A.A., Nerobeev A.I., 2010).

Data suitable for design modeling in computer-aided design (CAD) systems are geometric models of reconstructed areas, maximally reliable to the real anatomical picture, without distortions and artifacts, obtained from axial sections of MSCT using segmentation methods and recorded in the DICOM format (Nasyrov R.V., 2011; Norenkov I.P., 2009). Taking into account the specifics of the lesion and the concept of reconstructive treatment (RTR) of the maxillofacial area only, the radiologist can provide reliable data suitable for design modeling and diagnosis.

Existing modes for processing and analyzing diagnostic MSCT images are based on recognizing clear threshold values of the Hounsfield scale; the most common and studied method is the automatic segmentation of bone and radiopaque substances (Zonneveld F.W., 2004; Reshetov I.V., 2017). The resulting geometric models are transferred to the engineering stage for further design and load calculations in CAD systems (Perfilyev S.A., 2009).

Purpose of the study. Improving 3D geometric models of the maxillofacial region based on MSCT data using the DICOM application for planning surgical treatment.

**Material and research methods.** 24 patients were examined in a multidisciplinary clinic of the Tashkent Medical Academy aged from 12 to 18 years. All patients underwent MSCT scanning of the maxillofacial area on a GE HiSpeed USA spiral tomograph using modern protocols, and the “RadiAnt DICOM Viewer” package version 4.2.1.17555 (64bit) was used to create 3D geometric models. This software package performed automatic and semi-automatic segmentation of MSCT images. The geometry of the resulting polygonal 3D surfaces of the skull

was studied and compared when changing: slice thickness of 1 mm and 0.5 mm, changing the gantry angle and zero position, applying filters, and using reconstruction modes.

The study included patients with unilateral lesions of the maxillofacial region, where the contralateral part was considered conditionally normal based on the anatomical and topographic relationship of organs and tissues; patients with bilateral lesions of the maxillofacial area were also excluded from the studies.

Segmentation of diagnostic MSCT images made it possible to reliably identify and highlight any anatomical areas and preparations of interest for solving diagnostic problems and design modeling. Identification of the necessary structures is carried out on axial sections within the anatomical boundaries with correction according to the density values of the Hounsfield scale. There are automatic, semi-automatic and manual segmentations. The principle of recognizing anatomical structures in normal and pathological conditions is the main difference between the segmentation of these conditions. Normally, during segmentation, structures of known topography are identified and the principle of “identification - segmentation” is carried out, and in pathology, objects are first identified and then recognized according to the principle of “segmentation - identification”.

The main requirement for solving medical problems of design modeling is the selection of an anatomically clean surface that best matches the actual surface of the patient. The surface identified according to MSCT data is converted into a mathematical one - a virtual prototype (CAD), which makes it possible to carry out the necessary calculations (CAM) and plan all stages of treatment and rehabilitation based on the final goal of maxillofacial treatment (CAE).

**Research results.** The parameters of protocols that are appropriate and inappropriate for design modeling are studied.

As a result of the analysis, it was determined that the protocols for MSCT examination of the head, accepted for preoperative planning, have similar parameters: slice thickness size (no more than 0.625), table feed pitch (should not exceed the slice thickness), gantry inclination angle (should be zero), as well as the presence of reconstruction in bone and soft tissue modes. Also, a wide range of voltage kV and current mAs indicates the absence of clear requirements for them, which means that these parameters can be reduced to reduce the level of radiation exposure.

Based on customizable parameters of MSCT scanning, which improve the quality of detail of the polygonal model, a “recommendation protocol” for MSCT scanning of the head has been developed, suitable for both diagnostics and design modeling.

The reasons for the formation of false defects are identified and their pattern is determined. A technique for closing false defects has been determined. Possibilities in automatic, semi-automatic and manual segmentation modes have been studied.

In addition to the experimentally determined values of the adjustable parameters, the study area was increased to the boundaries of the anatomical region of the head, and the minimum values of the voltage and current of the X-ray tube were taken.

As a result of segmentation of diagnostic MSCT images in patients, the following tissues of the maxillofacial area were reliably identified and isolated as independent anatomical objects, and also translated into geometric models suitable for design modeling: skull bones, muscles, fat, skin. The possibilities of automatic, semi-automatic and manual segmentation for all types of tissues of the maxillofacial area, both normal and pathological, have been determined. When automatically segmenting bones in the Hounsfield scale range from +100 to +1500 HU, the following results were obtained. On the volumetric model of the skull, in 100% of cases multiple defects of bone structures were found according to the type of destruction, which in no way corresponded to the real anatomical situation. This discrepancy was proven by comparing the

defect area on the surface of the volumetric model with axial sections on which the integrity of the bone tissue was clearly visible.

Such surface image artifacts, which do not correspond to the true state of the maxillofacial region, have received the working name “false defect”.

False defects during automatic segmentation were found in the following bones: the walls of the maxillary sinuses, the orbital floor, the anterior wall of the frontal sinus, the greater wings of the sphenoid bone, the cells of the ethmoid labyrinth, the walls and cells of the mastoid process, the walls of the nasal turbinates, the lacrimal bone, the hard palate, and the alveolar ridge.

According to MSCT data obtained in the “recommendation protocol”, automatic segmentation revealed false defects in the same bones, but with less frequency. Changing the conditions of the CT scanning protocol reduces the number of artifacts in the form of LD of thin bone structures. This is significant in age groups with completed osteogenesis, regardless of gender, where a decrease in defects in bone structures indicates their typical location.

The data on a decrease in the number of LDs of thin bone structures using the example of the orbital walls and maxillary sinuses are clear; where their anatomical position to the tomographic slice creates the conditions for the occurrence of the “partial volume effect,” which implies an almost parallel position with the slice for the walls of the orbits and perpendicular for the walls of the sinuses. The results of the work allow us stick to the following bone segmentation algorithm: the skull bones are segmented automatically. Volumetric reconstruction determines defects and their topography; differentiation of “false defects” in semi-automatic mode using the “threshold” tool; in manual mode, the true boundaries of the bone tissue are determined at the level of the false defect.

The data is stored in DICOM and transferred to the further design modeling stage.

**Conclusions.** Thus, adhering to high requirements for reconstructive treatment, the methodology for preoperative planning of surgical treatment of the maxillofacial area is successfully applied and is constantly being refined. Preoperative planning allows you to calculate all stages of surgical treatment, which in turn considers the final result of treatment as the starting point from which all calculations are made. The first place in planning algorithms is occupied by multislice computed tomography, based on the data of which calculations are performed. The value of MSCT images increases when translating diagnostic DCOM data into calculated mathematical surfaces, which can be endowed with any physical properties and load calculations can be carried out in CAD systems. The reliability of mathematical surfaces and, accordingly, the results of design modeling directly depend on the quality of the primary DICOM data obtained from MSCT scanning. Considering the importance of primary DICOM data, design modeling places special demands on their quality and not every MSCT study result is suitable for constructing a reliable mathematical surface. The solution to the problem of repeated scans is the use of a unified protocol for MSCT scanning of the maxillofacial area, suitable for both diagnostics and subsequent design modeling. The universal protocol for scanning the maxillofacial area eliminates repeated examinations, thereby reducing radiation exposure, material costs and preparation time for surgical treatment.

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## RADIATION DIAGNOSTICS OF VOLUMETRIC FORMATIONS OF THE LIVER

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**Abstract.** *Despite the development of highly informative diagnostic methods, the risk of erroneous diagnosis remains relevant, as a result of which a malignant tumor may be missed. The aim of the study was to improve the diagnosis of volumetric formations of the liver by using radiation research methods-complex echography and computed tomography. Materials and methods of research. The work was carried out on the basis of the Tashkent Pediatric Medical Institute in the regional oncological dispensary from 2015 to 2021. 70 patients aged 20 to 70 years were under observation, of which 30 (42.8%) were men and 40 (57.2%) were women. The results of the study. With ultrasound, CT of the liver, the sensitivity depended on the size of the detectable formations and the massiveness of the liver lesion. With adenoma, a rounded formation with clear contours, a moderately heterogeneous internal structure was determined, the echogenicity of the adenoma was with some predominance of hyperechoic variants. During ultrasound, the hemangioma was more often visualized as a hyperechoic formation, sometimes with an acoustic shadow located behind it. A characteristic CT sign of hemangioma was the clarity of its contours, which we noted in 82% of cases. A smooth contour was characteristic of small hemangiomas and was observed in half of the patients. Conclusions. for the primary detection of benign focal liver lesions, it is advisable to start the examination with ultrasound examination followed by CT diagnostics.*

**Keywords:** *volumetric formations of the liver, liver adenoma, liver hemangioma, diagnostics, ultrasound diagnostics, Dopplerography, computer tomography.*

**Relevance.** Technological progress and the introduction of new diagnostic equipment into clinical practice make it possible to detect volumetric liver formations in the early stages of the disease, before the appearance of clinical symptoms [1,4,8]. However, among the focal formations of the liver, both benign (hemangiomas, adenomas) and malignant (primary liver cancer, metastases of various tumors) can occur, the approach to treatment of which is fundamentally different.

Benign focal liver lesions are observed in 24.5% of cases of all diseases of this organ, of which non-parasitic cystic liver lesions currently account for 11.8% [3, 7]. The frequency of liver abscesses in general surgical pathology reaches 0,1% - 0,5% [4, 6, 7].

Volumetric formations of the liver from the moment of their occurrence until the first clinical manifestations develop rather covertly and asymptotically.

Despite the development of highly informative diagnostic methods, the risk of erroneous diagnosis remains relevant, as a result of which a malignant tumor may be missed [2].

Ultrasound examination plays the main role in the early detection of focal liver diseases. But the practical significance of the method is not limited to this. In recent years, ultrasound has been used not only for diagnosis, but also for performing minimally invasive puncture-drainage interventions [3,5].

**The purpose of the work.** Improving the diagnosis of volumetric formations of the liver through the use of radiation research methods-complex echography and computed tomography.

**Materials and methods of research.** The work was carried out on the basis of the Tashkent Pediatric Medical Institute in the regional oncological dispensary from 2015 to 2021. 70 patients aged 20 to 70 years were under observation, of which 30 (42.8%) were men and 40 (57.2%) were women. The study did not include patients with chronic viral hepatitis in combination with focal liver lesions.

To obtain their own regulatory data on echography of the liver, gallbladder, pancreas and spleen, 35 practically healthy people, aged 20 to 70 years, with normal clinical, laboratory and echographic indicators at the time of examination were examined. The main group consisted of patients with focal liver lesions, of which 5 (14.3%) with adenoma, 5 (14.3%) with hemangioma, 15 (42.9%) with liver metastases and 10 (28.5%) with liver cancer.

For a comprehensive ultrasound examination of the hepatobiliary and pancreatoduodenal system, a seroscale ultrasound device operating in real time using a convex electronic scanning sensor with a frequency of 3.5-5 MHz was used. Patients were examined on an empty stomach, polypositionally: in the supine position, on the left side, in the longitudinal, transverse and oblique scanning planes, in obese patients, intercostal scanning was also resorted to, achieving the best visualization of all anatomical parts of organs and "zones of interest". The study was carried out comprehensively, the condition of the liver, gallbladder, pancreas and spleen, as well as vessels of the portal and inferior vena cava systems were evaluated. A complete description of all quantitative and qualitative parameters of the studied organs is given.

**The results of the study.** Depending on the severity and stage of the disease, various changes in the echographic picture occurred in adenoma. Etiopathogenetic factors - variants of bacterial, toxic and metabolic lesions - played a certain role in the speed and severity of the dynamics of the echographic picture of the liver in adenoma.

Among patients with liver hemangiomas, there were 1 men (aged 36 to 65 years, average age -52.7 years), 4 women (aged 31 to 69 years, average age - 54.2 years). In 2 patients, hemangiomas were located in the right lobe of the liver, 2 of them had single tumors ranging in size from 2.2 to 12.1 cm.

A complaint of general weakness was presented with hemangioma and liver abscess in 4 (80%) and 4 (80%) patients. Rapid fatigue and decreased performance were one of the main symptoms of this pathology.

Of the dyspeptic manifestations, the feeling of bitterness and dry mouth, decreased appetite and intolerance to fatty foods, bloating and constipation were most often noted. The symptom of bitterness in the mouth is most often detected by liver adenoma in 5 (100%) patients. With liver adenoma, a high frequency of symptoms such as heartburn was also noted in 4 patients, decreased appetite in 5 and stool disorders in the form of constipation in 4 (80%) patients. 80% of patients with these pathologies complained of intolerance to fatty foods, 60% of patients complained of belching, 60% of patients complained of nausea, 80% of patients with adenoma and hemangioma of the liver complained of a feeling of overflow in the epigastrium and bloating. With an objective study, the condition of patients in most cases is satisfactory, the position is active. The skin and visible mucous membranes had an icteric color. During ultrasound, liver adenoma was suspected when a rounded formation with clear contours, moderately heterogeneous internal structure, intra-tumor vessels, septa, surrounded by a hypoechoic rim was detected. The echogenicity of the

adenoma was with some predominance of hyperechoic variants. Diagnostics of liver hemangiomas in our study were transabdominal ultrasonography and X-ray computed tomography. A characteristic CT sign of hemangioma was the clarity of its contours, which we noted in 82% of cases. A smooth contour was characteristic of small hemangiomas and was observed in half of the patients. In other cases, the contour was uneven, which was explained by the appearance of its tuberosity with an increase in the size of the tumor.

Diagnostic criteria for hemangioma (according to CT and ultrasound) revealed the following: it is never encapsulated, edematous, tends to be located next to the hepatic veins, sometimes approaching the shape of the liver lobes. Its contours were irregular, but clear. During the study, a very slow growth was observed in dynamics.

During ultrasound, the hemangioma was more often visualized as a hyperechoic formation, sometimes with an acoustic shadow located behind it. However, in the presence of concomitant fatty infiltration of the liver, the hemangioma acquired hypoechogenicity and was then difficult to distinguish from cysts or metastases. The cavernous cavities looked like hypo- and anechoic areas, which made their interpretation difficult.

**Table 1.**

**Diagnostic criteria for focal liver lesions**

<b>Criteria</b>	<b>Hepatoma</b>	<b>Metastasis</b>
Shape	Rounded + the child nodes	Rounded, irregular
Contours	Fuzzy	Fuzzy
The presence of a capsule	Yes	No
The internal structure	is inhomogeneous in 58% of cases	Inhomogeneous
Intra -tumor vessels	Yes	No
Edema	Sometimes	Sometimes
Signs of bleeding	Sometimes	Sometimes
Ultrasound characteristics:	Echogenicity is almost any, somewhat more often hypoechoic. Pronounced heterogeneity of the internal structure, detection of hypointensive rim	Polymorphism of the picture. Combination of various echographic types of metastases: hyperechoic, isoechoic, hypoechoic, anechoic, mixed echogenicity
CT Characteristics:	Low density. There may be calcifications, necrosis. Portal vein thrombosis. Bumpy contours	Low density. The multiplicity of foci. Foci of necrosis, calcification

The computed tomography picture of large hemangiomas, 6-8 cm in diameter, had distinctive features. Compared with small hemangiomas, their contour was also clear, but bumpier. It is characteristic that small areas appeared on the CT section in the parenchyma of the hemangioma in the form of individual dots, 2-3 mm in diameter or strips up to 3 mm in size with reduced density. Similar areas were located throughout the hemangioma section or grouped in the center, but practically did not occur in the peripheral areas of the liver.

With hemangiomas larger than 8 cm, CT sections revealed a symptom specific to these formations, consisting in the appearance of a uniformly low density, stellate or oblong-branched area in the center of the tumor, with clear contours. In contrast, the low-density areas encountered during the decay of a malignant tumor had a more rounded shape, fuzzy borders and uneven density.

In ultrasound, CT of the liver, the sensitivity depended on the size of the detectable formations and the massiveness of the liver lesion (Table 1).

The characteristic CT signs of small hemangiomas were the clarity of contours and homogeneous structure. For large hemangiomas, in addition to the clarity of the contours, the presence of peculiar low-density zones in the form of "outgrowths" spreading from the periphery to the center was characteristic. This specific feature of large hemangiomas made it possible to differentiate them from liver tumors with a decay zone without the use of intravenous contrast enhancement.

**Conclusions.** Thus, for the primary detection of benign focal liver lesions, it is advisable to start the examination with ultrasound examination followed by CT diagnostics.

As our study has shown, the use of modern minimally invasive interventions is the method of choice in the treatment of benign focal liver lesions. The volume and type of minimally invasive surgical intervention depends on the nature of liver damage, the size and localization of the formation.

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## COMPLEX ULTRASOUND DIAGNOSTICS OF VARICOCELE IN ADOLESCENTS

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**Abstract.** *One of the leading problems of modern medicine and demography is infertility. The purpose of the study was to improve the diagnosis of varicocele in adolescents through the use of multiparametric echography. Materials and methods of research. This work is based on an analysis of the results of ultrasound examination of 65 adolescents who received examination and treatment at the TashPMI clinic and EXPERT MEDICAL LLC from 2019 to 2022. on ultrasound machines SONOSCAPE S 22, Aplio 500 and Samsung HS70A. Research results. a sharp increase in the diameter of the veins indicated renospermatic venous reflux, characteristic of type I varicocele. The initial increase in the diameter of the veins in orthostasis with compensation by 10% and the absence of its increase after eliminating digital compression indicated in favor of ospermatic reflux, characteristic of type II varicocele. compression more than doubled indicated renospermatic and/or ospermatic reflux, which was typical for mixed type III varicocele. Conclusions. multiparametric ultrasound has opened up new opportunities in assessing the clinical forms of varicocele and its important in the management of adolescents suffering from varicocele.*

**Keywords:** *varicocele, adolescents, multiparametric echography, dopplerography, color doppler mapping, power dopplerography, pulsed wave dopplerography.*

**Relevance.** One of the leading problems of modern medicine and demography is infertility. There is no doubt that one of the reasons for the demographic crisis and depopulation of the nation is the socio-economic situation in the country. At the same time, over 20% of families do not have children due to certain diseases. Currently, according to world statistics in Europe, the number of couples who do not become pregnant within 1 year reaches 15%, and in 50% of cases, infertility is associated with the “male factor”. While only 7.5% of men are diagnosed with infertility (Zhiborev B.N., 2011).

The development of male infertility is based on various factors, such as anatomical, physiological, immunological and psychological. Among the diseases that predispose to the development of male infertility, varicocele takes first place (in more than 30% of cases) (Cimador M., Di Race M.R., Castagnetti M. et al., 2012).

Considering the high percentage of infertility associated with the presence of varicocele, treatment should be considered as a reserve for the birth of desired children and a promising increase in the childbearing potential of the population. The main attention should be paid to the state of reproductive health in the group of children and adolescents, since up to 64% of diseases that pose a direct or indirect threat to the reproductive function of the male body occur precisely at this age. Considering the unfavorable prognosis of the consequences of this disease, as well as the fact that varicocele occurs mainly in young people and schoolchildren, its careful diagnosis is very important.

Until now, the main methods for diagnosing varicocele remain the assessment of complaints, collection of anamnesis, examination and palpation of the scrotal organs. If palpation of the scrotum is a routine technique for identifying varicocele, then the ultrasound diagnostic method is a non-invasive screening diagnostic method that allows to determine the dilatation of

veins at earlier stages, when it cannot be determined by palpation (Apolikhin O.I., Efremov E.A., Shekhovtsov S. Yu. Kastrikin Yu.V., 2017).

With the help of introduction of new methods of minimally invasive research, such as ultrasound with dopplerography, the possibilities of studying the vessels involved in the drainage of the pampiniform plexus have significantly expanded (Kadyrov Z.A., Ishonakov Kh.S., Sarkhadov N.Sh., 2010). These data indicate the relevance of the problem of early diagnosis of varicocele in adolescents and requires further study.

Purpose of the study. Improving the diagnosis of varicocele in adolescents through the use of multiparametric echography.

**Material and research methods.** This work is based on an analysis of the results of ultrasound examination of 65 adolescents who received treatment and examination at the TashPMI clinic and EXPERT MEDICAL LLC from 2019 to 2022. on ultrasound machines SONOSCAPE S 22, Aplio 500 and Samsung HS70A. In order to determine the structural changes in the gonads and the size of varicose veins of the pampiniform plexus, all patients received ultrasound echolocation of the scrotal organs in the gray scale echography mode. The study of hemodynamic changes in the veins of the spermatic cord and pampiniform plexus was performed using color doppler mapping (CDM), power doppler (PD) and pulsed wave doppler (PWD).

Ultrasound examinations were carried out in compliance with the following conditions. The patient arrived at the department with an empty bladder, the temperature in the room was not lower than 20°C, and a heated gel (29-30°C), used in ultrasound examinations, was used to relax the muscular elements of the scrotum. After optimal placement of the sensor to the mediastinum of each testicle, the cross-sectional area was measured along two axes, length and diameter. The resulting images were recorded, after which the size of each gland was measured using hardware calculation functions. The result of a comparative assessment of both genital glands was the possibility of comparing their sizes. The study was carried out in a supine position with slightly bent and spread legs and in a standing position. Scanning of the scrotal organs was performed in B-mode and the dimensions (length, width, thickness), volume (length x width x thickness x 0.523), shape, echogenicity and homogeneity of the testicular structure were determined. Using CDM and ED, the degree of testicular vascularization was assessed by the number of vascular signals. Absolute (peak systolic and end-diastolic blood flow rate) and relative quantitative indicators (resistance index) were studied using pulsed wave dopplerography. Testicular vessels (arteries and veins) were assessed in the projection of the spermatic cord and near the epididymis; parenchymal blood flow was determined in the projection of testicular tissue. Adolescent boys received the Valsalva maneuver (stress test), which assessed venous blood flow both at rest and under tension in the projection of the epididymis.

**Research results.** In order to clarify the hemodynamic type of disturbances in varicocele, the patient received transverse and longitudinal ultrasound scanning of the veins of the pampiniform plexus, and the cross-section of the most clearly visualized veins (initial diameter) was measured. After digital compression at the level of the inguinal canal, the patient was transferred to an orthostatic position. Then the veins of the pampiniform plexus and their diameter in clinostasis were assessed. The presence of pampiniform plexus of blood flow in the veins in clinostasis was recorded. After 30 seconds, continuing digital compression at the level of the inguinal canal in orthostasis, an ultrasound scan of the pampiniform plexus was performed. The diameter of the veins obtained during repeated examination was compared with the original dimensions. After cessation of digital compression, the measurement of the previously visualized vein was repeated.

The distribution of patients with varicocele according to severity was carried out according to the M.D. classification. Bomalasky et al. (1993), while the first degree was defined by palpation as a non-visualized dilatation of the veins of the spermatic cord and pampiniform plexus, limited in volume and length, detected only by straining, which was found in 14 (21.6%) adolescents.

Echographically, stage I varicocele was characterized by tortuous, tubular, anechoic structures near the testicles, which corresponded to dilated veins of the pampiniform plexus with a caliber of 2-3 mm during the Valsalva maneuver in a gray scale mode, an increase in the diameter of the veins of 2 mm and > at the appendage, monophasic blood flow, speed 3–6 cm/s, increased reverse blood flow (less than 2 sec), when performing tests in the color flow mode, static reflux into the spermatic vein was noted, which increases with the Valsalva maneuver.

The second degree of varicocele was detected in 35 (53.8%) adolescents, the signs of which were the presence of visually detectable varicose veins of the spermatic cord and pampiniform plexus. Characteristic for this group of patients was the collapse of dilated veins when the patient was transferred to a horizontal position. Teenagers often noted a feeling of heaviness during and after physical activity. The echographic criteria for grade II varicocele included an increase in the diameter of the veins of 2 mm and > in the epididymis and the middle third of the testicle; with IWD, monophasic and phasic blood flow was determined, with an increase in speed of more than 6 cm/s; when performing the Valsalva maneuver, small varicose veins with intermittent reflux were noted into the spermatic vein, increased reverse blood flow (2 sec and >), as well as greater staining of the testicular veins during colorectal circulation. This sign was characterized by significant progress on the left with venous expansion both in the standing and lying positions.

The third degree of varicocele was established in 16 (24.6%) teenage boys, with dilatation of the veins of the spermatic cord and pampiniform plexus, which looked like a conglomerate reaching the bottom of the scrotum. Patients in this group reported pain in the scrotum and testicle. The pain intensified with physical activity, often the pain radiated to the lower abdomen, lumbal region and thigh. The echographic criteria of the third degree were: an increase in the diameter of the veins of 3.5 mm and > to the lower pole of the testicle; with IWD, phasic blood flow was determined, a speed of more than 8 cm/s; with CDM, there was a clear dilatation and elongation of the vessels with continuous reflux at rest and did not increase with Valsalva maneuver, as well as increased staining of the testicular veins during colorectal circulation.

Of the other echographic symptoms of varicocele, it was necessary to determine whether the volume of the testicles was reduced or not (varicose orchopathy), which was visualized in 3 (4.6%) adolescents. With subclinical varicocele, the diameter of the testicular vein increased to 3–4 mm, and short-term reflux (up to 3 s) was detected during the Valsalva maneuver. A further increase in reflux parameters and vein diameter corresponded to more pronounced stages of the pathological process, such as a sharp increase in vein diameter, which indicated reno-spermatic venous reflux, characteristic of type I varicocele. The initial increase in the diameter of the veins in orthostasis with compensation by 10% and the absence of its increase after eliminating digital compression indicated in favor of ospermatic reflux, characteristic of type II varicocele. A slight increase in the diameter of the veins during compression in orthostasis and a progressive increase in the diameter of the veins after eliminating digital compression more than doubled indicated reno-spermatic and/or ospermatic reflux, which was typical for mixed type III varicocele.

Carrying out a study using this method allowed in most cases to suggest hemodynamically the type of varicocele, identify signs of renal venous hypertension and identify subclinical forms of the disease that are difficult to diagnose by palpation. Ultrasound comparison of the diameter of the veins when performing the Valsalva maneuver and the Ivanissevich maneuver (against the



background of compression and after its cessation) helped to identify differential signs of varicocele in adolescents.

**Conclusions.** Thus, multiparametric ultrasound has opened up new opportunities in assessing the clinical forms of varicocele and this is important in the management of adolescents suffering from varicocele. Studies have shown that, depending on the age of the teenager, tactical and methodological approaches are required: multiparametric echography, which is the diagnostic method of choice for diagnosing varicocele, and postoperative examinations, due to its wide availability, high repeatability, low cost, and absence of side effects.

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## CHRONIC KIDNEY DISEASE IN CHILDREN: PECULIARITIES OF MULTIPARAMETER ECHOGRAPHY

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**Abstract.** *The most pressing problems facing modern pediatrics and nephrology is chronic kidney disease (CKD) which is associated with an orderly onset of disorders in patients in childhood, a constant increase in the incidence of chronic progressive kidney disease and the occurrence of chronic renal failure (CRF). Despite recent advances in nephrology, reducing the risk of problems associated with delayed CRF and reduced kidney function remains a challenge in the early detection and prevention of kidney disease of various etiologies.*

**Keywords:** *kidney, laboratory diagnostics, complex echography, Doppler sonography, chronic kidney disease.*

**Relevance.** An abnormality in creatine levels over a period of several month to several years is called chronic kidney disease (CKD). CKD is based on the degree of kidney damage calculated from the Reduced Glomerular Filtration Rate (GFR) (i.e.<60ml/min per 1.7m for more than three months).

Ultrasonography is non-invasive and inexpensive examinations with sufficient anatomical details necessary for diagnosing kidney diseases without irradiation or contrasting of the patient and therefore has replaced standard radiography in our country and abroad [3-5].

All of these factors contribute to the early detection and prediction of renal dysfunction necessary for making a therapeutic decision. When using echography in the B-mode the length of the kidney, the thickness and echogenicity of the renal parenchyma are studied, in addition, this mode makes it possible to detail the pelvicalyceal systems [6]. This information helps to determine the degree of damage to the renal parenchyma and the possibility of ero-reversebility [7,8], as well as decide on a kidney biopsy [9].

In interstitial fibrosis and glomerulosclerosis, due to fibrosis, the echogenicity of the parenchyma increases [10], and an increase in echogenicity can also occur with interstitial inflammation. There is a significant correlation between kidney length, parenchymal echogenicity, glomerular sclerosis or tubular atrophy.

Kidney morphology can be determined using a number of methods, including measuring the length, and volume of the kidneys, as well as the thickness of the renal cortex. Kidney function can also be assessed from kidney length, cortical thickness and important clinical decisions can be made based on this. Therefore, dynamic echographic studies are carried out to detect insufficiency in the progression of renal recovery. Although renal parenchymal volume is a fairly accurate measurement in patients with end-stage renal disease, in healthy patients' measurement of the longitudinal length kidney is sufficient. Ultrasound is an informative method to confirm renal failure and progression of the disease.

Purpose of the study. To study the possibilities of complex echography in the diagnosis of chronic kidney disease in children.

**Material and research methods.** All examinations were carried out in the radiology departments of the National Children's Medical Center and the clinic of the TashPMI, from

January to October 2022. All children referred for kidney ultrasound with elevated creatinine were taken into account, the total number of patients was 70 children.

The study group included children with stage 3/4/5 CKD and  $GFR < 60 \text{ ml/min}$ , and children older than 10 years (41 (58.5%) boys and 29 (41.5%) girls) were included in the study. Patients with acute kidney injury, transplanted kidney, children on hemodialysis, chronic liver disease solitary kidney were excluded from the study. Complex echography of the kidneys was performed using a standard ultrasound machine Aplio500 (Japan) in gray scale, color Doppler mapping and pulsed wave Doppler using a convex transducer with a frequency of 3.5-5.0 MHz. The echogenicity of the parenchyma of both the liver and kidneys was assessed using imaging with low tissue harmonics and speckle reduction to reduce intratissue displacement. Gain and temporal gain compensation were adjusted manually. Volume and thickness were measured in a segment perpendicular to the presumed longitudinal axis of the kidney according to longitudinal imaging. It was not necessary to hold the ultrasonic transducer perpendicular to the skin, but the level of this cross section was placed close enough to the hilum of the kidney, but at the same time free from the pelvis.

**Research results.** The term CKD refers to progressive kidney damage that may worsen over time and is due to structural or functional problems. The kidneys stop functioning as the damage worsens, whether or not there is a decline in GFR. This is evidenced by histological data, changes in markers of kidney damage or variations in imaging tests.

In the course of the study we studied the functional ability of the kidneys in CKD using complex ultrasound methods, determining GFR using serum creatinine in our study was 1.25 mg/dl for grade 0, 1.85 mg/dl for grade 1, 2.5 mg/dl for grade II, 3.27 mg/dl for grade III and 5.03 mg/dl for grade 4. The main ultrasound criteria in the greyscale mode were an uneven increase in the echogenicity of the renal parenchyma, with a decrease in the thickness of the renal parenchyma. As the pathological process progressed, a decrease in the anterior-posterior size of the kidneys was determined as well as unevenness and tuberosity of the contours, which meant cortical fibrosis. This study showed that the average thickness of the renal parenchyma was 8.3 mm. As echogenicity increased, a decrease in mean parenchymal thickness was observed. The main features of changes in CFM ultrasound parameters in children with CKD included asymmetry of hemodynamic parameters, diffuse depletion of the intrarenal vascular pattern due to reduction or absence of small branches of segmental arteries, blood flow turbulence, and the presence of unusual thinned and deformed vessels. It was determined that in patients with stage 2 CKD there were significantly more pronounced violations of the color flow parameters than in patients with stage 1 CKD, including blood flow turbulence ( $V_{\max} - 52.5$  and  $V_{\min} - 33.3$ ), asymmetry of hemodynamic parameters ( $V_{\max} - 52.5$  and  $V_{\min} - 33.3$ ) location of rare thin and deformed vessels ( $V_{\max} 34.4$  and  $V_{\min} - 1.5$ ) and diffuse loss of vascularization ( $V_{\max} - 52.5$  and  $V_{\min} - 33.3$ ).

PW Doppler showed that children with CKD were much more likely to have decreased maximum systolic velocity and minimal diastolic velocity than children without symptoms of CKD. With the progression of the disease, there was a decrease in systolic velocity of blood flow in the interpolar arteries in patients with stage IV-V CKD compared with the stage III. In patients with stage 1-2 CKD, diastolic blood flow velocity decreased significantly as CKD progressed, indicating impaired intrarenal hemodynamics. Diastolic blood flow velocity decreases to 5.2% as CKD progresses (stages 3-4). Doppler indices of resistance index in interlobar arteries in patients with stage 1-2 CKD corresponded to normal values, while this study had the lowest informative value. As the disease progressed, the systolic-diastolic ratio increased. Allowing this indicator to be used both for early diagnosis and for predicting the progression of CKD in children. With further progression of the disease, a violation of renal hemodynamics was revealed in the form of decrease in intrarenal blood flow with an increase in the resistivity index as well as an increase in

the ratio of systolic to diastolic. As serum creatinine increases, the echogenicity of the renal cortex increases. Because changes in renal echogenicity are irreversible, an echographic classification of CKD can be done to assess the severity of CKD.

**Conclusions.** Thus, the best echographic parameter correlated with serum creatinine level, the echogenicity of the renal cortex and its gradation in comparison with the longitudinal length, thickness of the parenchyma and the thickness of the cortical layer in patients with CKD, Doppler ultrasound also replaces X-ray angiography and the advantage of this method over other imaging methods is that provides real-time assessment of blood flow time

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## ULTRASOUND EXAMINATIONS IN THE DIAGNOSIS OF INTRAVENTRICULAR CEREBRAL HEMORRHAGES IN CHILDREN

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**Abstract.** *A change in the parameters of cerebral blood flow cannot be considered a sign of IVH, but reflects a non-specific reaction of cerebral hemodynamics to an increase in intracranial pressure during IVH and characterizes the overall severity of brain damage. The Doppler study of cerebral blood flow plays an auxiliary role in the diagnosis in the IVH, but undoubtedly has an important prognostic value.*

**Keywords:** *children, diagnostics, ultrasound examination, hemorrhages, brain.*

**Relevance.** Intraventricular hemorrhages (IVH) occupy a leading place in the structure of perinatal lesions of the nervous system in newborns and are one of the main causes of deaths, which account for 9-27% in full-term and up to 70% in premature infants. Hemorrhages suffered in 55.4% of cases cause neuropsychiatric disorders (A.A. Baranov, 2010; O.G. Semenov, 2012). Intraventricular cerebral hemorrhages in children in the structure of pediatric morbidity in Uzbekistan account for about 8-15% of newborns (Statistical materials on the activities of healthcare institutions of the Republic of Uzbekistan in 2017).

The main etiological factor of perinatal pathology of the nervous system and, in particular, IVH, is hypoxia, which leads to hemorrhagic lesions in newborns. Its result is a cerebrospinal fluid disorder, leading to brain dysfunction. This requires the dynamic observation of many specialists (J.Volpe, 2012), including ultrasound examination (ultrasound) of doctors to determine the development of hydrocephalus in a timely manner.

For the further development of perinatal neurology, it is necessary to search for new objective methods for assessing the functional and structural state of the brain. Topical diagnostics is possible with the help of radiation research methods (V.P. Kharchenko, 2011).

However, the use of computed tomography (CT) and magnetic resonance imaging (MRI) is difficult, especially in the conditions of the intensive care unit and in preterm infants (T.N. Trofimova, 2009) and for constant dynamic monitoring of the state of cerebrospinal fluid dynamics and hemodynamics.

All of the above is considered an urgent problem and requires further study.

The purpose of the study.

Optimization of the diagnosis of intraventricular cerebral hemorrhages in children through the use of modern ultrasound research methods.

**Material and methods of research.** The present work was based on the results of a neurosonographic examination of 90 sick children with IVH. All patients underwent brain ultrasound using standard and polypositional neurosonography (stNSG and pNSG) techniques. All children in the hospital population had an increased risk of developing IVH. The ratio of newborns and children aged 1-12 months of life was approximately the same (52.5 and 47.5%), boys significantly prevailed (71.2%). More than half of the children (61.8%) were born from natural

childbirth in the head presentation. Almost a quarter of patients (22.2%) were born by caesarean section. Complicated situations in childbirth were often encountered: rapid labor took place in 4.0% of cases, secondary weakness of labor activity - in 4.0%, vacuum extraction - in 6.0% and labor in the buttock and leg presentation - in 3 (3.0%) cases. Birth trauma, as an etiological factor in the development of IVH, was diagnosed in 17.8% of cases, in the presence of clinical manifestations of this pathological condition (pain syndrome, general brain and focal neurological symptoms) and signs of mechanical damage to the skull (cephalomatoma, pathological configuration of the newborn's head, fractures of the skull bones, osteodiasis of the occipital bone).

Birth traumatic injuries were diagnosed in 12.9% of children without neurological symptoms with 1 art.

Hypoxic-ischemic lesion of the central nervous system was detected in 3% of children with IVF 3-4 ct, hypoxic-traumatic - in 4%.

Postnatal traumatic brain injury caused the development of IVH in 25.7% of children.

Household traumatic brain injury occurred in 20.8% of cases, as a rule, it occurred when children accidentally fell out of the hands of adults, from a changing table or bed. Traumatic brain injury in a traffic accident was registered in 1% of the patient.

In 1 child, multiple fractures of the skull were detected in combination with massive PVHs, a focus of brain contusion and severe damage to the parenchyma in the form of subcortical necrosis; in 3 other children, subacute bilateral IVHs were detected in combination with PVHs.

Comprehensive clinical, laboratory and instrumental examinations included a detailed history collection, physical examination, neurosonographic examination in the Republican Perinatal Center and on the basis of the Republican Scientific Center of Neurosurgery on Sonoscape 5000, Aplio 500 ultrasound diagnostic devices ("Toshiba" Japan), Mirror 2.

The control, i.e. comparison group consisted of 20 healthy children of the same age. In the control group, we examined practically healthy children.

High-frequency sector sensors 5.0 and/or 7.5 MHz were used to conduct ultrasound examination of the brain in newborns and young children. When using convex sensors, the view of the lateral structures of the brain is limited. The severity of the condition was not a contraindication for neurosonography. Scanning was carried out in B-mode, CDK mode and pulse Dopplerography.

All children underwent NSG in the first 1-2 days after admission to the hospital, additional preparation for the study was not required.

Polypositional NSG was performed in the position of the child lying on his back, followed by turning the head to the right and left. Patients in extremely serious condition who were on artificial ventilation were examined in the presence of a resuscitator.

The technique included polypositional scanning using both traditional access through the large fontanel, and accesses through the occipital, mastoid fontanelles, temporal access, sutures and through bone defects in fractures of the skull bones. Scanning was carried out in frontal, sagittal, axial and oblique planes using convex and high-frequency linear sensors.

In addition to the study in the "gray scale" mode, Dopplerographic techniques were used. CDC was used to assess the vascularization of the shell spaces and the brain, and the mode of pulse dopplerography made it possible to obtain quantitative indicators of cerebral blood flow and to identify disorders of cerebral hemodynamics.

The pNSG Protocol included the following items:

- differentiation and symmetry of brain structures;
- the presence or absence of displacement of the median structures of the brain;
- assessment of brain parenchyma (echogenicity, presence of diffuse and focal changes, pattern of furrows and convolutions);
- dimensions of internal liquor spaces: lateral, III and IV ventricles;
- assessment of vascular plexuses, ventricular ependyma, presence of inclusions in the cerebrospinal fluid;
- dimensions of the external cerebrospinal spaces (width of the subarachnoid space along the convexital surface of the cerebral hemispheres, width of the interhemispheric gap);
- presence or absence of pathological shell clusters (indicating localization, shape, size, echogenicity and structure);
- patency of the liquor pathways;
- assessment of the structures of the posterior cranial fossa: the symmetry of the cerebellar hemispheres, the size of the large occipital cistern, the presence of paracerebellar shell clusters, their size and structure, as well as the presence of echogenic inclusions in the lumen of transverse venous sinuses;
- Dopplerographic indicators of cerebral blood flow: maximum systolic blood flow velocity,  $V_{max}$ , in the anterior cerebral artery; minimum diastolic blood flow velocity,  $V_{min}$ , in the anterior cerebral artery; resistance index, RI, in the anterior cerebral artery; blood flow velocity in the Galena vein and transverse sinuses.

**Research results.** When analyzing the features of the clinical course of IVH, we noted the relationship between the severity of neurological symptoms and the severity of hemorrhages. Neurological manifestations did not differ significantly in 5 children with grade I IVH and in 15 children in the comparison group. The time of occurrence of neurological symptoms varied from 1-2 to 8-9 days of life. In 5 children with grade I IVH, there was a moderately pronounced CNS depression syndrome, which is characterized by suppression of unconditioned reflexes, 4 children with a decrease in spontaneous motor activity, 6 children with a decrease in muscle tone and 2 children of tendon reflexes with oculomotor disorders. At 2-3 weeks of life, all children became more active, signs of hyperexcitability syndrome appear - increased spontaneous motor activity, revival of unconditioned reflexes, muscular dystonia and tendon hyperreflexia. Convulsive syndrome was observed in 2 children of the I-degree of IVH in the neonatal period.

In 15 children with grade II IVH, the CNS depression syndrome is more pronounced. There may be a disorder of consciousness, sopor, and in more severe cases - coma, 4 children have anomalies of pupillary reactions, 7 children oculomotor disorders were often combined with bulbar disorders (violation of sucking, swallowing, pathology of breathing and cardiac activity.) Differences with the comparison group were significant only in relation to the frequency of convulsive syndrome in 5 children.

With grade III IVH, it was the most difficult, the children were in a comatose state for a long time, due to respiratory disorders, CVL was brought.

Bulbar disorders of 3 children were often noted, in 4 children the convulsive syndrome remained resistant to therapy for a long time. In 8 children, there was a sharp suppression of unconditioned reflexes, muscle hypotension, tendon hyporeflexia, bradycardia, decreased hematocrit, metabolic acidosis seizures. A combination of neurological symptoms was noted. A



directly proportional dependence of the frequency and severity of structural changes in children in the first year of life on the degree of hemorrhage suffered in the neonatal period was revealed. In children after IVH of the III degree, by 9-12 months of life, a delay in psychomotor development of 3 children, cerebral palsy of 2 children, convulsive syndrome of 4 children were noted. The prognosis was more favorable in the group of children with grade I and II IVH.

During echography, grade I IVH was characterized as a hyperechoic rounded formation inside the ventricles or vascular plexus. 5 children in the residential complex were bilateral. A dynamic study revealed the formation of intraventricular pseudocysts after grade 1 IVH on day 10-14 in 84% of children. It should be noted that the thrombus in the lumen of the lateral ventricle in the initial stage of the disease was tightly attached to the vascular plexus and, possibly, to the germinal matrix, although not differing from them in structure. Thus, it is very difficult to accurately measure the size of a blood clot, usually it was captured together with the vascular plexus and the germinal matrix.

The thrombus located in the cerebrospinal fluid pathways has undergone significant changes over time. In the first 5-7 days, it had a fairly homogeneous echogenic structure, and then lysis processes occurred. The thrombus became heterogeneous, the echogenicity of its middle part decreased, as a result of which the contours looked underlined. Further, the thrombus fragments or gradually resolves with a change in shape, size, consistency.

With grade II IVH, nodular thickening of the vascular plexus, its asymmetry and expansion were noted, the expansion of the lateral ventricles on the side of the hemorrhage was determined, the depth of the lateral ventricles at the level of the bodies was more than 5 mm. within normal limits. In 2 children, the IVH was bilateral. During the course of the II degree of IVH, the state of the cerebrospinal tract changed, posthemorrhagic ventriculitis often developed, which during ultrasound was represented by a combination of three main echosymptoms: - ventriculomegaly; - increased echogenicity of the walls of the lateral ventricles; - the presence of a fine suspension in the lumen of the lateral ventricles. In uncomplicated cases, ventriculomegaly increased for 2-3 weeks, after which, against the background of treatment, the condition stabilized, and after 1-month, positive dynamics was noted.

Grade III IVH was characterized by dilation and nodular thickening of the vascular plexus, which was accompanied by ventricular dilation and parenchymal hemorrhage. During 2-3 weeks, the echogenicity of the parenchymal hemorrhage area gradually decreased, only local hyperechoic inclusions remain. After 3-4 weeks, at the site of parenchymal hemorrhage, there were formations of a porencephalic pseudocyst in the form of an anechoic structure with clear contours communicating with the lateral ventricle of the brain. In 8 children, clots formed that repeated the shape of the ventricles of the brain, causing their tamponade. There was an increase in ventriculomegaly from minor to severe with the formation of internal hydrocephalus. 2 children in the IVH were bilateral.

In many cases, high-grade VVC was accompanied by hemorrhage into the cavity of the III-IV ventricles. The III ventricle was optimally visualized when scanned through the scales of the temporal bone, while in the acute stage of the process, the blood in it looked like the contents of increased echogenicity. Gradually, the clot was transformed in the same way as blood clots in the lateral ventricles: its middle part turned out to be hypoanechogenic, and the contour was emphatically echo-dense.

A formidable complication of high-grade IVH was hemorrhage in the posterior cranial fossa. It is quite difficult to visualize it with NSG, it is advisable to use non-standard scanning accesses. The most frequent finding was a hemorrhage in a large cistern. Fresh blood looked like the contents of increased echogenicity, evenly filling the entire large tank. Its size in the acute phase of the disease usually did not increase. Quite often, a block of the cerebrospinal fluid pathways developed with high-grade IVH, while in the acute phase of the disease, a sharp increase in dilatation of fragments of the cerebrospinal fluid pathways was determined. In their lumen, it was sometimes possible to identify fragments of blood clots. The block of the cerebrospinal fluid pathways sometimes arose due to the adhesive process or against the background of the addition of inflammatory changes. The narrowest places were most often affected: the Sylvian water supply, the Monroe hole. With the block at the level of the Monroe orifice, a significant dilation of the lateral ventricle on the side of the block developed. With the block of the Sylvian aqueduct, the sizes of both lateral and III ventricles sharply increased.

There was a block at the level of a large tank, which was accompanied by a significant, sharp deterioration in the condition of the child with a violation of vital functions. The cerebrospinal fluid pathways were dilated throughout, and the large cistern acquired a spherical shape, sharply pushing the medulla oblongata in the ventral direction. Grade III with neurosonography was diagnosed quite easily: the parenchymal component was pathognomonic for this type of hemorrhage, i.e. it is determined not only a thrombus in the lumen of the lateral ventricle, but also the focus of hemorrhage in the parenchyma of the brain, adjacent directly to the thrombus in the lumen of the ventricle. Ventriculomegaly developed dynamically, and hemorrhage in the parenchyma of the brain led to the formation of a large porencephalic cyst. The parenchymal component of grade III IVH occurred in any part of the brain adjacent to the lateral ventricle, while in all cases the contour of the lateral ventricle was not traced. In massive hemorrhages, the dislocation of the median structures of the brain shifted in the direction opposite to the hemorrhage with a sharp violation of the anatomy of the brain.

In addition to the In-mode study, a Doppler evaluation of cerebral hemodynamics was performed in all patients with ultrasound signs of IVH.

The CD mode with the assessment of visualization of the vascular pattern of the brain and the pulse Dopplerography mode with the possibility of quantitative assessment of cerebral hemodynamics were used. The parameters of blood flow in the anterior cerebral arteries, Galena vein and transverse sinuses were studied.

The following symptoms were identified:

A symptom of vascular pattern flickering. This sign was recorded in the CD mode with a marked decrease in the rate of arterial blood flow in the diastole and a significant increase in vascular resistance. The change in the color of the arterial blood flow staining from red to blue indicates the appearance of a reverse flow in the diastole, which corresponds to the values of the resistance index of more than 1.0. The symptom of vascular pattern flickering was detected in 9.8% of children with ultrasound signs of IVH. In all cases, the condition of the children was regarded as very serious, all of them were being treated in the intensive care unit.

The symptom of an increase in the resistive characteristics of blood flow in the cerebral arteries is, in fact, the quantitative equivalent of the flicker symptom. Taking into account the urgency of the situation and the generalized response of the infant's cerebral hemodynamics to IVH, the measurement of quantitative characteristics of blood flow was carried out in the anterior

cerebral artery (ACA), less often in the pericallosal artery. The symptom of an increase in the resistive characteristics of blood flow was recorded at values of the resistance index (RI) in the PMA of more than 0.7. The symptom was detected in 39.0% of children with ultrasound signs of IVH. In the acute period of massive IVH and PVH, there was a sharp increase in the resistance index in ACA to 1.0 and higher, which was observed in 9.8% of children. In 3.6% of cases, there were modulations of the amplitude of arterial blood flow depending on the act of breathing, which was regarded as a sign of impaired autoregulation of cerebral blood flow. A decrease in the resistance index in the acute period was not detected in any case.

A symptom of a change in the blood flow rate in the ACA. Among patients with ultrasound signs of IVH, the maximum arterial blood flow rate was maintained within the reference values in 53.7% of children, increased to 0.9-1.2 m/s in 12.2%, decreased in 7.3%. Patients with normal rates of ACA had different values of the resistance index: in 31.7% - within the normal range, in 6.1% - increased to values less than 1.0, in 6.1% - more than 1.0, respectively. An increase in Vmax in ACA with an increase in RI was observed in 13.4% of patients and only in 1.2% of patients with normal peripheral resistance. A decrease in Vmax was observed at normal RI values in 1.2% of the patient, at sharply elevated values - in 1.2%.

The symptom of pulsativeness of venous blood flow in the Galena vein was detected in 2.4% of patients with ultrasound signs in the LC. All the children were with massive IVH, were in serious condition in the intensive care unit. In all cases, the children had concomitant pronounced disorders of central hemodynamics, which does not allow us to unambiguously judge the change in the nature of blood flow in the Galena vein as a consequence, in fact, of IVH. Disorders of arterial cerebral blood flow in all these patients were pronounced, but not critical.

**Conclusions.** Thus, pNSG were allowed to be diagnosed in the IVH not only in B-mode, but also using Doppler blood flow assessment techniques.

Summarizing the study of the echographic semiotics of IVH in newborns and children of the first 3 months of life, it can be concluded that stNSG, with which the examination of each infant begins, does not always allow to identify the main echosymptoms of IVH and reliably diagnose pathology. With SNC, it is possible to visualize only large IVH and identify their indirect signs, while pnsC allows you to visualize not only large IVH that were not detected with stNSG, but also small IVH.

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## ROLE OF ECHOGRAPHY IN THE DIAGNOSIS OF DEVELOPMENT ANOMALIES OF GALLBLADDER IN CHILDREN

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**Abstract.** *Diagnosis of anomalies in the forms of the gallbladder in children is very difficult, which depends on a competent and skillful approach to solving the problems of the doctor-researcher, and the use of highly informative technologies. The ultrasound diagnostic method is currently a harmless, non-invasive and highly informative method that allows you to really evaluate both the shape of the gallbladder and differentiate the types of changes.*

**Keywords:** *ultrasound diagnosis, gall bladder, children, functional cases.*

Diseases of the gallbladder and biliary tract in children are the most common diseases of the digestive system. Developmental anomalies and acquired deformations of the gallbladder may have pathogenetic significance in disrupting the passage of bile as one of the causal factors of various pathological processes in the biliary tract. Stagnation in the bladder over time leads to the development of dystrophic processes in the wall of the gallbladder and, consequently, to disruption of its contractile function, up to atony.

Congenital and acquired pathologies of the gallbladder in the cervical-ductal zone are currently classified as a special group of diseases called siphonopathies. Various types of developmental anomalies and acquired deformations of the gallbladder and bile ducts interfere with their normal function and lead to impaired motility, mainly of the hypomotor type.

In this group of patients, the presence of putty-like bile and non-displaceable stones in the gallbladder is more often observed. Increased surgical activity on the biliary tract, primarily for cholelithiasis (GSD), requires knowledge of the clinical features of the manifestation of anomalies of its development. Diagnosis of most of them is difficult, since a feature of such anomalies is the absence of characteristic clinical signs. The manifestation of developmental anomalies usually occurs in childhood or adolescence.

The most common gallbladder anomaly is kinks (50 - 74% of all developmental anomalies). Kinks and constrictions in different parts of the gallbladder occur with varying frequencies. Kinks of the gallbladder are more common in the neck and body, constrictions - in the neck and fundus. The ratio of the constrictions of the gallbladder in the neck, body, and fundus is 4:2:1, and the ratio of constrictions in these sections is 7:1:3.

Ultrasound examination is one of the main methods for diagnosing developmental anomalies and acquired deformations of the gallbladder. The sensitivity of ultrasound in detecting gallbladder abnormalities is 88%, and the specificity is 98%. At the same time, in the diagnosis of anomalies of the ductal system, these indicators are almost equal to %.

Ultrasound specialists rarely evaluate the contractile function of the gallbladder. This does not allow the clinician to differentiate dyskinesia from cholecystitis. Not always, with “deformations” of the gallbladder (GB), a violation of its motor function is detected. There are no works devoted to the characteristics of clinical manifestations of gallbladder anomalies and their

prevalence in various diseases of internal organs. The relationship between the presence of gallbladder abnormalities and the clinical picture of cholecystitis has not been studied. There are few works concerning the function of the gallbladder with its anomalies.

**Purpose of the study.** Improving the diagnosis of various gallbladder anomalies in children through the use of modern ultrasound examinations.

**Material and research methods.** The work is based on the results of a comprehensive standard examination of 46 children with various deformations of the gallbladder aged from 1 to 18 years, who were examined and treated at the TashPMI clinic. The examination was carried out using an ultrasonic device “SONOSCAPE SSI 5000”, “APLIO 500” with sector and linear sensors with a frequency from 3.5 MHz to 7.5 MHz.

**Research results.**

Echography was performed in the morning on an empty stomach, no earlier than 12 hours after eating, the patient in the supine position, holding the breath during the deep inspiration phase. To improve contact of the sensor with the scanned surface, the skin of the outer abdominal wall was lubricated with a special gel. The study of the gallbladder included determining its length, width, and wall thickness. The contractile function of the gallbladder was assessed by data on its volume on an empty stomach and 40 minutes after a choleric breakfast (egg yolk). Initially, the volume of the gallbladder was calculated using the formula proposed by A.A. Ilchenko (2004). With an ejection fraction of less than 30%, contractile function was assessed as reduced; 30-50% normal; more than 50% increased.

We examined 46 children with gallbladder diseases (21 (45.7%) boys and 25 (54.3%) girls aged 5 to 18 years) in 52.7% of children, gallbladder anomalies (GAB), In our studies, we did not encounter such anomalies of the gallbladder as agenesis, double and duplicated gallbladder, or its abnormal location. Most often, constrictions, kinks and an S-shaped gallbladder were detected.

At the same time, AGB were constrictions and kinks of the gallbladder of varying degrees of severity: in 23 children with dyskinesia of the gallbladder - in 50.2% of cases, in 19 children with chronic acalculous cholecystitis - in 41.3%, in 4 children with chronic calculous cholecystitis - in 8.5% of cases.

Gallbladder deformities were 1.3 times more common in girls than in boys. The incidence of AGB among patients with cholelithiasis and chronic acalculous cholecystitis did not differ from healthy individuals.

In 6 children, even in the absence of anatomical “defects,” a violation of the outflow of bile was observed, manifested by recurrent pain syndrome that was not amenable to conservative therapy.

Studies have shown that hypokinetic dyskinesia of the gallbladder was detected in 40% of children with kinks and somewhat more often (50%) with constrictions, and hyperkinetic dyskinesia was detected much less frequently (in 10 and 7% of patients, respectively). Some authors describe the dynamics of the contractile function of the gallbladder in children in the presence of its anomalies. Thus, at the initial stage there was hyperfunction, which subsequently turned into a decrease in the contractility of the gallbladder.

A uniform contraction of the bladder indicated compensation for the congenital defect, and difficulty in emptying the distal part indicated a violation of compensation. At the same time, when the deformation was localized in the area of the bottom and body of the bladder, hypermotor dyskinesia was observed in 35.7% of cases.

**Conclusions.** Thus, literature materials and our own data reveal anomalies of the gallbladder, both in healthy children and in pathologies of internal organs. Modern ultrasound devices make it possible to timely recognize their various options, objectively assess the function of the gallbladder and clarify its condition in various diseases of the internal organs with its anomaly.

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## METHODS OF MEASUREMENT OF CORNEA DIAMETER IN CHILDREN

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**Abstract.** *The article presents the data of a comparative analysis of methods for measuring the diameter of the cornea in various ophthalmopathologies in preschool children. The total number of children was 50 (100 eyes) with various ophthalmopathy. The studies were conducted in the Department of Ophthalmology of TashPMI. The indicators obtained by measuring the diameter of the cornea with a surgical compass were taken by us as a basis, as the most objective method of remote measurement of the diameter of the cornea. The average value was  $10.48 \pm 0.97$  mm. These indicators were compared with the indicators obtained by measuring with a ruler and special "glasses" offered by us. Special "glasses" for measuring the diameter of the cornea give reliably accurate indicators, are safe and convenient for use in pediatric ophthalmology. And also, they make it possible to dynamically monitor the progression of the process and archive the data obtained.*

**Keywords:** *corneal diameter, ruler, special "glasses", compass Castroviejo, ophthalmopathy in children, remote measurement of corneal diameter.*

**Actuality.** Young children with visual impairments may experience delays in motor, language, emotional, social and cognitive development, which may have long-term consequences [1,3]. Among school-age children suffering from visual impairments, reduced academic performance is often observed [4,9]. There are at least 200 million cases of visual impairment or blindness in children worldwide, with more than 95 million of these resulting from lack of timely diagnosis or treatment. One of the main directions of modern ophthalmology is the development of promising methods for early diagnosis of ophthalmic pathologies in children [2,5,8]. Anomalies in the development of the cornea are diverse. Of the developmental anomalies, microcornea should be noted. In a newborn, the horizontal size of the cornea is 9 mm. If the diameter of the newborn's cornea is 1-2 mm smaller, then this is microcornea, and an increase by the same amount is macrocornea. According to Zaikova I.S. (1991), the horizontal diameter of the cornea in a newborn is 9.62, at 1 year – 11.29, at 6 years – 11.36, in an adult – 12. The thickness in the center of a newborn is 0.560, at 1 year – 0.524, at 6 years old – 0.535, in an adult – 0.516. In adults, the horizontal size of the cornea is 11.5 mm. Pediatric glaucoma is a group of potentially blinding diseases characterized by the development of abnormalities in the aqueous humor outflow system of the eye. Neonatal and infantile eyes are elastic and increased IOP leads to distension of the eyeball (buphthalmos) [7,10]. In turn, stretching involves other structures of the eye such as the cornea, anterior chamber structures, sclera, optic nerve, scleral canal and cribriform plate. Corneal changes in PIH lead to the classic clinical triad of epiphora (lacrimation), blepharospasm (constriction of the eyelids) and photophobia (sensitivity to light). The diameter of a normal cornea is 9.5 - 10.5 mm at birth and 10 - 12 mm at two years. If the corneal diameter is asymmetrical, or the diameter is greater than 13 mm at any age, or 12 mm at birth, then the diagnosis of glaucoma



should be excluded [6]. A device widely used in practice for measuring the diameter of the cornea of the eye in the form of a measuring compass with sharp ends is known. The disadvantage of this device is the risk of injury to the eye from the sharp ends of the measuring compass when taking measurements. When measuring the diameter of the cornea of the eye with a measuring compass, the cornea is measured at two points, which does not give an objective picture of the size of the cornea of the eye in two mutually perpendicular directions. Thus, multiple measurements of the corneal diameter along several axes are required. A device for ophthalmological measurements is known, containing a plate with through calibrated holes of different diameters, placed in a uniformly varying sequence. The disadvantage of this device is the lack of measurement accuracy due to the impossibility of bringing the measuring instrument as close as possible to the eye when taking measurements. In addition, these known devices cannot be used for a wide range of measuring the diameter of the cornea of the eye, because in different patients this diameter varies from 8 to 15 mm, and it is necessary to have holes of different diameters within these limits [4, 6]. Taking this into account, the above served as a prerequisite for carrying out this study and made it possible to formulate the goals and objectives of this work. Purpose of the study: comparative analysis of methods for measuring corneal diameter in various ophthalmopathologies in children.

**Material and research methods:** 50 patients had their corneal diameter measured using a ruler, special “glasses,” and a Castroviejo compass in the eye department of the TashPMI clinic for the period from 2021 to 2023.

**Results and discussion:** The indicators obtained by measuring the diameter of the cornea using a surgical compass were taken by us as the basis as the most objective method of remotely measuring the diameter of the cornea. The average value was  $10.48 \pm 0.97$  mm. These indicators were compared with the indicators obtained by measuring with a ruler and the special “glasses” we proposed. All indicators were subjected to statistical processing to identify significant differences in indicators (Table 1).

**Table 1**

**Results of comparison of methods for measuring corneal diameter**

Way measurements	Compass (n=50)	Ruler (n=50)	Glasses (n=50)
Indicators (mm)	$10.48 \pm 0.97$	$10.74 \pm 1.0$	$10.38 \pm 0.98$
Student's criteria (t)		t= 4.3 $p \leq 0.05$	t=1.4 $p > 0.05$

		(Critical value: 2.02)	(Critical value: 2.02)
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When comparing the indicators obtained using a compass and a ruler ( $12.48 \pm 0.97$  and  $12.74 \pm 1.0$ , respectively), the difference in mean values was not statistically different ( $t = 4.3$   $p \leq 0.05$  "critical value: 2.02"). When comparing the indicators obtained using a compass and "glasses" ( $12.48 \pm 0.97$  and  $12.38 \pm 0.98$ , respectively), the difference in average values turned out to be not significant ( $t = 1.4$   $p > 0.05$  "critical value : 2.02").

This confirms that there were no differences in the indicators obtained when measuring with compasses and "glasses", which means that the method of measuring the diameter of the cornea using "glasses" is quite accurate, convenient and can be used in pediatric practice for all eye pathologies accompanied by changes corneal diameter.

**Conclusion and suggestions:** Measuring the diameter of the cornea using special "glasses" contributes to the early diagnosis of pathological deviations of the cornea in diameter, which is very important during the dynamic observation of children. The sensitivity and specificity of this method were 90.5% and 85.7%, respectively.

The invention we propose for a method of measuring the diameter of the cornea in the form of glasses solves the problem of obtaining results quickly, clearly, and conveniently. The special "glasses" we offer for measuring the diameter of the cornea provide reliably accurate indicators, are safe and convenient for use in pediatric ophthalmology. They also make it possible to dynamically monitor the progression of the process and archive the data obtained.

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# QUANTIFICATION OF HUMAN SPERM CONCENTRATION USING MACHINE LEARNING-BASED SPECTROPHOTOMETRY

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**Abstract.** Spectrophotometry is an indirect non-invasive and quantitative method for specifying materials with unknown contents based on absorption behavior. This paper presents the first application of artificial neural network in spectrophotometry for quantification of human sperm concentration. A well-trained full spectrum neural network (FSNN) model is developed by examining the absorption response of sperm samples from 41 human subjects to different light spectra (wavelength from 390 to 1100 nm). It is shown that this FSNN accurately estimates sperm concentration based on the full absorption spectrum with over 93% prediction accuracy, and provides 100% agreement with clinical assessments in differentiating the samples of healthy donor from patient samples. We suggest the machine learning-based spectrophotometry approach with the trained FSNN model as a rapid, low-cost, and powerful technique to quantify sperm concentration. The performance of this technique is superior to available spectrophotometry methods currently used for semen analysis and will provide novel research and clinical opportunities for tackling male infertility.

**Keywords:** semen analysis, sperm concentration, spectrophotometry, artificial neural network.

## INTRODUCTION

Infertility is on the rise worldwide [1, 2], affecting one in six couples with almost half of the cases caused by male infertility factors [3, 4]. Male infertility is commonly attributed to low sperm count (oligospermia), low sperm vitality (necrospermia), poor sperm motility (asthenospermia), and abnormal sperm morphology (teratospermia) [5]. Other quality metrics such as semen volume and DNA integrity are also shown to be correlated with male infertility, however, with less direct association [6]. Despite the rising trend of infertility, improvements in conventional diagnostic methods have been infrequent, and new technological development is required to allow for more accurate semen analysis outside of fertility clinics or for at-home testing [2, 7].

Semen analysis to quantify sperm concentration, vitality, motility, and morphology is crucial to infertility diagnosis [2, 8-10]. Current clinical semen analysis methods demonstrate about 89.6% sensitivity, with the ability to accurately diagnose 9 out of 10 infertile men [5]. Routinely, the first step in clinics is to quantify sperm concentration, motility and morphology as the three critical indicators [11]. In up to 90% of male infertility cases, low sperm concentration exhibits a strong positive correlation with other abnormal semen parameters [5, 12], and can be used as the first stand-alone step to diagnose male infertility. Moreover, sperm concentration for each individual changes on a daily basis [13], and for a reasonable judgement on the male fertility health, three cycles of semen analyses are to be conducted over the course of 2 to 3 weeks, each at least seven days apart [14]. Additionally, follow-up treatments need even more frequent analysis of semen to track subsequent changes in sperm concentration [14].

Conventional methods for sperm concentration analysis includes hemocytometry, computer-aided semen analysis (CASA), microfluidic methods, and spectrophotometry [16].

Hemocytometry is the most traditional and oldest method for quantifying cell concentration by counting the number of cells in a chamber of known volume. Besides being laborious and prone to the operator error, this method is the third most imprecise method for estimating sperm concentration [7]. CASA is the gold standard method for semen analysis in clinics. In CASA, captured image sequences from at least 100 sperm in the sample are processed in real-time using an advanced computer-based image processing unit to quantify sperm concentration and motility [8]. CASA system is expensive, while system-to-system variations between the image processing units can also influence calculated sperm concentrations [11]. Microfluidic methods [2], particularly in paper-based formats [3] and in combination with cell-phone based applications [10] have also provided new opportunities for low-cost and accessible semen analysis. While promising, lack of standardization and reproducibility have prevented adoption and/or commercialization of developed microfluidic technologies, mainly due to variation between different cell-phone-based imaging devices and challenges accessioned with handling delicate volumes of fluid. More recently, cell-phone based systems have been used as a capturing device to overcome issues associated with the lack of standardization procedures, providing a portable and more standard analyzing system.

Spectrophotometry is a precise method for quantifying cell concentration and is routinely used for estimating sperm concentration in wild and captive animals such as bull, horse and aquatic species. This method is based on measuring the transmission of light through a known volume of sample, in which light absorption values at specific wavelengths are used to quantify sample concentration [12]. According to Beer-Lambert law, the absorption magnitude,  $A$ , is equal to the log ratio of transmitted light intensity,  $I$ , to the initial light intensity,  $I_0$ , as  $A = \log(I_0/I)$  [26]. Using this method, sperm concentration in unknown samples is estimated based on a previously established linear correlation between absorption intensity (recorded at a set wavelength) and sperm concentration. This method has been applied to quantify bull sperm concentration, demonstrating good agreement with that of the hemocytometry method. While spectrophotometry is rapid, accessible and well-suited to process a large number of samples, the method is very time sensitive as the absorption reading varies significantly with time. Moreover, the optimal wavelength for the most accurate prediction of sperm concentration varies from species to species and/or setups. For examples, this method has been applied to quantify sperm concentration by recording the absorption intensity at 400 nm for ray-finned fish and bull, at 480 nm for salmonid fish, and at 550 nm for roosters. This variability reduces the prediction accuracy of the methods where the most appropriate wavelength is not applied [12], preventing its widespread application, particularly for human semen analysis. Moreover, due to inherent nature of spectrophotometry, the sensitivity of the method is influenced by the concentration of somatic cells and debris in the raw semen sample that additionally absorb light and result in overestimating sperm concentration compared to conventional CASA systems.

Here, using a UV-Visible spectrophotometer, we introduce a well-trained ANN approach to evaluate human sperm concentration, by establishing a correlation between the full absorption spectrum and sperm concentration. This method is the first application of artificial neural network in spectrophotometry for sperm concentration analysis, and by using the full absorption spectrum rather than only one optimal wavelength, significantly improves over the traditional spectrophotometry-based methods to predict sperm concentration. Due to the inherent nature of spectrophotometry, our method is rapid and low-cost with over 93% accuracy in predicting sperm concentration, providing identical clinical outcomes for tested patient and donor samples.

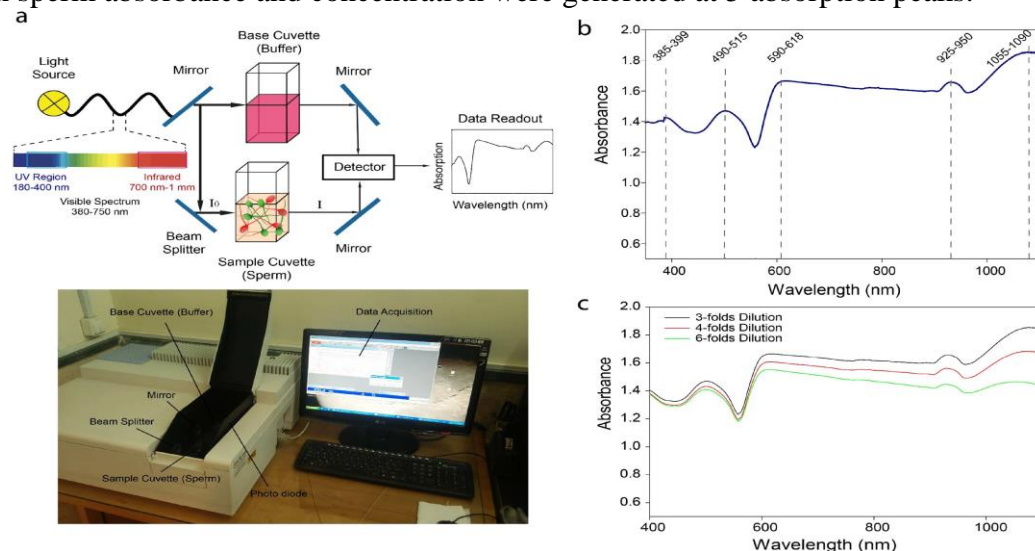
## **MATERIAL AND METHODS**

### **sample preparation**

The semen samples were collected from 41 male subjects between 30 and 45 years old who were referred to Avicenna Infertility Clinic for treatment, with ~15% of male partners experiencing infertility issues and the samples covering a wide range of patient and donor samples. All subjects signed an informed consent form and the study was approved by the ethical Committee of Avicenna Research Institute (Tehran, Iran). The study excluded subjects with a history of round cells ( $\geq 1 \times 10^6$  per ml), radiation, smoking, alcohol consumption, drug abuse, systemic disease, leukocytospermia, and varicocele. Semen samples were collected after 2–5 days of sexual abstinence, liquefied and prepared by standard swim-up technique. In brief, 1 ml of the semen specimen was gently mixed with 1 ml of Ham's F10 medium (Sigma, USA) supplemented with 3% human serum albumin (HSA) (Sigma, USA) and centrifuged at 330 g for 10 min. The supernatant was removed and 2 ml of Ham's F-10 medium supplemented with 3% HSA was added to the pellet. Subsequently, a MedeaLab CASA system (MTG, Germany, Ver. 4.1) with a MD-30 CCD camera and a sperm motility analyzer (VT Sperm 3.1) was used for clinical measurement of sperm concentration and progressive motility, according to World Health Organization (WHO) guidelines [40].

### UV-VISIBLE SPECTROPHOTOMETRY

Absorption magnitudes versus wavelength were recorded using UV-Visible Spectrophotometer (Perkin Elmer, Lambda 25), as shown in Figure 1a. To calibrate the device, sample and base cuvettes were both filled with Ham's F-10 medium supplemented with 3% HSA, and the machine was zeroed. The recorded absorption spectrum was used as a reference to be subtracted from sperm sample spectra. The sample cuvette was then loaded with 0.5 mL of washed semen sample. To prevent inaccurate readings due to probable and gradual settlement of semen samples, the sample was remixed by gently shaking the closed-cap sample cuvette prior to each measurement. The wavelength was swept from 390 nm to 1100 nm (1 nm interval), and the measurement was repeated twice for each sample (sample volume was divided into two equal parts and tested separately). Each test took about 5 minutes, and all the experiments were performed at 11 am to minimize the sensitivity of the method to the time-frame. Furthermore, linear regressions between sperm absorbance and concentration were generated at 5 absorption peaks.



**Figure 1. (a) UV-Visible spectrophotometry experimental setup. (b) A representative absorption spectrum for a tested semen specimen, demonstrating 5 absorption peaks at 390, 502, 615, 929, and 1075 nm. (c) The effect of sample dilution on absorption intensity for a semen specimen with the initial raw concentration of 70 Million/ml.**

Absorption pattern is identical and only lower absorption and complex but related datasets. Two neural networks, each with a two-layer backpropagation network, were developed using

Matlab R2019b software for predicting sperm concentration from absorption spectrum (Figure 2), one based on absorption peaks (5 peaks at 390, 502, 615, 929, and 1075 nm) and the other one based on the full absorption spectrum. The choice of backpropagation was because it is the most popular training algorithm for adjusting network weights and biases. Among the 41 tested human semen specimens, 26 samples were used in the model development phase (70% for training, 15% for testing and 15% for validation), and an additional 15 samples (previously unseen by the model) were used for external validation, ensuring the generality of the trained network for prediction and avoid overfitting of the data. The optimum number of neurons in each hidden layer was also optimized through assessing 400 ANN structures (for 5 times per structure for a total of 2000 cases) to achieve the lowest RMSE for best prediction accuracy (Table S1 and Table S2 in the Supplementary Material). It is noteworthy that the prediction accuracy was defined as the percentage ratio between predicted concentrations from the model and the clinical values ( $100 \times \text{model value/clinical value}$ ), as a clear metric to demonstrate how closely the estimated concentration from the model compares with the clinical measurements. To validate the performance of the model, 13-fold cross validation was also performed on the dataset, with the results demonstrating an average classification accuracy of 92% for the dataset A multi-input selected peak neural network (SPNN) model was trained by using peak absorptions for each of the 26 training samples as the input dataset and their corresponding sperm concentration as the output dataset (Figure 2a). The inputs were the product of peak absorption wavelengths ( $W_i=390, 502, 615, 929$  and  $1075$  nm) and the corresponding normalized absorption values ( $Abs_i$ ). The maximum absorption value among all tested samples was used for normalization. Absorption measurement at the peak wavelengths introduces the smallest error due to their relatively high signal-to-noise ratio, improving measurement accuracy especially for relatively small absorbance values. A full spectrum neural network (FSNN) model was also trained by using the full absorption spectrum for each training sample as the input (711 data points per sample) and the corresponding sperm concentration as the output (Figure 2b).

### **DATA ANALYSIS**

Absorption spectra from a total of 41 semen specimens were recorded, out of which 26 samples were used for establishing the calibration curves and training the artificial neural networks and the other 15 samples were used as unknown samples for testing the external validity. To validate the performance of the ANN models, 13-fold cross validation was also performed on the dataset, with the results demonstrating an average classification accuracy of 92%. For cross validation, the dataset was randomly partitioned into 13 parts, where 12 parts formed the training set and the remaining part formed the test set. Each 13-fold cross validation procedure was repeated three times to ensure

### **RESULTS AND DISCUSSION**

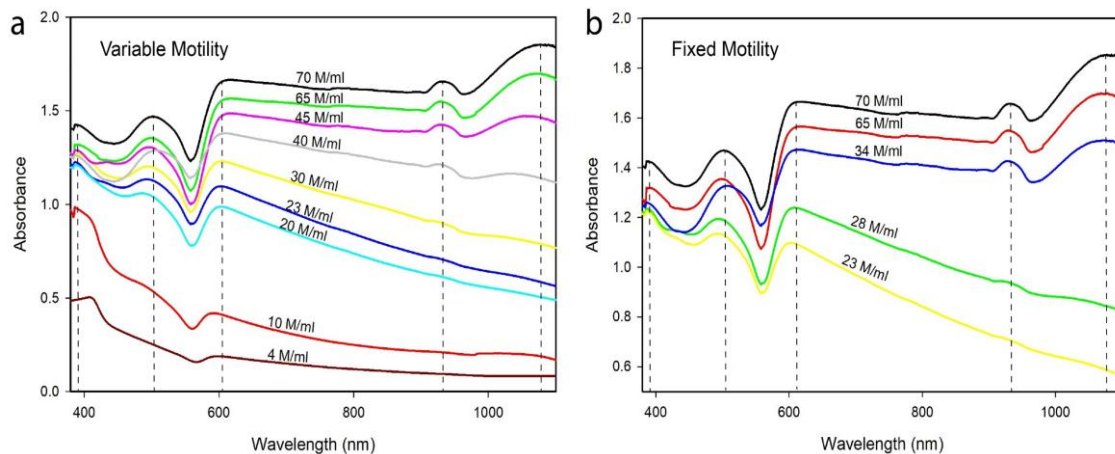
#### **absorption-sperm concentration correlation**

Figure 1b shows a representative absorption spectrum for a human sample with 70 million per millilitre (M/ml) sperm concentration, demonstrating 5 absorption peaks at 390, 502, 615, 929, and 1075 nm. To characterize the effect of sperm concentration on absorption spectrum, the semen specimen (with 70 M/ml sperm concentration) was also diluted 3-, 4-, and 6- folds and absorption spectra were recorded (Figure 1c). Recorded absorption spectra for diluted samples followed the same pattern as the original sample but shifted down by diluting the sample. Specifically, the absorption peak positions were almost independent of the applied dilution (i.e. change in sperm concentration), however, the peak absorptions were considerably influenced and shifted down for lower sperm concentrations. As shown in Figure 1c, the change in the peak absorption values was more pronounced at higher wavelengths, particularly for peaks at wavelength higher than 600 nm.

Specifically, by diluting the sample 4- and 6-folds, the absorption magnitude at wavelength higher than 600 nm decreased on average by 6% and 13%, respectively, but only by 2.5% and 4% at lower wavelengths (<600 nm). Compared to the sample with 3-folds dilution, the peaks at 1084 nm decreased considerably by 10% and 28% by diluting the sample 4- and 6-folds, respectively. As a result of this nonlinear change, the maximum absorption was observed for the 612 nm peak by diluting the sample 6-folds, instead of the maximum peak at 1075 nm for samples of higher sperm concentrations. The results demonstrate that the absorbed light intensity is correlated with sperm concentration, shifting down for samples with lower concentrations.

To establish a correlation between sperm concentration and absorption intensity, 26 human samples with sperm concentrations ranging from 4 M/ml to 70 M/ml and sperm motility ranging from 10% to 65% were tested (Figure 3). For samples of different concentrations, 5 absorption peaks were observed, shifting by less than 5% to be at 385-399 nm, 490-515 nm, 590-618 nm, 925-950 nm, and 1055-1090 nm.

All of the tested samples demonstrated the visible range peak at 590-618 nm, but with lower peak absorption intensities for lower sperm concentrations. For samples with sperm concentration lower than 20 M/ml (Figure 3a), the 490-515 nm peak mostly disappeared, and the first dominant absorption peak was observed at 590-618 nm. Moreover, the two absorption peaks at 925-950 nm and 1055-1090 nm were also only observed for samples with concentrations above 40 M/ml, but not for samples of lower concentrations. The absorption behaviour was also compared for samples of different concentrations but the same motility of 50% (obtained from clinical measurements), as shown in Figure 3b. Samples with fixed sperm motility of 50% demonstrated the same behavior, and absorption spectra shifted down at lower concentrations. It is noteworthy that, while absorption spectra were influenced by sperm concentration, no clear and comprehensive correlation between any of the individual absorption peaks and sperm concentration was observed.



**Figure 3. Absorption spectra for human semen specimens of different concentrations. (a) Absorption spectra for 9 semen specimens ranging in sperm concentration from 4 M/ml to 70 M/ml and in motility from 10% to 65%.**

#### Full spectrum neural network (fsnn) model

To develop a comprehensive prediction tool, a full spectrum neural network (FSNN) model was constructed that estimates sperm concentration based on the full absorption spectrum (711 data points per sample, Figure 2b). The minimum RMSE of 0.086 was achieved for the FSNN model with Levenberge-Marquardt (LM) as the training method and with Tansig and Logsig as the transfer functions for the first and second hidden layers respectively. The best FSNN model maps 711 input variables (absorption values and corresponding wavelengths) onto a single output (sperm concentration) with 12 neurons in the first hidden layer and 20 neurons in the second hidden



layer (denoted as 711:12:20:1), listed as structure number 240 in Table S1 in Supplementary Material. Figure 5b compares sperm concentrations from clinical measurements with values predicted by the FSNN model, for the same 15 human samples tested with the SPNN model. Sperm concentration from the FSNN model strongly correlated ( $R^2=0.98$ ,  $P\leq 0.0001$ ) with clinical measurements, with predicted values within 7% of the clinical measurements (93% prediction accuracy). The FSNN model demonstrated over 7% and 15% improvement in prediction accuracy as compared with the SPNN and simple regression models, respectively. The FSNN model accurately estimates sperm concentration by fully accounting for the non-linear correlation between sperm concentration and absorption spectrum, including the change in the dominant absorption peak and the shift in the peak position for samples of different concentrations. It is noteworthy that, both SPNN and FSNN models were also trained and evaluated to also estimate sperm motility from recorded absorption spectra for clinically tested samples with sperm concentrations ranging from 4 M/ml to 70 M/ml and sperm motility ranging from 10% to 65% (i.e. ANN models with sperm concentration and motility as output parameters). However, the models were incapable of predicting sperm motility and estimated concentrations were independent of sperm motility.

To evaluate the performance of the developed models to estimate sperm concentration, Figure 6 compares sperm concentrations from the linear regression, SPNN and FSNN models against clinically measured values, for patient and donor samples ranging in concentration from 5 to 65 M/ml.

## **CONCLUSIONS**

In summary, we demonstrated a machine learning-based spectrophotometry approach for quantifying human sperm concentration. The full spectrum neural network (FSNN) model accurately estimates sperm concentration based on the full absorption spectrum by establishing a weighted correlation graph to fully account for the non-linear correlation between absorption spectrum and sperm concentration. Sperm concentration from the FSNN model strongly correlated ( $R^2=0.98$ ) with clinical measurements and were within 7% of the clinical values, demonstrating a prediction accuracy of 93% with over 15% improvement over the linear regression model. The FSNN model provided 100% agreement with clinical measurements in terms of clinical outcome for patients to accurately distinguish between donor and patient samples. However, increasing sample representativeness in terms of sperm concentration by increasing the sample size, could possibly increase the prediction accuracy of our method and better validate the model for clinical adoption. Collectively, the FSNN model provides a rapid and powerful tool for quantifying sperm concentration, improving on current spectrophotometry methods for semen analysis and providing novel opportunities for male infertility diagnosis. While increasing the sample size, can better inform the model for estimating sperm concentration and further increase the prediction accuracy, the FSNN model still demonstrates its performance for male infertility diagnosis. Utilizing the novel machine learning-based spectrophotometric approach is also suggested for samples with DNA fragmentation in search for an effective diagnostic tool.

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## PATHOLOGICAL CHANGES IN THE ORAL MUCOSA IN DIABETES MELLITUS

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**Abstract.** *Diabetes affects the condition of almost the entire body, including the oral cavity<sup>4</sup>. This reaction of the body is explained by the formation of ketone compounds when the amount of glucose increases, which are "poison" for all cells and tissues<sup>3</sup>. Against the background of this disease, various problems related to teeth, gums and periodontal tissues (periodontal tissues) can develop<sup>3</sup>. However, their appearance is related not only to the main disease - diabetes, but also to oral hygiene<sup>2</sup>. In this article, we will tell you how the condition of the oral cavity changes with diabetes and how to take care to prevent the development of problems with teeth and gums.*

**Keywords:** *listerine® total care, bad breath, plaque, dry mouth symptoms.*

It has been proven that the manifestation of diabetes in the oral cavity does not occur or is mild in people who take good care of their teeth.

### **Dry mouth symptoms**

Many people with diabetes notice that they produce less saliva and have a dry mouth, known as xerostomia<sup>4</sup>. As a rule, xerostomia is one of the first oral symptoms of diabetes mellitus<sup>3</sup>. Dry mouth is accompanied by increased appetite and thirst<sup>4</sup>. The cause of the registered complaints is an increase in the level of glucose in the blood and a "jump" in its content during the 3rd day. In addition to the decrease in saliva, the composition of saliva also changes - the amount of glucose in it increases<sup>4</sup>. All this creates favorable conditions for the development of dysbiosis in the oral cavity - the number of "dangerous" microbes that because inflammation increases by<sup>3</sup>. Xerostomia can also cause pain, mucosal ulcers, infections and caries<sup>4</sup>.

### **Plaque**

Lack of saliva and high sugar levels in saliva and tissues is an excellent breeding ground for many "harmful" microbes. Glucose is a source of energy for them<sup>3</sup>, and since there is little saliva, not all bacteria are washed off the tooth surface<sup>8</sup>. Remaining in the oral cavity, bacteria begin to actively multiply - thus a soft plaque is formed, which later becomes denser and turns into tartar<sup>3</sup>. With diabetes, mineral metabolism is also disturbed - calcium and fluoride are washed out of the body, bone tissue is destroyed, and enamel becomes brittle. The acid produced by the microbes in the oral cavity quickly penetrates the hard tissues of the teeth and destroys them, causing caries<sup>3</sup>.

### **Bad breath**

65% of patients with diabetes develop bad breath (halitosis). The main cause of this smell is volatile sulfur compounds produced by bacteria<sup>7,8</sup>. If you do not pay attention to hygiene, food residues accumulate on the surface of the teeth, in the spaces between the teeth, as well as on the back of the tongue. Microbes consume food residues and in the process of their vital activity emit foul-smelling sulfur compounds<sup>8</sup>. Dry mouth also contributes to the appearance of halitosis - the

decrease in saliva production leads to the deterioration of the natural cleaning of the oral cavity. As a result, favorable conditions are created for the growth of bacteria that produce sulfur compounds <sup>8</sup>.

### **Inflammatory diseases of the oral cavity**

Gum and periodontal diseases are 3 times more common in patients with diabetes and more severe than in people with normal blood sugar levels. The reason for this is that blood vessels are affected in diabetes, bone tissue is destroyed, and local immunity in the oral cavity decreases <sup>5</sup>. When the walls of blood vessels thicken, the flow of nutrients to the gums and periodontium slows down, while the removal of waste products from them is impaired. Poor blood circulation reduces the body's ability to fight infections, and bacteria living on dental plaque cause inflammation <sup>4</sup>. Timely detection and treatment of inflammatory diseases in the oral cavity is important - this has a beneficial effect not only on the oral cavity, but also on the level of glucose in the blood <sup>5</sup>. It has been proven that diabetes patients have high blood sugar levels when they have gum disease or periodontal inflammation. With any inflammatory process, including in the oral cavity, the production of active substances - inflammatory mediators - increases. They contribute to the development of insulin resistance, which is the basis of diabetes mellitus. Often, a dentist can first suspect diabetes based on the following symptoms <sup>2</sup>: Gum swelling, cyanosis and bleeding; Heavy plaque on the teeth.

If you notice any of these symptoms, visit your dentist and pay attention to your daily dental care. Good oral hygiene is especially important if you have diabetes – poor blood sugar control increases your risk of developing dental disease. The more poorly controlled your diabetes is, the more likely you are to develop oral inflammation <sup>4</sup>.

### **Features of oral care for diabetes**

For people with diabetes, oral hygiene is not just about brushing, but infection control, which is important for overall health <sup>2</sup>. Here are some tips to help you maintain good oral health:

You should brush your teeth regularly, at least twice a day: in the morning, after breakfast (not before) and in the evening after the last meal (before going to bed). Cleaning time should be at least <sup>3</sup> minutes <sup>6</sup>. Whether it's a full meal or a light snack, brush not only your teeth but also your tongue after every meal <sup>2</sup>. Clean from all sides with sweeping movements from the gum to the edge of the tooth <sup>6</sup>. Use a soft-bristled toothbrush that effectively removes plaque without damaging the gums <sup>2</sup>. After each cleaning, wash the brush with soap and water and store it in an upright position with the head facing upwards. Change it at least once a month <sup>6</sup>. In addition to the toothbrush and toothpaste, use additional products: mouthwash, dental floss or brushes <sup>2</sup>. Choose antimicrobial toothpastes and mouthwashes to reduce plaque build-up and prevent the growth of germs between brushes <sup>2</sup>. It is good that the products contain fluoride - it strengthens the enamel and protects it from caries <sup>2</sup>.

LISTERINE® TOTAL CARE - comprehensively protects the oral cavity. Detergent has 6 advantages:

- Destroys 99% of bacteria <sup>10</sup>;
- Reduces plaque <sup>12</sup>;
- Prevents the formation of tartar <sup>13</sup>;
- Supports gum health <sup>14</sup>;
- Protects against caries <sup>15</sup>;
- Refreshes breath <sup>17</sup>.

Oral diseases associated with diabetes occur in 87% of patients <sup>3</sup>. Careful care of the oral cavity will help to alleviate their course or completely prevent it. Proper hygiene is the basis for the prevention and treatment of any inflammatory diseases of the oral cavity, as they are caused by plaque bacteria. For people with diabetes, oral hygiene is a mandatory and very important daily routine to maintain health <sup>2</sup>.

### **Conclusion**

In conclusion, diabetes mellitus can lead to a variety of pathological changes in the oral mucosa. These changes are primarily attributed to the underlying metabolic disturbances and compromised immune function associated with diabetes. Common oral manifestations include an increased prevalence and severity of periodontal disease, impaired wound healing, decreased salivary flow, oral candidiasis, and altered taste sensation. The presence of diabetes alters the oral microenvironment, creating an environment conducive to the growth of periodontal pathogens. This, coupled with impaired immune response, results in an increased risk of periodontal disease, characterized by inflammation, bleeding gums, and eventual tooth loss if left untreated. Additionally, the compromised immune function and impaired blood circulation in diabetes contribute to delayed wound healing in the oral cavity, making individuals with diabetes more susceptible to oral infections and ulcers.

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## MODERN IDEAS ABOUT THE DIAGNOSIS OF FUNDUS CHANGES IN HYPERTENSION

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**Abstract.** *There is some disagreement regarding the correct test method for imaging lesions in GH. For example, conventional fundoscopy has been shown to have limited added value in GR due to significant interobserver variability. Moreover, fundoscopy may not be suitable for detecting subtle changes. Maestri et al. compared the use of direct ophthalmoscopy with microdensitometry in the assessment of vascular vasoconstriction expressed as arteriovenous diameter ratio (AVR). Their study showed that semi-automated microdensitometry is more useful in diagnosing early vascular changes than standard ophthalmoscopy. The high reliability of this method is due to minimal interobserver and intraobserver variability.*

**Keywords:** *microvascular, reproducible, Spectral domain OCT*

Recently, significant progress has been made in the field of imaging the internal structures of the eye. Now you can observe not only the large vessels of the retina, but also penetrate deeper to the level of the capillaries. The introduction of retinal adaptive optics (AO) and optical coherence tomography (OCT) has provided scientists with improved data on retinal vascular changes. This is particularly important for monitoring retinal microcirculation to predict cardiovascular risk. With these new imaging techniques, lesion progression can be closely monitored as it allows for in vivo observation of the vessels. Spectral domain OCT (SD-OCT) provided faster scanning, denser examination, and three-dimensional imaging. A study using SD-OCT analysis in a group of 119 patients, of whom 56 had hypertension, showed that in the chronic stage (KWB grades I and II) it is an accurate, reproducible and convenient method for assessing the diameter of the central retinal artery (CRA), diameter of the central retinal venula (CRV) and the CRA/CRV ratio (AVR). Additionally, SD-OCT demonstrated a stronger correlation of these measurements with worsening visual acuity than the KWB classification due to the presence of subretinal fluid (SRF) in patients with severe hypertension (SBP >180 mmHg or DBP >110 mmHg. Art.). In their study, Ahn et al. also proposed a new classification of hypertensive retinopathy based on OCT data, including 3 grades: mild to moderate, malignant without SRF, and malignant with SRF. SD-OCT is also useful for monitoring retinal nerve fiber layer (RNF) reduction and central macular thickness in grade IV hypertensive retinopathy. Findings from the Singapore Malay Eye Study highlight the association between decreased arteriolar and venular diameters and RNFL thickening, even after excluding patients with glaucoma. Data from another study suggest that SD-OCT assessment should be added to the standard assessment of hypertensive retinopathy in patients with systemic hypertension for the early diagnosis of hypertensive macro- and microorgan damage (HMOD).

OCTA provides a rapid and harmless assessment of the retinal microcirculation. Microvascular changes in the retina and choroid are assessed based on parameters such as vascular density (VD), foveal avascular zone (FAZ) area, and radial peripapillary capillary (RPC) vasculature. Retinal capillary assessment has been effective in diabetic retinopathy, and its use in hypertensive retinopathy may also be effective. This makes it possible to detect even subtle differences in capillary structure, which may be early markers of ischemia and hypoxia, before changes occur in arterioles and venules. Moreover, recent studies using OCTA analysis show that

vessel density in the SVP is reduced in a group of hypertensive patients with inadequate blood pressure control. In addition, decreased retinal and choroidal vascular density is closely associated with stenosis of the coronary arteries and their branches, making OCTA an effective and harmless method for measuring and detecting the early stages of CAD, which may reduce the likelihood of developing myocardial infarction. It is also reasonable to perform simultaneous SD-OCT and OCTA analysis. Unlike SD-OCT, OCTA cannot measure retinal vessel diameter but provides an assessment of hemodynamics and retinal vascular flow density. Takayama et al. expressed the need to implement a new classification system based on the use of OCTA and measurement of choroidal vasculature in proximity to the fovea, which is also reduced in hypertension. They demonstrated that changes in SVP, FAZ area, capillary density, and inner retinal thickness occurred in a group of hypertensive patients without hypertensive retinopathy. As mentioned earlier, subtle changes in the vasculature may develop before the onset of hypertension. This implies that increasing the frequency of OCTA monitoring may be useful for monitoring changes in retinal vasculature and thickness in a group of patients at risk of developing hypertension.

Adaptive optics (AO) retinal imaging is another important tool for precise imaging of the retinal vasculature. With a resolution of less than 2  $\mu\text{m}$ , it has improved the quality of retinal images and aided in the assessment of cellular and subcellular details such as endothelial cell health and subtle fluid leaks [90]. Using this technique, retinal vessel wall thickness (VW) and luminal diameter (LD) can be directly measured. The semi-automated method for measuring vascular parameters has low intraobserver variability. Another useful vascular parameter is the wall-to-lumen ratio (WLR), which can be measured by combining AO with scanning laser ophthalmoscopy. The increase in WLR that occurs in hypertension is due to a decrease in LD and thickening of the arteriolar wall. This is used to detect subtle retinal microvascular changes observed during early remodeling. Its importance is further expanded as increased WLR correlates not only with age and higher body mass index (BMI), but also with early stage hypertensive macro- and microorgan damage (HMOD). Increased use of AO for retinal imaging will be essential in the search for new mechanisms of vascular changes associated with hypertension. It has already improved our understanding of the implications of changes at the capillary level for perfusion.

Researchers S. Akbar and colleagues studied the effects of arterial hypertension on the fundus of the eye. They have developed an automated system that can analyze heart rate (HR) and retinal health in hypertension. Particular attention was paid to the arteriovenous ratio and papilledema on retinal images. Hypertension can cause various changes in the retina, such as vascular tortuosity, hard exudates, cotton wool lesions, hemorrhage and papilledema, which can affect visual acuity. Researchers have presented a new automated system for GR classification that uses hybrid functions and is supported by a vector machine used in medical practice.

This system includes two modules: vascular analysis, which determines the arteriovenous ratio, and analysis of the optic nerve head region, which detects papilledema on fundus images. For the first module, a set of hybrid features was used in combination with a vector machine method and a basic radial kernel to estimate the arteriovenous ratio. The second module analyzes the optic nerve head to look for signs of swelling. The first module achieved an average accuracy of 95%, while the second module achieved an average accuracy of 96%. This newest system allows you to analyze the state of the retinal vessels, the state of the vessels of the head of the optic nerve head and link them with heart rate (HR).

In 2014, A. Triantafyllou and co-authors conducted a study of angioretinopathy caused by high blood pressure and its relationship with vascular wall stiffness in patients with normal blood pressure and early manifestations of hypertension. This is explained by the fact that changes in micro- and macrocirculation are characteristic of long-term hypertension, but not enough studies



have analyzed these changes in the early stages of GH. Non-dilated fundus photographs were used to assess retinal vascular diameters, including the central retinal artery (CRA), venular equivalent, and arteriovenous ratio (AVR). Arterial stiffness was determined by measuring pulse wave velocity (PWV) and aortic augmentation index (AIx). This study is the first to show an association between quantitative changes in the retina and increased arterial stiffness in the early stages of HD. Violation of micro- and macrocirculation in hypertension is a dynamic and interconnected process that manifests itself at the earliest stages. Given the importance of both retinal arteriolar constriction and arterial stiffness in cardiovascular risk, identifying associated micro- and macrovascular changes may be important in assessing cardiovascular health in patients with hypertension.

Guedri et al., studying the diameter of blood vessels during GR, used a modern computer method. The essence of this method is to measure the diameter of a blood vessel in an image of the retina. The proposed method includes thresholding and rarefaction segmentation steps, followed by retinal feature point detection according to the Douglas-Pucker algorithm. Then the contours of the vessel are determined, and Heron's formula is used to calculate the diameter.

McDonald proposed a new approach to the study of GH by studying mRNA, endothelin receptors and their antagonists. This work noted clinical and histological changes in the retina, such as hyalinization of the retinal arteries, increased thickness of the vascular basement membrane, narrowing of the retinal arterioles, necrosis of the arteriolar walls, closure of the retinal capillaries, the appearance of cotton wool spots on the retina, smooth muscle degeneration, and disruption of the blood-retinal barrier. Despite the association between systemic hypertension and GH, the exact pathogenesis of this disease remains poorly understood.

Zou and colleagues performed an extensive study of the fundus vessels in GH in cases of hypertension, despite the fact that the symptoms of hypertension have been described in the medical literature since 1859. To assess changes in the fundus in patients with hypertension, in 1939 Keith, Wagener and Barker proposed a classification that included 4 stages: 1) moderate general narrowing of the retinal arteries; 2) stage 1 plus abnormal arrangement of vessels and their narrow constrictions; 3) stage 2 plus the presence of exudates, cotton wool spots and flame-shaped hemorrhages; 4) stage 3 plus papilledema.

Currently, interest in the clinical aspects of hypertension continues, and Zou et al introduced a new arterial-venous classification (AVC), emphasizing the central line of the vessel. The vessel centerline is extracted after pre-processing vessel segmentation and determining the location of the optical disc in the fundus image. A region of interest (ROI) of the retinal vessels is then analyzed. Each pixel on the centerline is treated as a local feature and the analysis is performed using Gray Level Co-occurrence Matrix (GLCM) and Adaptive Local Binary Pattern (A-LBP) using a Maximum Relevance Minimum Redundancy (mRMR) scheme. For arterial-venous classification, an algorithm with functional K-nearest neighbor (FW-KNN) estimation is used. Experimental studies on the DRIVE and INSPIRE-AVR databases showed high classification accuracy - 88.65% and 88.51%, respectively.

In parallel to this study, Spanish scientists in the same year presented data on the micro- and macrocirculation of the retina obtained using automatic retinography during GR. These data correlate with the results of ultrasound examination of the carotid arteries. Based on these data, a new medical technology called “web integration” (Wivern) was developed, which can be used in multidisciplinary medical centers to analyze micro- and macrocirculation. This tool allows you to manage clinical information in several medical specialties such as neurology and ophthalmology. Each study provides automated analysis, including retinography, carotid ultrasound, and blood

pressure monitoring, and provides automated calculations to assess cardiovascular risk. The Wivern application enables interdisciplinary research into the vasculature.

The significance of hypertensive chorioretinopathy. Hypertensive retinopathy and chorioretinopathy serve as indicators of hypertensive changes in other parts of the body. Features of mild hypertensive retinopathy, including global and focal arteriolar narrowing, copper hoops, and arteriovenous junction narrowing, have been associated with coronary artery disease, stroke, and renal dysfunction. The Ibaraki Population Health Study found that mild hypertensive retinopathy is a risk factor for cardiovascular mortality independent of other risk factors for cardiovascular disease. For patients with mild hypertensive retinopathy, multivariate hazard ratios for all-cause cardiovascular mortality were 1.23–1.24 for men and 1.12–1.44 for women, and multivariate hazard ratios for all-cause stroke mortality were 1.31–1.38 for men and 1.30–1.70 for women.

Signs of mild hypertensive retinopathy, including retinal hemorrhages, cotton flakes, hard exudates, and microaneurysms, are even more strongly associated with an increased risk of death from cardiovascular causes. The ARIC study found that features of mild hypertensive retinopathy are associated with a two- to fourfold increased risk of stroke, independent of other risk factors, including long-term elevated blood pressure, smoking, and lipid levels. This study also found that, after controlling for existing risk factors, mild hypertensive retinopathy was associated with a twofold increased risk of heart failure. Habib et al. found that higher grades of hypertensive retinopathy were significantly associated with higher angiographic severity of coronary artery disease as assessed by the syntactic index.

Hypertensive chorioretinopathy is more common in younger patients with acute increases in blood pressure and is associated with a poor prognosis if untreated. It is seen in conditions such as malignant hypertension, preeclampsia, eclampsia, acute or chronic renal failure, renal artery stenosis and adrenal cancer. These conditions are medical emergencies that require immediate treatment.

Currently, there is an increase in the number of studies in the field of hypertensive retinopathy. Most of them are aimed at a deeper understanding of the pathogenesis of this disease. One study indicated that endothelins, a group of vasoconstrictive substances produced by endothelial cells, may cause damage to the blood-retinal barrier (BRB). It is mainly caused by the activation of endothelin receptors A and B (ETRA and ETRB) by endothelin 1 (ET-1). Stimulation of these receptors promotes vascular leakage and VEGF stimulation and is upregulated in animal models of hypertension and diabetes. In addition, antagonists of these receptors have been shown to reduce vascular damage and neovascularization, as well as exert protective effects on BRB. In addition, plasma ET-1 levels are increased in hypertensive retinopathy. It is important to further investigate the role of neovascularization in hypertensive retinopathy, as this may help achieve additional therapeutic benefits. Targeting agents that promote neovascularization such as platelet-derived growth factor (PDGF), pigment epithelium-derived factor (PEDF), hepatocyte growth factor (HGF), angiopoietins, and fibroblast growth factor (FGF) may be promising. Studies in a rat model of hypertensive complications of pregnancy, preeclampsia, have confirmed the connection between high blood pressure, RAAS and increased levels of pro-angiogenic factors such as VEGF and PEDF. In preeclampsia, there is massive endothelial dysfunction, which also causes minor retinal vasoconstriction. Proteomic analysis of the vitreous may help determine the involvement of these factors in the pathogenesis of hypertensive retinopathy due to its close location to the damaged retina. One difficulty with this method may be the small sample size.

Serum uric acid concentration (SUC) is an independent risk factor for hypertension. It is also associated with hypertensive retinopathy, as shown in a large study in the Chinese population.

Elevated SMC levels can lead to damage to endothelial cells. In addition, additional increases in blood pressure may have a negative cumulative effect on the microcirculation and may mediate vascular damage. It is possible that reducing SMC levels may reduce the risk of developing hypertensive retinopathy. Another substance, marinobufagenin, which is a biomarker of salt sensitivity and increases with salt intake, was found to be associated with decreased retinal microvascular dilatation in young normotensive adults. In addition, increased levels of marinobufagenin have been shown to promote endothelial damage and prevent the decrease in blood pressure at night, which is a physiological process.

Genetic testing can also provide new data. Attempts have been made to identify the genes responsible for the diameter of the reticular vessels. To date, 8 single nucleotide polymorphisms (SNPs) have been identified for CRVE diameter and 2 SNPs for CRAE diameter. Additional research into their role in microcirculatory diseases may explain the predisposition to microcirculatory disorders. Additionally, ALK-1 and endoglin polymorphisms have been shown to be risk factors for cardiovascular events. Both ALK-1 and endoglin are receptors for transforming growth factor beta1 (TGF- $\beta$ 1), which is important in the regulation of blood pressure and vascular homeostasis. In addition, TGF- $\beta$ 1 has been shown to be involved in the destruction of the capillary basement membrane, which serves as a support for epithelial cells.

Much attention is paid to the issues of inflammation and its connection with damage to the retinal microcirculation. Particular attention is paid to the role of LMP10, the catalytic subunit of the interferon- $\gamma$ -induced proteasome, which has trepsin-like activity. Ang II can cause an increase in the level of this subunit, and studies in mouse models and humans have shown that its level and activity are increased in the retina during hypertension. Moreover, ablation of LMP10 reduces the increase in retinal vascular permeability, remodeling, and inflammation. Inhibition of this subunit may be a potential drug. Another proteasome subunit, b5i, plays an essential role in the development of hypertensive retinopathy in a mouse model of hypertension. The b5i subunit reduces the stability of its associated AT1R protein (ATRAP), which normally inhibits the development of AT1R-induced retinopathy. Ablation of b5i attenuated Ang II-induced retinal thickness increases, inflammation, oxidative stress, and remodeling. An excess of this subunit, on the contrary, enhances these effects. Another study in a mouse model of hypertension showed that G protein-coupling receptor 174 (GPR 174) plays an important role in regulating the immune and inflammatory response. Removing the gene encoding this protein caused a decrease in vascular permeability and had a protective effect on the retina. Recent research has proposed acetylsalicylic acid glycoproteins (GlycA) as a new marker of chronic and cumulative inflammation. High GlycA levels were associated with wider venule diameter and narrower arteriole diameter. The relationship between GlycA and hypertensive retinopathy remains to be investigated.

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## HABITUAL MISCARRIAGE

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**Abstract.** *In January 2023, ESHRE (European Society of Human Reproduction and Embryology — European Society of Specialists in Human Reproduction and Embryology) issued updated recommendations on habitual miscarriage to replace the previous version of 2017. All changes and additions to the recommendations in the guidelines were formulated after evaluating the most qualitative and relevant evidence that appeared in the literature and their discussion by an expert group that took into account the benefit-harm ratio, patient preferences and the experience of clinicians [1].*

**Keywords:** *3D ultrasound, sonohysteroscopy, hysterosalpingography, epidemiology.*

Despite the fact that there are many studies in the field of habitual miscarriage, in about half of the cases we still cannot answer the question of what reason or combination of reasons led to another pregnancy loss. But even when there is the most probable cause, it is not always possible to offer effective measures to prevent repeated losses that increase the probability of live birth. So far, there are not so many therapeutic options with unambiguously proven effectiveness for patients with habitual miscarriage, but data is accumulating, and some of them are moving from the purely scientific sphere into our daily clinical practice. In the ESHRE protocol, some abstracts are marked with the clause "recommended only during clinical trials", so far they are given only for familiarization with news in this area and should not be used in routine clinical practice. In the near future, some of them may become "recommended" — for use in the practical work of a doctor, while the rest will forever remain only part of the scientific search with the designation "not recommended". When studying and comparing the ESHRE and ROAG protocols, there are many reasons for reflection. Controversial issues arise already at the definition stage. According to the study by E. Van den Boogaard et. al. [2], the frequency of detection of antiphospholipid syndrome (AFS) in patients with habitual miscarriage does not depend on whether pregnancies were lost in a row or not, as well as on whether a woman had a history of 2 or 3 miscarriages. In a large retrospective study, it was shown that the distribution of concomitant risk factors in couples who lost 2 and 3 pregnancies was the same [3]. It is also important to note that of all couples with PV, no more than 10% will have  $\geq 2$  inconsistent pregnancy losses, the rest of the patients will have consecutive losses. Therefore, the inclusion of such couples in the list of those subject to examination and treatment will not significantly change the picture [4]. Thus, the prevalence of PV among women with two or more pregnancies in the anamnesis ranges from 0.8 to 1.4%. However, all these studies were conducted quite a long time ago, at a time when methods for detecting very early pregnancy loss were far from perfect. If these studies were repeated today, the prevalence of PV would probably be greater.

### **Examination and risk assessment**

**Age.** The ESHRE protocol prescribes the need to inform patients that the risk of miscarriage is minimal at the age of 20-35 years, and after 40 years it increases significantly. The age of a woman over 40 is a generally recognized risk factor for female infertility, fetal

abnormalities, stillbirth and obstetric complications [8, 9]. Based on computer modeling with the inclusion of data on the probability of pregnancy loss after conception, depending on age, it was shown that in order to build a family with two children with a 90% probability, a couple should start trying to conceive a child until a woman is over 31 years old. If the couple is not considering IVF, then in order to achieve the same probability, it is worth starting at all at the age of no older than 27 years. To create a family with one child, couples should start trying before the age of 35 (up to 32 years old, if they are not considering IVF) [10]. In women with PV, the probability of a live birth decreases with increasing age. After 35 years, the risk of another loss in the presence of PV is 2 times higher than before 35 years [11]. A meta—analysis conducted in 2020 showed that the age of the father also matters: with increasing age, the risk of miscarriage increases - the relative risk for the age groups 30-34 years, 35-39 years, 40-44 and 45+ was 1.04, 1.15, 1.23 and 1.43, respectively [12]. However, the experts did not find any studies that would study the influence of the father's age on the risk of miscarriage in PV. Perhaps, in the future, the definition will be clarified, but at the moment it is useful to pay attention to patients who have lost 2 pregnancies, not only from the point of view of examination (for example, to determine antibodies to phospholipids, although formally 2 losses are not yet a criterion of AFS), but also from the point of view of providing them with psychological assistance [13]. ESHRE experts recommend calculating the prognosis based on the age of the woman and her obstetric history, including the number of previous pregnancy losses, live births and their sequence.

**Chronic endometritis.** In recent years, very often patients are diagnosed with chronic endometritis, which is very doubtful, given the lack of generally recognized standards for the diagnosis and treatment of this disease. Chronic endometritis is characterized by plasmocellular infiltration of the endometrium associated with a number of pathogenic microorganisms. According to some studies, the prevalence of chronic endometritis in women with PV ranges from 7 to 58% of cases [14-16]. The prevalence depends on the detection method: high rates were obtained during hysteroscopy and/or immunohistochemistry using antibodies to CD138 [17-19]. However, the only study comparing the prevalence of chronic endometritis with fertility control did not reveal any significant differences between healthy women and women with PV [20]. There is evidence that antibiotics reduce the severity of endometritis, followed by an improvement in the live birth rate [14, 15]. However, this concept has not been tested in randomized controlled trials. Based on the results of these studies, ESHRE experts emphasize the need for further studies (including prospective observational and randomized controlled studies) before recommending examination for chronic endometritis to women with PV.

#### **Antiphospholipid syndrome.**

**Immunological aspects.** In the European recommendations on immunological screening regarding the study of HLA, a slight amendment was made compared to the recommendations of 2017. The definition of HLA is still not recommended routinely, but in very specific circumstances and in a narrow ethnic group, this may be important [21]. In a recent large case—control study involving 1,078 Caucasian women with PV and 2,066 control group patients, it was found that the HLA-DRB1\*07 allele was associated with an increased risk of PV (relative risk 1.29 in heterozygous patients and 2.27 in homozygous patients). In this study, the frequency of HLA-DRB1\*07 did not differ significantly between patients with primary and secondary PV, and the frequency of occurrence of the allele did not change with an increase in the number of miscarriages [22]. At the moment, the clinical significance of these findings is not clear.

ESHRE experts also consider it appropriate to examine patients with PV for antinuclear antibodies (ANA). ANA are a group of autoantibodies against the components of the cell nucleus that bind to proteins, nucleic acids and protein–nucleic acid complexes. The presence of high ANA titers (>1:160) is closely associated with autoimmune diseases, which in turn are associated with adverse pregnancy outcomes. ANA circulation can also occur among healthy individuals, with the prevalence varying from 5.92 to 30.8% depending on the study population. However, it has been shown that the frequency of PV is 3 times higher in patients with ANA at a concentration of more than 1:160 [23, 24].

**Diseases of the uterus.** The anatomy of the uterus should be evaluated to identify abnormalities of its structure, which occur in 10-15% of patients with PV, which significantly exceeds their prevalence in the general population. The preferred screening method is 3D ultrasound, sonohysteroscopy or hysterosalpingography can also be used, and in some cases, MRI. In all these issues, both leaders are in solidarity. European experts, based on the latest data that adenomyosis is associated with a higher frequency of pregnancy loss, even if it is not PV [25, 26], considered it important to emphasize this and added a recommendation to conduct a 2D ultrasound to exclude adenomyosis. This recommendation relates more to the calculation of the prognosis for PV than to the choice of treatment.

**Endocrine disorders.** Both guidelines and recommendations regarding endocrine examination are consistent. It is necessary to exclude thyroid diseases, for this you should donate blood for thyroid-stimulating hormone (TSH) and antibodies to thyroperoxidase (TPO). In the absence of symptoms of hyperprolactinemia, the level of prolactin has no clinical significance, it is also impractical to assess the ovarian reserve, androgen levels and luteinizing hormone (this will not improve the prognosis for the next pregnancy). Determination of the level of progesterone in serum and examination to identify the inferiority of the luteal phase are also of no fundamental importance due to the lack of standardized approaches to diagnosis and clear criteria.

**Hypercoagulation.** It is known that several genetic mutations increase the risk of thrombosis and thromboembolism, these include factor V mutation (Leiden mutation), prothrombin mutation, protein C deficiency, protein S and antithrombin III. Even in the case of venous thromboembolism, the value of the analysis for congenital thrombophilia is controversial [27], although this examination and further anticoagulant therapy are still recommended. But does it make sense to examine patients with PV without a history of thrombosis for congenital thrombophilia, as it often happens in clinical practice? On the one hand, it has indeed been shown that women with the Leiden mutation have an increased risk of miscarriage, but at the same time there is no effective method of prevention: low molecular weight heparins (NMH) do not improve pregnancy outcomes and do not increase the likelihood of live birth. Other types of congenital thrombophilia are not associated with an increased risk of PV at all, and the prevalence of hereditary thrombophilia in women with PV is unclear. It is in connection with the above data that ESHRE experts do not recommend testing for congenital thrombophilia in patients with PV in the absence of other indications. In the Russian KR, examination for the Leiden mutation, prothrombin mutation and evaluation of protein S activity are recommended.

**The male factor.** ESHRE experts suggest evaluating the fragmentation of sperm DNA, which may help in determining the cause of PV. In the Kyrgyz Republic, the Ministry of Health of Russia recommended carrying out a spermogram of her husband, and it was clarified that the examination of men is carried out by a urologist, guided by the guidelines developed by the

Russian Society of Urologists. But for some reason, the link under this thesis leads to the CD "Male infertility", where there is not a word about PV3. So while the scope of the examination of men in Russia is not regulated. Although the role of a man, his age and state of health is increasingly being traced in the problem of habitual miscarriage.

### **Conclusion**

In conclusion, habitual miscarriage, or recurrent pregnancy loss, is a distressing condition that affects couples worldwide. It is characterized by the occurrence of three or more consecutive pregnancy losses before 20 weeks of gestation. The etiology of habitual miscarriage is often multifactorial and can include genetic abnormalities, anatomical factors, hormonal imbalances, autoimmune disorders, thrombophilic disorders, and environmental factors. The management of habitual miscarriage involves a comprehensive evaluation of both partners, including genetic testing, hormonal assessments, anatomical evaluations, and immunological screening. Treatment approaches may include lifestyle modifications, hormonal supplementation, surgical interventions to correct anatomical abnormalities, and assisted reproductive techniques such as in vitro fertilization (IVF) with preimplantation genetic testing. Psychological support and counseling are also important components of care for couples experiencing habitual miscarriage. With advancements in medical knowledge and individualized treatment strategies, the prognosis for couples affected by habitual miscarriage continues to improve, offering hope for successful pregnancies and healthy births in the future.

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## IMPROVING THERAPEUTIC MEASURES FOR CHANGES IN THE ORAL MUCOSA AND TONGUE OF THE PATIENT IN A POSTOPERATIVE BARIATRIC CONDITION

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**Abstract.** *Bariatric surgery is the surgical repositioning of the stomach, intestines, or both for weight loss. Approximately 250,000 bariatric surgeries are performed in the United States each year. The development of safe laparoscopic techniques has made this operation more popular. To qualify for bariatric surgery, patients must have: body mass index (BMI) > 40 kg/m<sup>2</sup> or BMI > 35 kg/m<sup>2</sup> and serious complications (eg, diabetes, hypertension, obstructive sleep apnea, high risk factor blood lipid profile), an acceptable risk for surgery. Having tried all reasonable methods of non-surgical weight loss and successfully overcoming all complications from obesity. Bariatric surgery should also be considered for patients with type 2 diabetes, a BMI between 30 and 34.9, and glycemic control despite optimal lifestyle and drug therapy. Improving therapeutic measures for changes in the oral mucosa and tongue of a bariatric patient after surgery.*

**Keywords:** *Improvement of therapeutic measures for oral mucosal and tongue changes in postoperative bariatric patient is reported in detail.*

The development of dental pathologies, as a rule, is the result of the development of pathological processes occurring in the human body. Against the background of weakened immunity, the influence of external negative factors increases, which leads to the formation of problem areas. The causes of diseases can be different: the symptoms manifested in the tongue, lips and gums, as well as the results of clinical diagnostics, including professional equipment, can determine the source of concern. Classification of diseases of the mucous membrane of the oral cavity, correct diagnosis and timely initiation of therapy help to avoid more serious negative consequences.

### **Classification of diseases of the mucous membrane of the oral cavity.**

Stomatitis is an inflammation of the mucous membrane, characteristic of children and adults. Most often, stomatitis is bacterial, viral or fungal in nature. Bad toothbrushes with hard, scratchy bristles, improperly fitted braces or crowns, and biting of the cheeks and lips can also cause canker sores.

Most often, stomatitis manifests itself in the form of itchy, bright red or white sores and erosions on the inner surface of the cheek, tongue or gums. A person may complain of burning and swelling, bad breath, pain when chewing and swallowing. In severe cases, the temperature rises, sleep may be disturbed, and the person becomes nervous.

Glossitis is an inflammation of the tongue, which can occur as a result of injury (for example, burns), pathogens, or as a symptom of some systemic diseases. Often, glossitis is manifested by a burning sensation and discomfort in the mouth. The tongue is bright red, slightly

swollen, saliva may increase. The patient may complain of a loss of taste or a change in the sense of taste, eating or even just talking causes pain.

Cheilitis (or cheilosis) is a disease in which the lips begin to peel, break and "sticks" appear at the corners of the mouth. The reasons can be very different: exposure to wind and sun, allergic reaction, chronic diseases with skin lesions (dermatitis, psoriasis, etc.), endocrine pathologies or mycoses.

### **Oral leukoplakia**

Oral leukoplakia is keratinization of the mucous membrane under the influence of aggressive factors such as smoking. This condition is considered precancerous and therefore requires mandatory treatment.

Often, oral leukoplakia appears as non-removable white, gray, or red plaques, rough or keratinized areas, or strange thickenings in the oral cavity. As a rule, the patient does not experience pain and discomfort, so he does not immediately consult a doctor.

### **Periodontosis**

The periodontium is a complex of tissues that surrounds and supports the tooth: gums, periodontal ligament, periodontium, root cementum and bone tissue. Periodontal diseases include: gingivitis, periodontitis and periodontal disease.

### **Gingivitis**

Gingivitis is an inflammation of the gums caused by improper or improper oral hygiene. Pathogens accumulate in plaque and tartar, causing inflammation.

Inflammation with gingivitis affects only the surface of the gums and can cause bleeding, swelling of the gums, mild pain or discomfort when pressed, and bad breath. If treatment is not started, the inflammation will increase and affect the periodontium.

### **Periodontitis and periodontal disease**

Often, patients confuse periodontitis and periodontal disease. Periodontitis is an inflammatory disease of the periodontal tissues, which causes the gums to bleed and gradually affects the roots of the teeth, their mobility and, as a result, their loss. Periodontal disease is a non-inflammatory periodontal disease in which the mucous membrane of the gums and jawbone is gradually reduced. Unlike periodontitis, which destroys tooth tissue over several years, periodontal disease develops very slowly and develops over decades. The patient may not even realize that he has gum disease. Periodontal disease is rare compared to other oral diseases. Damage to the tissues of the oral cavity and other traumatic effects (chemical, thermal, etc.) with the development of traumatic erosion, ulcers, leukoplakia or leukokeratosis. Infectious diseases affecting the mucous membrane of the oral cavity due to the penetration of viruses, spirochetes, bacteria and fungi. Most often, the appearance of pathological changes in the mucous membrane of the oral cavity is associated with disorders of various organs and systems of the body: allergies, cardiovascular system, gastrointestinal tract, endocrine diseases, systemic connective tissue diseases, blood diseases and other dermatoses, tuberculosis, AIDS and some other conditions.

### **Diagnosis of pathologies**

Modern methods used in dentistry allow to quickly identify infectious or fungal diseases of the mucous membrane of the oral cavity. It is worth noting that self-diagnosis, as well as subsequent attempts at self-treatment, often lead to a worsening of the general condition. Determining the causes of pathological changes is a medical task, for which the following are used:

- Microscopic examination of samples.
- Test for allergic reactions.
- Test for viral pathogens.
- General examination and medical history.

It is necessary to make a timely diagnosis in order to develop and implement the correct treatment plan that takes into account the negative symptoms and factors that cause pathological changes. Principles of treatment of diseases of the mucous membrane of the oral cavity. The main principles of treatment of diseases of the mucous membranes of the mouth, lips and tongue. Rational treatment requires communication between the dentist and other dental and non-dental professionals. Treatment should be carried out in accordance with the principles of bioethics, these diseases should be considered from the point of view of the state of the whole organism, so in many cases it is impossible to limit oneself only to local effects.

The axiom for the dentist should be to eliminate all unpleasant irritating factors that help and provoke the development of the pathological process in the patient's oral cavity. It is impossible to use cauterizing agents and to use the same mouthwashes for a long time. Treatment should begin only after at least one preliminary diagnosis has been made and the following requirements have been met: be comprehensive; providing a pathogenetic approach; do not violate the anatomical and physiological characteristics of the oral mucosa; eliminate the pain factor; stimulation of rapid epithelization of lesions; to ensure the active participation of the patient in conducting treatment procedures at home.

#### **Therapy methods**

Etiotropic and pathogenetic therapy aimed at eliminating the cause of the disease (due to the infectious nature of stomatitis, glossitis, cheilitis, antiviral, antibacterial therapy, vitamin therapy for hypovitaminosis, treatment of the main disease that led to the appearance of the pathological process in the oral cavity). cavity of the mucous membrane;

Local treatment aimed at eliminating local traumatic factors, the main symptoms of the disease and faster healing of existing erosion and wounds;

A general strengthening procedure that stimulates the body's defenses.

To prevent painful symptoms, experts recommend following the universal rules of oral hygiene:

- a) use correctly selected toothbrushes, use them regularly, and also avoid bad habits, especially smoking.
- b) It is recommended to monitor your diet: in some cases, irritation of the oral cavity can be caused by excessive consumption of oranges, lemons, etc.
- c) the habit of cleaning the seeds with the teeth rather than with the hands can be uncomfortable for the oral cavity.

#### **Conclusion:**

In conclusion, improving therapeutic measures for changes in the oral mucosa and tongue of patients in a postoperative bariatric condition requires a comprehensive and collaborative approach.

By focusing on patient education, regular monitoring, and preventive measures, healthcare professionals can help these individuals maintain optimal oral health and improve their overall postoperative experience.

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# EFFECTIVENESS OF NEUROAXIAL BLOCKADES DURING ABDOMINAL DELIVERY IN PREGNANT WOMEN WITH COMMUNITY-ACQUIRED PNEUMONIA AND MILD RESPIRATORY FAILURE

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**Abstract.** *This study evaluated anesthetic tactics for delivery in women with concomitant community-acquired pneumonia. Pregnancy contributes to the susceptibility to respiratory viral infections. During the new coronavirus pandemic, the incidence in pregnant women was higher than that in the general population. The progression of acute respiratory failure (ARF) is accompanied by a violation of ventilation-perfusion relations and preservation of blood flow in the unventilated parts of the lungs against the background of compression of the diaphragm by the pregnant uterus. The objective of this prospective study was to examine 86 pregnant women with community-acquired pneumonia and I degree ARF at the age of 21–45 years, with a gestational age of 32-41 weeks. The choice of anesthesia management method during operative delivery was based on the severity of pneumonia and the degree of respiratory failure. Depending on the above mentioned, the 1st group included patients (34) who underwent epidural anesthesia (EA) with NIAV with positive PEEP FiO<sub>2</sub>-60-100%; the 2nd subgroup (28) - EA with NIAV on the same parameters and the 3rd group (24) included Balanced EA with NIAV with similar parameters. The tested variants of neuraxial blockade (NB) had no depressive effects on external respiration or gas exchange. The use of reduced bupivacaine concentrations was not accompanied by pronounced motor blockade.*

**Keywords:** *acute respiratory failure (ARF), Neuraxial blockade (NB), pneumonia, Non-invasive artificial ventilation (NIAV), epidural anesthesia (EA), CPAP (Continuous Positive Airway Pressure), total peripheral vascular resistance (TPVR).*

**Relevance:** Despite a significant decrease in morbidity and mortality from pneumonia among the population since 1901, pneumonia in pregnant women remains one of the pressing problems that require solutions, according to the World Health Organization (WHO) [2, 5, 8, 9].

Pregnancy is a physiological condition that increases susceptibility to respiratory viral infections. Due to physiological changes in the immune and cardiovascular systems, severe respiratory viral infections occur more often in pregnant women [3, 6]. During the novel coronavirus pandemic in 2019-2021, the incidence of COVID-19 in pregnant women was higher than in the general population. Pregnant women infected with SARS-CoV-2 are at increased risk of developing severe disease. Many studies indicate adverse pregnancy outcomes in COVID-19, including high mortality rates of up to 25% among pregnant women [10, 6].

The progression of acute respiratory failure (ARF) with severe dysfunction of the respiratory system and gas exchange in pregnant women with community-acquired pneumonia has an additional negative impact on the respiratory and cardiovascular systems. The main cause of ARF in pregnant women with community-acquired pneumonia is a violation of ventilation-

perfusion ratios, preservation of blood flow in unventilated areas of the lungs due to infiltration, as well as compression of the diaphragm under the influence of the pregnant uterus.

Providing anesthetic support during abdominal and vaginal delivery in pregnant women with community-acquired pneumonia is one of the most difficult and not yet fully resolved problems in the field of modern anesthesiology and obstetrics. This problem is especially acute for women suffering from severe forms of community-acquired pneumonia with respiratory failure, as well as in situations where the course of pregnancy is complicated by circulatory disorders and accompanied by severe extragenital diseases. It is clear that such cases require an individual approach to anesthesia, the main criterion of which is to ensure the safety of the delivery process and maintain the stability of the main life support systems throughout the entire period of childbirth and immediately after it (in the postpartum period). For the successful implementation of these requirements, a preliminary assessment of the level of respiratory failure and the severity of community-acquired pneumonia is key.

**Purpose of the study:** Optimization of anesthetic tactics in pregnant women with community-acquired pneumonia and stage I respiratory failure during abdominal delivery.

**Materials and research methods:** The purpose of the upcoming study was 86 pregnant women suffering from community-acquired pneumonia and having stage I respiratory failure. The age of the study participants ranged from 21 to 45 years, and the gestational age ranged from 32 to 41 weeks. All observed patients with community-acquired pneumonia and stage I acute respiratory failure underwent abdominal delivery, both emergency and planned. The timing and methods of delivery were determined individually, taking into account the clinical condition of women, the duration of pregnancy and the condition of the fetus. All operations were carried out between 2018 and 2023 in the obstetric department of the multidisciplinary clinic of Samarkand Medical University, as well as in the regional perinatal center and city maternity complex No. 3 of Samarkand. The choice of the method of anesthesia during surgical delivery of women with community-acquired pneumonia and stage I ARF was carried out with mandatory consideration of the severity of community-acquired pneumonia and the degree of respiratory failure. Depending on the method of anesthesia, all women (n=86) suffering from community-acquired pneumonia with respiratory failure of the first degree are divided into 3 subgroups. The 1st subgroup (n=34) included women operated on using spinal anesthesia (SA) against the background of NIAV with positive PEEP FiO<sub>2</sub>-60-100%, the 2nd subgroup (n=28) included women operated on using epidural anesthesia (EA) against the background of NIAV with a positive PEEP FiO<sub>2</sub>-60-100%, the 3rd subgroup (n=24) included women operated on using balanced epidural anesthesia (BEA) against the background of NIAV with a positive PEEP FiO<sub>2</sub>-60-100%. Blood loss during abdominal delivery ranged from ≈ 350 to ≈ 800 ml. It should be noted that in order to carry out preventive preparation for surgery and select an anesthetic strategy, we strictly adhered to the National Clinical Protocol “Management and Delivery of Pregnant Women with Pneumonia” of 2021, approved by the Ministry of Health of the Republic of Uzbekistan. We were also guided by intensive care protocols in accordance with the “Temporary guidelines for the prevention, diagnosis, treatment and rehabilitation of coronavirus infection (COVID-19),” approved by the same ministry. Tactics for pregnant women with worsening signs of respiratory failure were developed individually and approved by a council of doctors.

The choice in favor of combined anesthesia with NIV with positive PEEP was made based on indicators with constant monitoring of SpO<sub>2</sub> in the mother (SpO<sub>2</sub> should be more than 94%)

and the condition of the fetus (CTG) in the absence of contraindications to central neuraxial block (CNB) in women. We adhered to a strict line determined by the National Clinical Protocol “Management and Delivery of Pregnant Women with Pneumonia” of 2021, approved by the Ministry of Health of the Republic of Uzbekistan, for conducting preliminary preparation for surgery and choosing anesthetic tactics. This included not only the use of drug preparation, but also taking into account the severity of pneumonia and the degree of respiratory failure in each individual case.

The anesthesia technique was carried out as follows: all women received premedication with diphenhydramine (0.2 mg/kg) and dexamethasone (8 mg), as well as prophylactic infusion of saline solutions (6-8 ml/kg). For subgroup 1 of pregnant women, local infiltration anesthesia was performed with lumbar puncture at the L2-L4 level and administration of a 0.5% hyperbaric solution of bupivacaine. The operating table assumed a Fowler position of 15-20 degrees. The operation began after the development of complete segmental sensory-motor block in 6-8 minutes. For subgroup 2, puncture-catheterization of the epidural space (ES) was performed, followed by the administration of a “test dose” of lidocaine and the main dose in the absence of a subarachnoid block. Subgroup 3 received the same procedure but with a balanced 0.375% bupivacaine solution administered through an epidural catheter. All women were given sibazon (0.2 mg/kg/hour) after fetal extraction to reduce psycho-emotional stress. If there were signs of weakening of the sensory block, a 1% lidocaine solution was administered epidurally. This choice is due to the shorter latency period and completion of the operation in most cases.

In all pregnant women with community-acquired pneumonia and stage I respiratory failure, we used sibazone (0.07-0.15 mg/kg) or dexmedetomidine with an infusion at a rate of 0.7 mcg/kg/h IV, maintaining 0.2-0.7 mcg/kg/h IV, as a hypnotic component for adaptation to non-invasive ventilation (NIV) after umbilical cord clamping. To improve respiratory function and prevent ventilator-associated lung damage, we set the CPAP ventilation parameters on AVENTA, FAZA, and Mindray breathing devices. These parameters included a tidal volume of no more than 6 ml/kg of ideal body weight, a positive PEER from 5-10 mm water column with oxygen supply FiO<sub>2</sub>-60-100%. We followed the 1992 Berlin Definition of ARDS when setting NIV CPAP parameters and used the empirical PEEP setting method or the FiO<sub>2</sub>/PEEP table for adjustment. All pregnant women in the period before the extraction of the fetus were given a “left-uterine position” with an inclination angle of 20 degrees to prevent aortocaval compression. The infusion program included the administration of crystalloids in a volume of 8-10 ml/kg/hour, using stabizol or refortan for blood loss more than 6 ml/kg. The use of blood products (FFP, packed red blood cells) was considered only for blood loss of 10 ml/kg or more. In pregnant women of the 2nd and 3rd subgroups in the postoperative period, an epidural catheter was used for postoperative analgesia, where a 0.25% solution of bupivacaine was used in a volume of 10 ml with an interval of 6-8 hours. The effectiveness of pain relief was assessed by clinical signs, including loss of tactile sensation and the use of the P. Bromage scale to assess the depth of motor blockade. Central hemodynamics were monitored using echocardiography and a Schiller monitor. The adequacy of anesthesia was assessed by the tension index (TI), the level of total cartisol (TC) in the blood plasma and the rate of norepinephrine (NE) excretion in urine at four stages of the operation. All results were processed using statistical analysis and presented in the table.

All received materials were subjected to automatic statistical processing. For variational and statistical processing of the research results, the Statistica6.0 program was used to determine



the key variational indicators of the mean (M), error of the mean (m) and standard deviation (p). The reliability of the results obtained was determined using the Student's test. When the P value was less than 0.05, the difference between the two means was considered significant. The reliability level was at least 95%.

**Results and discussion:** Having characterized the clinical course of subarachnoid anesthesia (SA) using a 0.5% hyperbaric solution of bupivacaine with non-invasive ventilation (NIV) in CPAP mode with a positive PEEP of 5-10 mm water column and oxygen supply FiO<sub>2</sub>-60-100% (1st subgroup), it should be noted that the classic signs of complete segmental sensory-motor blockade formed by 8-10 minutes after subarachnoid injection of local anesthetic. However, in contrast to healthy pregnant women, the level of blockade spread exceeded the level of Th<sub>6</sub>-Th<sub>7</sub>, reaching Th<sub>4</sub>-Th<sub>5</sub> dermatomes. This can be explained by high intra-abdominal pressure caused by the gravid uterus, shortness of breath and respiratory failure. An earlier and more pronounced decrease in blood pressure (BP) was observed, requiring vasopressor support. However, the use of minimal doses of mesaton helped to quickly stabilize arterial hypotension, and only in some cases was vasopressor support necessary throughout the operation.

Regarding the clinical course of epidural anesthesia (EA) with a 0.5% bupivacaine solution with respiratory support NIV in CPAP mode with a positive PEEP of 5-10 mm water column and oxygen supply FiO<sub>2</sub>-60-100% (2nd subgroup), it is practically not differed from the course in the 2nd subgroup. In this subgroup, blood pressure decreased more markedly by the time the surgical stage developed, requiring intraoperative vasopressor support. However, at subsequent stages of the operation, until completion, blood pressure remained stable and did not require correction. Postoperative epidural analgesia effectively provided pain relief, promoting early activation and rapid restoration of the motor-evacuation function of the gastrointestinal tract.

It is also worth highlighting the characteristics of the course of balanced anesthesia (3rd subgroup) with a 0.375% solution of bupivacaine, continuous infusion of propofol 0.3-4 mg/kg/h or dexmedetomidine with a maintenance infusion of 0.2-0.7 mcg/kg/h at preserved breathing against the background of respiratory support with NIV in CPAP mode with positive PEEP from 5-10 mm water column and oxygen supply FiO<sub>2</sub>-60-100%. Already 8-10 minutes after the epidural administration of painkillers and sedatives, a pronounced sedative effect was formed, with a narrowing of the pupil, a decrease in heart rate and RR. By this point, clinical signs of segmental sensory-motor blockade also began to form, reaching a peak at the 15th minute with a duration of the surgical stage of 1.5-2.0 hours. The administration of sedatives caused a drowsy state and indifference to the environment, but accessibility to contact remained, which made it possible to conduct functional studies. Subsequently, all patients remained active and available for contact even after expanding the scope of surgical intervention. Blood pressure remained stable and pulse decreased by 5-7 beats per minute throughout the operation. Clinical signs of hypoxia and hypercapnia were not noted. After the operation, all patients remained active and without complaints of pain for 5-6 hours. It should be noted that respiratory support with NIV in the SRAR mode continued in the postoperative period for all women (1st, 2nd and 3rd subgroups).

Information on the impact of the tested versions of central neuraxial blockade (CNB) on various parameters of hemodynamics and peripheral circulation is presented in Table 1. As the table data shows, the initial values of the parameters of central and peripheral hemodynamics in all three studied subgroups (1, 2, 3) corresponded to the hypokinetic regime blood circulation (see Table 1). There was moderate tachycardia and a decrease in cardiac output and cardiac output.

Systolic and diastolic pressure and total peripheral vascular resistance were increased, and minute diuresis was reduced, amounting to 0.54-0.59 ml per minute, which can be defined as “oliguria”. There were no intergroup differences in the studied parameters at this stage.

Before the skin incision at the level of complete segmental sensorimotor and sympathetic blockade, a statistically significant decrease in systolic and diastolic pressure was recorded in all three subgroups, more pronounced in the 1st subgroup of patients who received subarachnoid anesthesia (SA). Thus, systolic and diastolic pressure in the 1st subgroup decreased by 28.6% and 11.3%, respectively, in the 2nd subgroup by 13.5% and 9.7%, and in the 3rd only by 8.4 % and 10.4%. Heart rate at this stage of the study also decreased statistically significantly (see Table 1), and the most pronounced changes continued in the 1st subgroup of patients. The cardiac index in the 2nd and 3rd subgroups did not change relative to the initial values, while in the 1st subgroup it decreased to  $2.04 \pm 0.04$  l/m<sup>2</sup>/min, which was 84% of the initial values. This sharp decrease in cardiac output with a constant stroke index should be associated with a sharp decrease in heart rate caused by severe segmental sympathetic blockade. Consequently, in the restructuring of hemodynamics, a change in minute diuresis was observed, which decreased significantly in the 1st subgroup of patients, which indirectly indicates a deterioration in peripheral circulation.

**Table 1**

***Some parameters of hemodynamics and peripheral blood circulation in the process of anesthesia and surgery in a woman with outpatient pneumonia and respiratory insufficiency of the first degree in subgroups 1, 2, 3.***

Research stages	groups	Parameters studied					
		Heart rate, per minute	ADP, mmHg	UI, ml/m <sup>2</sup>	SI, l/m <sup>2</sup> /min	TPVR, dyn/s×m-5	Minute diuresis, ml/min
On the operating table	1	87,5±2,3	94,8±1,6	27,9±1,8	2,43±0,06	1642,2±48,1	0,59±0,03
	2	88,8±2,1	93,2±1,4	27,1±1,9	2,4±0,09	1634,6±54,3	0,57±0,02
	3	89,6±1,9	94,5±1,3	26,8±2,1	2,41±0,07	1658,2±50,8	0,54±0,02
Before the skin incision	1	72,2±1,1* Δ	70,4±1,4* Δ●	28,2±1,6	2,04±0,04 *●Δ	1452,6±50,3 *	0,36±0,02 *●Δ
	2	80,6±1,3*	80,6±2,1* ●□	27,6±1,6	2,29±0,06 ●	1476,3±39,6 *	0,52±0,03 ●
	3	83,2±2,1*	86,6±2,1* □	27,8±1,8	2,38±0,09	1486,2±44,3 *	0,51±0,02
Traumatic stage	1	74,8±1,2* Δ	72,8±2,1* Δ●	26,4±1,1	1,97±0,02 *●Δ	1555,1±48,4	0,29±0,02 *□●Δ
	2	83,2±1,4*	78,2±1,8* ●Δ	26,9±1,4	2,27±0,03 93,3 ●Δ	1459,5±42,3 *	0,49±0,02 *●
	3	84,6±1,2*	90,1±2,2	27,3±1,6	2,36±0,04 97,9	1581,2±44,2	0,47±0,02 *
	1	72,4±3,1* Δ	70,6±1,3* Δ	27,4±1,5	1,99±0,03 81,9 *●Δ	1493,4±51,6 *	0,34±0,02 *●Δ

<b>End of operation</b>	2	80,4±1,8*	76,6±2,2* Δ	27,8±1,6	2,28±0,09 95 ●	1416,7±4 6,3 *	0,56±0,04 □●
	3	80,9±1,9*	85,7±1,8*	28,8±1,4	2,36±0,08 97,9	1480,7±5 1,4 *	0,59±0,06 □

*Note: \* - statistically significant relative to ( $p < 0.05$ ) relative to the original values; □ – statistically significant ( $p < 0.05$ ) relative to the previous stage of the study; ● – statistically significant differences ( $p < 0.05$ ) between subgroups 1 and 2; Δ - statistically significant differences ( $p < 0.05$ ) in comparison with 3 subgroups*

The most traumatic stages of the operation were not accompanied by statistically significant differences in the studied hemodynamic parameters in all three studied subgroups compared to the previous stage of the study. The most significant changes were still observed in the 1st subgroup of patients who received SA. Minimal hemodynamic disturbances were recorded in subgroup 3 when using balanced epidural anesthesia (EA) with reduced concentrations of local anesthetics. Noteworthy is the further decrease in minute diuresis in the 1st subgroup of patients, which at this stage reached  $0.29 \pm 0.02$  ml/min ( $P_{1.2} < 0.05$ ), which indirectly indicates a further deterioration in peripheral circulation and a decrease in more less than 50% relative to the initial values before surgery. Completion of the operation in women in all studied groups was accompanied by a tendency towards normalization of the studied hemodynamic parameters. Nevertheless, the hypokinetic circulatory regime remained. In women of subgroups 2 and 3, the studied hemodynamic parameters approached the initial values before surgery, and minute diuresis increased statistically significantly (see Table 1). In women of the 1st subgroup at this stage of the study, systolic pressure was  $70.6 \pm 1.3$  mmHg, cardiac index –  $1.99 \pm 0.03$  l/m<sup>2</sup>/min, heart rate –  $72.4 \pm 3.1$  per minute, minute diuresis –  $0.34 \pm 0.02$  ml/min. These indicators were statistically significantly different from the values in the 3rd subgroup of patients, in whom systolic pressure, cardiac index and minute diuresis at this stage were  $85.5 \pm 1.8$  mmHg,  $2.36 \pm 0.08$  l, respectively /m<sup>2</sup>/min,  $80.9 \pm 1.9$  per min, and  $0.59 \pm 0.06$  ml/min.

Data on the impact of various variants of central neuraxial blockade (CNB) on external respiratory function, minute respiratory volume (MVR), blood gas composition and oxygen saturation (SpO<sub>2</sub>) are presented in Table 2. As can be seen from the table, there is an increase in respiratory rate to 23.9 -24.8 per minute and a decrease in tidal volume from 4.38 to 4.52 ml/kg. These changes are associated with the presence of pneumonia, respiratory failure and a gravid uterus, which inevitably leads to increased intra-abdominal pressure, elevation of the diaphragm and a decrease in the volume of the ventilated part of the uninfected lungs. At the same time, compensatory tachypnea maintained adequate minute volume of respiration in all three studied subgroups (1, 2, 3).

Let us pay attention to the combination of moderate respiratory alkalosis and metabolic alkalosis, which is typical for the third trimester of pregnancy. At the same time, pO<sub>2</sub> and SpO<sub>2</sub> levels were slightly below normal, amounting to 74.3-74.6 mmHg, respectively. and 92.6-92.9%. At this stage, no significant differences were found between the subgroups. Before the intervention, a decrease in respiratory rate by 8.8%-14.1% was observed, especially pronounced in patients undergoing general anesthesia, which is explained by partial blockade of the intercostal nerves. At the same time, tidal volume remained stable, and minute ventilation decreased in patients of the first subgroup by 12.8%, in the second - by 9.6%, and in the third - by 6.2%. These changes occurred against the background of respiratory support with non-invasive ventilation and

maintaining a positive end expiratory pressure of 5-10 mmH<sub>2</sub>O. with oxygen supply FiO<sub>2</sub> 60-100% throughout the entire operation. At the end of the intervention, there was a significant increase in tidal volume and minute ventilation in all three subgroups, and a trend towards an increase in pO<sub>2</sub> and SpO<sub>2</sub> levels was also noted.

**Table 2**

**Some indicators of CBS, blood gas composition and SpO<sub>2</sub> at the stages of anesthesia and surgery in women with community-acquired pneumonia with ARF I degree 1,2,3 subgroups**

Parameter s studied	G r o u p s	Research stages			
		On the operating table	Before the skin incision	Traumatic stage	End of operation
BH, per minute	1	24,2±0,6	20,8±0,4 *	21,6±0,3 *	21,4±0,4 *
	2	24,8±0,5	21,6±0,4 *	22,2±0,3 *	21,6±0,3 *
	3	23,9±0,6	21,6±0,3 *	22,8±0,4	21,3±0,3 *
DO, ml/kg	1	4,52±0,21	4,56±0,22	4,42±0,21	5,12±0,24*□
	2	4,38±0,29	4,48±0,26	4,36±0,32	5,16±0,22●*□
	3	4,56±0,29	4,61±0,32	4,51±0,26	5,24±0,23*□
MOD, ml/kg*min	1	110,2±4,8	96,2±3,6 *	95,2±3,1 *	108,2±3,6 □
	2	109,6±4,2	98,7±3,2 *	96,8±3,3 *	111,8±3,4 □
	3	109,1±3,9	102,4±3,8	101,7±3,2	112,2±3,4 □
pH	1	7,33±0,014	7,32±0,011	7,32±0,012	7,34±0,011
	2	7,34±0,012	7,33±0,09	7,33±0,011	7,34±0,09
	3	7,34±0,013	7,33±0,012	7,33±0,012	7,35±0,011
pCO <sub>2</sub> , mmHg	1	29,8±0,6	32,3±0,4 *	32,6±0,3 *	32,4±0,3 *
	2	30,4±0,6	32,6±0,6 *	32,4±0,4 *	32,6±0,4 *
	3	30,2±0,5	33,1±0,4 *	32,6±0,3 *	32,2±0,4 *
pO <sub>2</sub> , mmHg	1	74,6±1,9	74,8±1,6	74,1±1,8	76,4±1,6
	2	74,5±1,6	74,6±1,6	74,9±1,9	75,8±1,6
	3	74,3±2,1	74,8±1,4	75,6±1,6	77,2±1,4
BE, mmol/l	1	-7,2±0,32	-7,8±0,34	-7,9±0,42	-7,4±0,32
	2	-7,6±0,41	-7,8±0,44	-7,6±0,34	-7,2±0,28
	3	-7,4±0,34	-7,6±0,32	-7,6±0,34	-7,2±0,28
SpO <sub>2</sub> , %	1	92,9±1,3	92,6±1,1	93,2±0,9	93,8±1,2
	2	92,8±1,2	92,4±1,4	93,8±1,1	94,2±1,3
	3	92,6±1,4	92,4±1,2	93,6±0,9	94,6±1,2

**Note:** \* - significance of differences ( $p < 0.05$ ) in comparison with the original values; □ - significance of differences ( $p < 0.05$ ) in comparison with the previous stage of the study; Δ - significance of differences in comparison with the 3rd subgroup; ● - significance of differences ( $p < 0.05$ ) between the 1st and 2nd studied subgroups.

Interesting data are the results concerning the influence of various types of central nervous blockade (CNB) on the autonomic system. The initial indicators of the tension index and the

concentration of cortisol in the blood plasma characterized pronounced activation of the sympathetic part of the autonomic nervous system in all women studied. However, before the operation, against the background of complete segmental blockade, the tension index in patients of the first subgroup significantly decreased, indicating a significant decrease in the sympathetic influence and the degree of tension on the regulatory systems of the heart rhythm. It should be noted that the concentration of cortisol increased by 52.8%, which is explained by the adequate response of the sympathoadrenal system to changes in hemodynamics and a decrease in sympathetic influence. While in subgroups 2 and 3, only a decrease in the tension index was observed, and the concentration of cortisol increased by 40.2% and 44.3%, respectively.

**Table 3.**

***Some indicators of the autonomic system at the stages of anesthesia and surgery in women with community-acquired pneumonia with ARF I degree 1,2,3 subgroups***

Parameters studied	Groups	Research stages			
		On the operating table	Before the skin incision	Traumatic stage	End of operation
SI, conventional units	1	236,4±20,3	174,6±10,4 *Δ	312,8±16,3 *□Δ	328,4±19,4 *
	2	228,6±20,8	209,3±16,9	341,4±18,2 *□Δ	336,1±17,2 *
	3	235,9±23,6	218,4±18,3	392,4±19,6 *□	346,4±19,8 *
TC, nmol/l	1	467,8±42,3	714,8±38,2*	801,4±36,4 *	788,3±34,5 *
	2	481,4±38,6	675,3±40,1 *	786,9±39,2 *	746,4±36,2 *
	3	489,2±40,3	706,2±32,4 *	816,4±36,4 *□	768,3±33,7 *
NE, nmol/l (urine)	1	8,2±1,2			11,8±1,1 *
	2	8,7±0,9			12,1±1,3 *
	3	8,3±0,9			12,4±1,3 *

*Note: \* - statistically significant differences (p<0.05) relative to the initial values; □ - statistically significant differences (p<0.05) relative to the previous stage of the study; Δ - statistically significant differences (p<0.05) relative to subgroup 3; ● - statistically significant differences (p<0.05) between the 1st and 2nd subgroups.*

At the most traumatic stages of the operation, the level of stress index (SI) in all three studied subgroups increased significantly compared to the initial preoperative values and the previous stage of the study, amounting to 312.8 ± 16.3 conventional units, 341.4 ± 18.2, respectively conventional units and 392.4±19.6 conventional units. It should be noted that within all study groups, the studied parameters remained within the “stress norm”, which emphasizes the adequacy of the pain relief provided. Upon completion of the operation, moderate activity of cardiac rhythm regulatory systems was noted. The level of SI in patients in all three subgroups significantly exceeded their initial absolute values by 42.5%, 47% and 46.8%, respectively. The concentration of cortisol in the blood plasma at this stage of the study decreased moderately, but

no statistically significant differences were observed compared to the previous stage of the study (see Table 3). All of the above indicates a moderate activation of the sympathoadrenal system in response to surgical trauma and hypoxia.

**Conclusions:** Based on the research data, the following can be concluded:

1. The use of spinal anesthesia (SA) in women with community-acquired pneumonia and stage I ARF is accompanied by significant hemodynamic disturbances, which makes the use of this method of central nerve block impractical in this group of patients. This is associated with the risk of developing severe hemodynamic disorders and possible disruption of the compensatory functions of the cardiovascular system.

2. The studied variants of central nerve blockade do not have a significant depressive effect on the function of external respiration and gas exchange. It is important to note that when spinal anesthesia is used, a more pronounced segmental motor block is observed with partial blockade of the intercostal nerves (Th12-Th5). While the use of reduced concentrations of bupivacaine does not lead to such a pronounced motor block, which is explained by the normalization of the function of external respiration and gas exchange due to surgical intervention, restoration of the physiological relationships of internal organs, as well as respiratory support using non-invasive ventilation in CPAP mode with positive PEEP and oxygen supply FiO<sub>2</sub> 60-100%.

3. Despite the high antinociceptive effectiveness of the studied options for central nerve blockade, the safest is considered to be the use of balanced epidural anesthesia with low concentrations of bupivacaine (0.375%) in combination with a continuous infusion of propofol (0.3–4 mg/kg/h) or dexmedetomidine with a level infusion of 0.7 mcg/kg/h IV, maintaining 0.2–0.7 mcg/kg/h while breathing is maintained. This method ensures minimal negative impact on the main life support systems.

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## FEATURES OF INFLAMMATORY PROCESSES OF THE NEO-VAGINA

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**Abstract.** *Colpopoiesis is an operation to form an artificial vagina, which is performed in the congenital absence of a vagina. The purpose of the study is to maximize the quality of life of patients so that a woman can create a family and have a full sex life. The sample population of the study consisted of 30 patients after sigmoid colpopoiesis, operated on in the maternity ward of the Samara State Medical University clinic. The control group consisted of 20 women without developmental anomalies and with a natural vagina. During the study, we studied the condition of the neovagina and natural vagina using a bacteriological research method, colpotest with determination of the pH of the environment, and histological analysis of the neovagina. The state of the intravaginal environment in patients with artificial vagina was assessed. Based on the data obtained, the management tactics for patients with artificial vagina were optimized.*

**Keywords:** *neovagina, vaginal aplasia, sigmoid colpopoiesis, uterine aplasia b Rokitansky-Küstner-Hausen syndrome.*

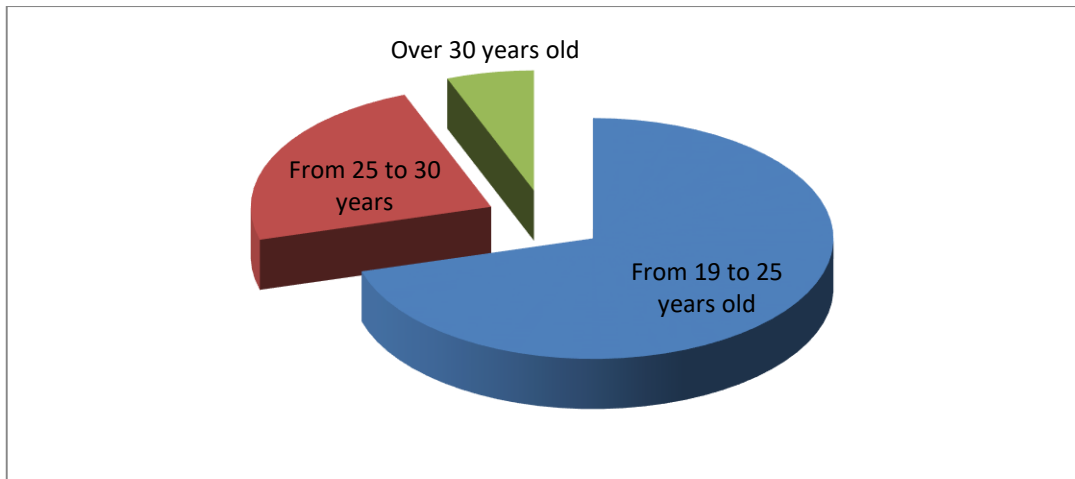
**Relevance.** **Inflammatory diseases of the female genital organs** are one of the most common groups of pathologies in gynecology. They affect all parts of the woman's reproductive system (D.M. Nuradilova 2015). Currently, gynecology allows reconstructive surgery for congenital aplasias and hypoplasias of the uterus and vagina. Such patients acquire a new vagina – a neovagina. Timely provision of medical care to patients with this condition is a priority, on which the prognosis of future sexual life and the patient's adaptation to society depends.

Neo vagina is a vagina that is artificially created using autografts for various pathologies of the development of internal organs with impaired development of the vagina. Colpopoiesis is used to successfully create a new vagina, which is most often used for congenital malformations. As a result of colpopoiesis, women have the opportunity to have an active sex life, however, difficulties arise in diagnosing inflammatory diseases of the new vagina and this affects even greater study of the vaginal microbiome.

**Purpose of the study:** improve the management of women with neovaginitis after sigmoid colpopoiesis.

**Materials and methods of research.** A study on the condition of the vagina after colpopoiesis was carried out in the gynecological department of the multidisciplinary clinic of SamSMU. 30 women with aplasia of the vagina and uterus were taken and underwent colpopoiesis surgery. A control group of 20 healthy women was also taken.

General clinical research methods were used: general blood test and general urinalysis, ECG, ultrasound before and after surgery, and also special research methods were used (bacterial culture of vaginal discharge, colpotest, histological analysis of neovaginal smears).



**Figure 1. Age distribution of patients.**

Bacteriological examination of the contents of the neovagina was carried out in the laboratory of the clinic by agreement. This method is used to diagnose pathological biological disorders of the vaginal microflora:

\* Identification of microorganisms that cause the development of infectious and inflammatory processes in the vagina and pelvic organs;

\* For the diagnosis of nonspecific bacterial vaginosis / vulvovaginitis, bacterial vaginosis, candidiasis vulvovaginitis.

The results are interpreted by the attending physician taking into account the patient's complaints, medical history, clinical manifestations of the disease and the exclusion of sexually transmitted diseases.



**Figure 2. Bacteriological cultures of microflora**

This study also used cytological collection and determination of the type of microflora of secretions from the female genital tract, based on the data of which sensitivity to antibiotics was determined.

Colpo test (measuring the pH of vaginal contents) was carried out using special strips. A decrease in pH indicates acidification, a shift in the acid-base state to the acidic side. Thus, if the value is higher than 7.0 compared to the pH standard, this indicates alkalization.

Histological examination of neovagina carried out using excisional and incisional methods in the preoperative and postoperative period. When examining the material taken, hematoxylin-eosin and Van Gieson staining methods were used. The finished preparations were examined under a microscope at 150- and 450-times magnification.

Ultrasound examination was performed on a Toshiba (Canon) Aplio 300 device using transabdominal and transvaginal sensors with a frequency of 5 MHz.

All received materials were subjected to automatic statistical processing. For variational and statistical processing of the research results, the Statistica6.0 program was used to determine the key variational indicators of the mean (M), error of the mean (m) and standard deviation (p).

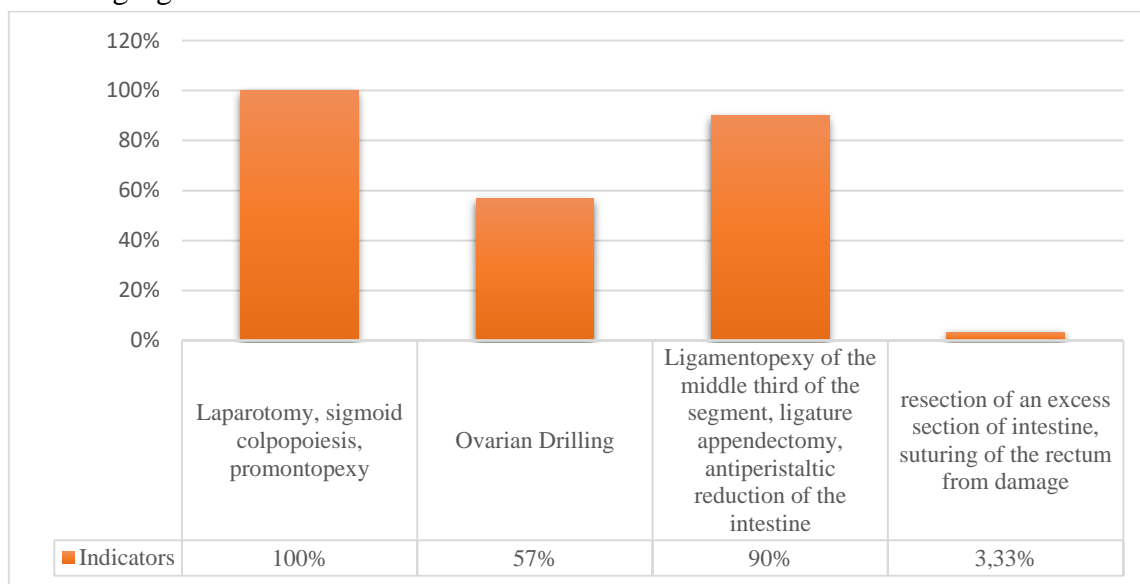
The reliability of the results obtained was determined using the Student's test. When the P value was less than 0.05, the difference between the two means was considered significant. The reliability level was at least 95%.

**Research results and discussion.** Mostly, the age was at puberty (from 12 to 18 years), at which the main complaint was the absence of menarche. On average, the age of the patients at the time of diagnosis of Rokitansky – Küstner – Hausen syndrome was  $14.8 \pm 1.15$  years.

During a preliminary ultrasound examination, it was confirmed that the uterus or its congenital hypoplasia was absent in the presence of ovaries. In some patients (86.7%), the structure of the ovaries also changed, i.e. polycystic changes were observed in 40%, cysts in the right or left ovary in 16.7%, and ovarian hypoplasia in 30%.

Microscopic examination of most of these patients showed a fuchsin yellow staining of tissue removed during Wangison staining, indicating the presence of fetal mesenchymal tissue in the area of vaginal hypoplasia.

Subsequently, all patients underwent surgical treatment to create an artificial vagina. At the same time, based on the patients' data, the scope of the operation expanded, which can be seen in the following fig. 3.



**Figure 3. Scope of surgical interventions performed**

All patients underwent a complete clinical data analysis. Upon admission, patients complained of frequent vaginitis, a large amount of discharge from the genital tract, frequent disruption of the vaginal biocenosis, and so on.

An analysis of patient complaints is given in Table 3.1.

As you can see, all patients had complaints characteristic of bacterial vaginosis, and they are comparable to the data of patients with a natural vagina with bacterial vaginosis.

*Table 1.*

*Analysis of complaints data from patients of the main group*

No.	Complaints	Abs (n=30)	%
1	a large amount of discharge from the genital tract	thirty	100.0 _
2	Frequent vaginitis	25	83.33
3	Presence of odor in the discharge	23	76.7
4	Burning and itching	15	50.0
5	Burning sensation when urinating	18	60.0
6	Pain during intercourse	8	26.7
7	Foreign body sensation	1	3.33

As can be seen from the table, the indicators of the main group, although different from the control group, were within normal limits. In patients over 40 years of age (6.7%), an increase in ESR of more than 15 mm/h. Due to anemia, a decrease in color index and hematocrit was observed.

In a general urine analysis, salts (usually oxalates) were detected in a third of patients, the presence of a large amount of epithelium was noted by half (50%) of the patients in the main group, and epithelium of 5-6-7 visual fields was present in 26.7% of patients.

The presence of mucus was observed in all patients of the main group and in 10% of patients in the control group.

The presence of protein in the urine was observed in 23.3% of patients in the main group, but the amount of protein varied from 0.033 to 1 g/l.

Leukocytes were completely detected in 33.3% of patients in the main group, a significant number - in 40%, 5-6-7 in the field of view - in 26.7%. In the control group, these figures were 5%, 10% and 15%, respectively.

The presence of yeast was present in all patients of the main group and only in 15% of patients in the control group.

According to the results of the colpo test, in patients of the main group, a slightly acidic environment was observed in 30%, almost neutral in 53.3% and alkaline in 16.7% of women from the main group.

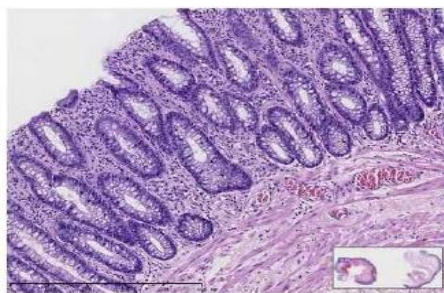
*table 2*

*Results of a general blood test in examined patients after surgery.*

No.	Index	Main group	Control group	p
1	Hemoglobin (g/l)	79.1±5.32	94.2±9.41	<0.0 5
2	Red blood cells (10 <sup>12</sup> /l)	3.6±1.1	4.1±0.79	<0.0 5
3	Leukocytes (10 <sup>9</sup> /l)	6.12±2.07	5.18±1.38	<0.0 5
4	Color index	0.80±0.02	0.85±0.03	<0.0 5
5	Hematocrit (%)	32.5±4.12	37.9±2.85	<0.0 5
6	Reticulocytes (%)	1.02±0.03	0.8±0.06	<0.0 5
7	Platelets (10 <sup>9</sup> /l)	247.3±36.5	217.4±29.46	<0.0 5
8	ESR (mm/hour)	11.3±4.07	7.2±2.11	<0.0 5

Histological examination of curettage of a new vaginal smear preserved the structural features and morphological histological type of the sigmoid colon (a significant accumulation of lymphocytes is located on the proper plates of the mucous and submucosal tissues; the outer longitudinal layer is not continuous in the muscular layer; the serous membrane has a normal structure), but a number of phenomena characteristic of a bacterial inflammatory process were observed.

Smears of neovaginal lesions had an exudative inflammatory process (66.7%) with congestion of capillaries and inflammatory cell infiltration. Intense staining of the smears was observed. In other patients' inflammatory processes were alterative in nature.



*Figure 4. Morphological examination of the neovagina*

**Conclusions.** In the immediate and long-term periods after sigmoid colpopoiesis, patients most often suffer from vaginosis. Which requires periodic treatment and adherence to a careful sanitary regime of the artificial vagina. Women in the postoperative period need to be more careful in relation to hypothermia, heavy physical labor, and violations of personal hygiene rules, since they have a greater susceptibility to vaginitis and vaginosis. As complications, the patients noted impaired sexual life, constant discharge and unpleasant odor, which caused their mental state and family life to suffer. Possible reasons for the development of inflammatory diseases of the neovagina after sigmoid colpopoiesis in the immediate and long-term periods are the histological structure of the neovagina with its pH environment. Violation of the pH balance leads to the active reproduction of conditionally pathogenic and pathogenic microflora, as well as fungal flora, which in turn causes vaginosis. The structure of inflammatory diseases of the neovagina after sigmoid colpopoiesis was represented mainly by gram-negative bacilli, gram-positive cocci, *Escherichia coli* and fungal flora to an equal extent.

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## THE STATE OF GESTATIONAL PYELONEPHRITIS IN SAMARKAND REGION

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**Abstract.** *In pyelonephritis, the pathogenic factor that affects the chronic stage of inflammation loses its leading role, the processes affecting the change in the rheological properties of blood and microcirculation play an important role, which leads to the development of a chronic condition. comes - the causes of this disease are a risk factor for the mother and the fetus, leading to perinatal losses.*

*Patients with acute pyelonephritis have significant changes in the hemostasis system, clinical and laboratory parameters. The above changes increase during the transition from the serous stage to the purulent stage of kidney inflammation.*

**Keywords:** *Samarkand, gestational pyelonephritis, premature birth, nephrostoma, retrospective analysis.*

**Relevance.** Among pregnant women, chronic pyelonephritis takes the first place among somatic pathologies (48-54%). Pyelonephritis has a negative effect on the course of pregnancy and the condition of the fetus, which is manifested in the risk of miscarriage, premature birth, placental insufficiency, fetal hypoxia, intrauterine infection, preeclampsia and a complicated course of the adaptation period (V.V. Iremashvili, 2007 ; L. E. Nicolle, 2008; K. Shea et al., 2008; A. J. Schaeffer et al., 2010).

In pyelonephritis, the pathogenic factor that affects the chronic stage of inflammation loses its leading role, the processes affecting the change in the rheological properties of blood and microcirculation play an important role, which leads to the development of a chronic condition. comes - the causes of this disease are a risk factor for the mother and the fetus, leading to perinatal losses.

The study of the interaction between GP and pregnancy is important because of the high percentage of obstetric complications, negative perinatal outcomes and serious diseases in newborns, which emphasize the medical and socio-economic importance of the problem. In chronic pyelonephritis, pregnancy is complicated by iron deficiency anemia (35-70%), premature termination of pregnancy at various times (15-20%), chronic placental insufficiency (30-35%), preeclampsia (35-70%). 30-40% causes complications such as chronic hypoxia of the uterus (30-40%), fetal infection (20-30%) and growth retardation (12-15%). In the background of chronic pyelonephritis, the adaptation ability of newborns is significantly impaired and the risk of early neonatal death increases (L.E. Nicolle, 2008; K. Shea et al., 2008).

**Aim of the study.** Study of the regional features of gestational pyelonephritis in the Samarkand region.

**Materials and methods.** In order to achieve the set goal and fulfill the tasks, the data of 55 pregnant women and their newborns, who applied to the perinatal center of Samarkand city on the basis of the Department of Obstetrics and Gynecology No 1 of SamSMU, were studied during 2020-2022. The women studied during the study were divided into 2 groups: the main group - 35 pregnant women with gestational pyelonephritis (GP) and the control group - 20 conditionally healthy pregnant women.

Examination of pregnant women includes the following: determination of clinical and anamnestic features of the pregnancy process, laboratory diagnosis of inflammatory pathology of the kidneys, examination of the kidneys and small pelvic organs, as well as the state of the fetus and feto-placental system using instrumental methods. Renal function: the amount of urea and creatinine in the blood serum (nitrogen excreting activity of the kidneys), glomerular filtration rate (according to endogenous creatinine clearance), concentrating ability (Zimnitsky test), kidneys and urinary tract (Nechiporenko test), and inflammation in the blood evaluated by the presence of the process.

General blood analysis indicators were counted automatically in hematological analyzers such as "CELL-DYN 1700" and "CELL-DYN 400" ABBOTT DIAGNOSTICS (USA), the sedimentation rate of individual erythrocytes was determined in 1 hour using 5% 0.25 sodium nitrate solution.

Biochemical blood tests were performed on the following devices: "EXPRESS PLUS" device developed by "BAYER" (Germany), "LIVID" by "CORMAY" and "AVARENESS TECHNOLOGI INC." by "STAT FAX-1904 PLUS" (USA) devices. General and indirect bilirubin, blood sugar, urea, creatinine was determined. Blood electrolytes were monitored as indicated, with blood electrolytes Medica Corp. It was carried out in the "Easy Lyte" ion-selective analyzer of the (USA) company. The study of the general analysis of urine included microscopic examination of the sediment, which revealed the presence of leukocytes, erythrocytes, bacteria, salt crystals, cylinders, epithelial cells; the presence of protein was carried out with a 3 or 15% solution of sulfalicylic acid.

The analysis of research results showed that during pregnancy (8-12 weeks) pregnant women with OGP do not significantly deteriorate the nitrogen excretion function of the kidneys, which is confirmed by the absence of significant changes compared to healthy kidneys.

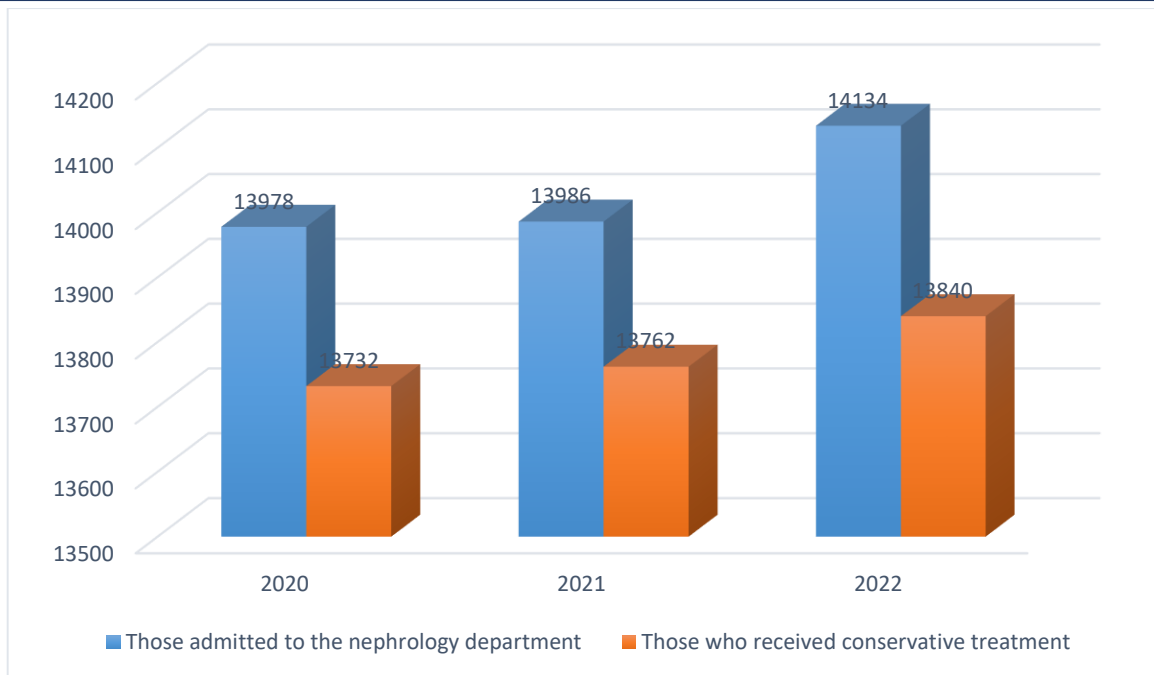
**Results and discussion.** Before describing the clinical material of the results of scientific and clinical work, it is appropriate to describe the state of the problem based on statistical data on the perinatal center of Samarkand region in 2020-2022 (diagram 1).

We can see from the diagram that the number of pregnant women admitted to this department is increasing year by year.

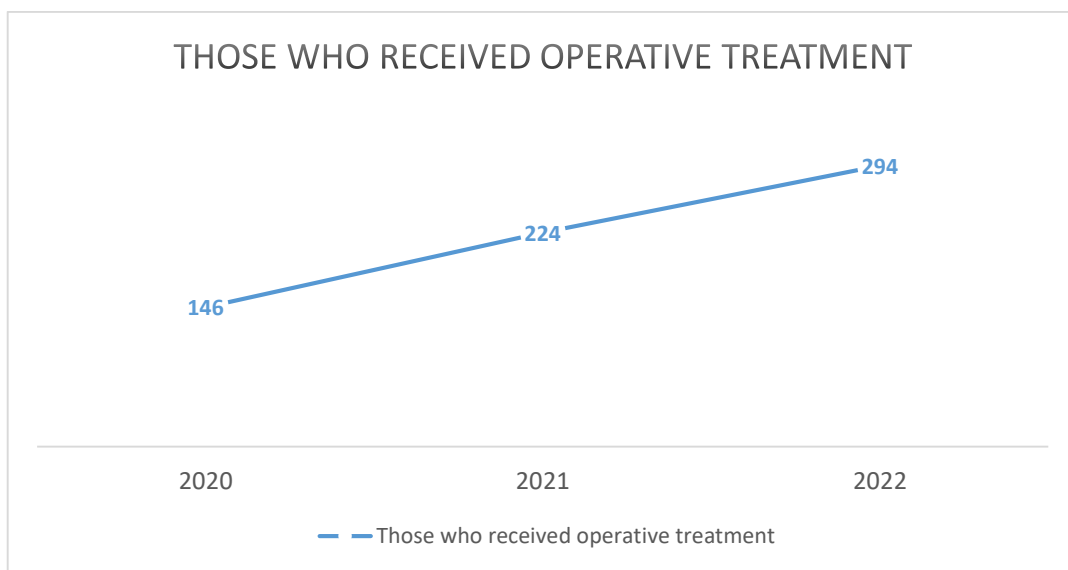
This indicates an increase in the number of nephrological diseases, including gestational pyelonephritis, acute and chronic pyelonephritis, glomerulonephritis and other kidney and urinary diseases.

With the increase in the number of conservative treatments, the cases of using operative treatment forms are also increasing proportionally (diagram 2).

For example, in 2020, 146 women needed operative treatment, in 2021, this figure increased to 78, and in 2022, it increased by 2 times compared to 2020, and by 34% compared to 2021.



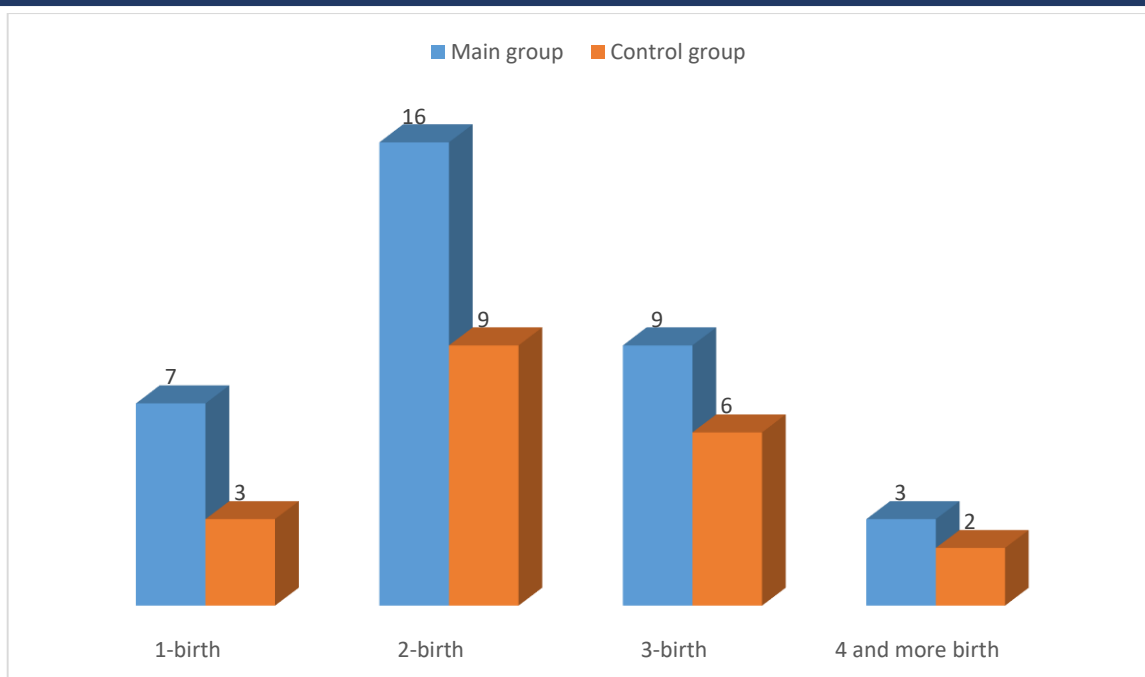
**Diagram 1. Patients admitted to the nephrology department of the Samarkand regional perinatal center (2020-2022)**



**Diagram 2. Frequency of operative treatment**

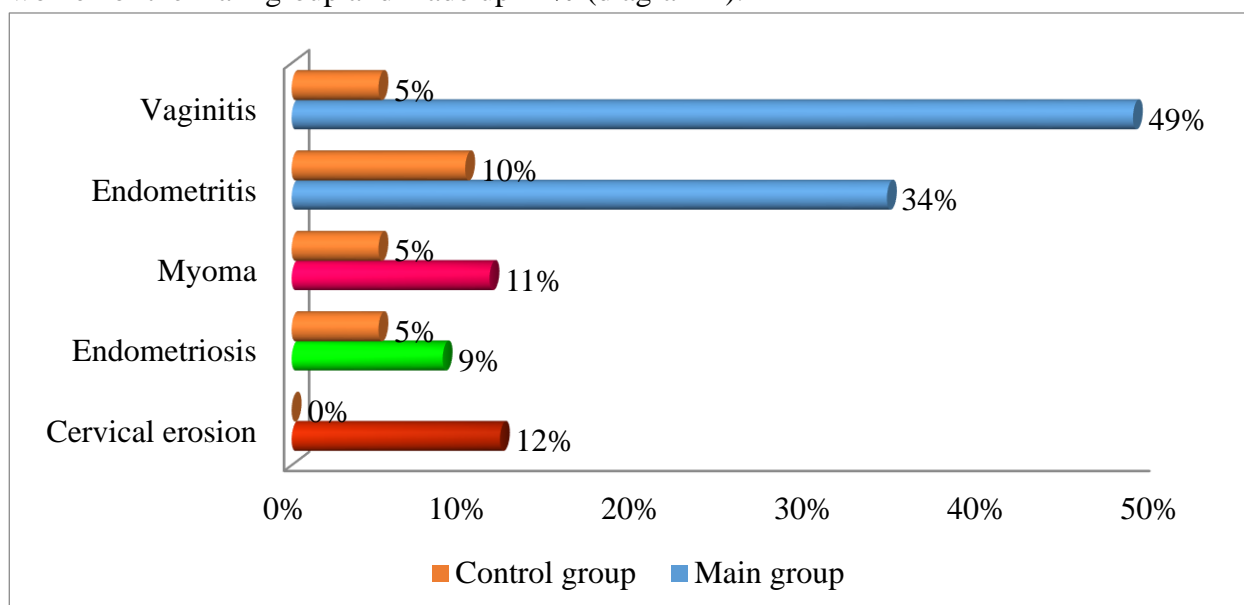
In particular, in 2022, out of 14,134 pregnant women admitted to the department during the year, operative treatment was applied to 294, of which 68 were placed with a nephrostomy. Clinical studies were conducted on 55 pregnant women, including 35 pregnant women with GP and 20 conditionally healthy pregnant women with physiological pregnancy.

Most of the patients had 2 or more births (78.7%), information on birth parity is presented in diagram 3, according to which we can say that the main and control groups have a statistically significant difference in terms of birth parity they did not ( $p \leq 0.05$ ). Women whose interval between previous and current pregnancy was up to 2 years made up 42.8% in the main group, and 20% in the control group.



**Diagram 3. Information on parity of examined women**

The analysis of gynecological diseases of pregnant women with OGP showed a high rate of inflammatory diseases. Most women had vaginitis (49%) and endometritis (34%), uterine fibroids and endometriosis were found in 5% of cases. In the control group, inflammatory conditions were significantly lower than in the main group. Cervical erosion was noted only in women of the main group and made up 12% (diagram 4).



**Diagram 4. Gynecology anamnesis**

When examining the history of comorbidities of the women participating in the study, a high rate of inflammatory diseases was noted, including 85.7% of women in the main group had urinary tract infections, while the control group had 10% of this pathology. urethritis and cystitis were recorded in 31.4% cases, vaginitis in 48.6% cases, and endometritis in 34.3% cases.

When the obstetric anamnesis of the studied women was determined, it was found that the rate of term delivery in the main group was 30% lower than in the control group, complications in

previous pregnancies were also more frequent. In particular, premature birth was recorded in 40%, early pregnancy loss in 14.3%, non-developing pregnancy in 17.1%, antenatal death in 5.7%, ectopic pregnancy in 2.87%. At the same time, when the structure of gynecological diseases of pregnant women with OGP was analyzed, complications of gynecological anamnesis were found in the main group.

**Conclusion.** Thus, the analysis of anamnestic data can show us the prevalence and nature of gynecological, obstetrical, perinatal complications, negative consequences of pregnancy as a risk factor for the development of OGP. Among women in the main group, the incidence of infectious diseases, including STDs and urinary tract infections, and the high rate of inflammatory diseases in the anamnesis may be represented by an imbalance of the immune system, and this may be due to other can be the basis for the development of diseases.

In the analysis of complaints, abdominal pain on the affected side was the only subjective symptom that attracted our attention. In varying degrees of severity, it was present in all patients of the main group. In the main group of patients, relevant symptoms of pyelonephritis of pregnancy were noted, they complained of pain in the lower back, pain or unconsciousness during urination, nocturnal urination, in the main 14 pregnant women (40%) with relevant symptoms of pyelonephritis, the body an increase in temperature up to 38-38.5 degrees was noted. 5 (14.3%) pregnant women applied with hectic fever.

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## MORPHOLOGICAL STRUCTURE OF THE ENDOMETRIUM IN WOMEN WITH ABNORMAL UTERINE BLEEDING

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**Abstract.** *In the Republic of Uzbekistan, the incidence of endometrial hyperplasia varies widely and depends on age. In perimenopausal women, the incidence ranges from 10 to 35%. Goal of work was to study the morphological structure of the endometrium in premenopausal women with abnormal uterine bleeding. We examined 55 patients with AUB who were treated in the gynecological department of the multidisciplinary clinic of SamSMU for the period from 2022 to 2023. The morphological picture of the endometrial layer in premenopausal women is represented by glandular hyperplasia in most cases, but glandular-cystic hyperplasia was found in 20% of cases. Atypical hyperplasia was detected in 5 women, and recurrence of hyperplasia was noted in these women*

**Keywords:** blood serum (BS), abnormal uterine bleeding (AUB), Endometrial hyperplastic processes (EHP), endometrial hyperplasia (EH).

**Relevance.** In the structure of gynecological pathology, endometrial hyperplastic processes range from 5 to 25%, being a medical and social problem due to the high incidence of relapses and the possibility of malignancy [1].

In the Republic of Uzbekistan, the incidence of endometrial hyperplasia varies widely and depends on age. In perimenopausal women, the incidence ranges from 10 to 35% [2]. Currently, a method for studying the structure of blood serum (BS) is being introduced into clinical practice, which makes it possible to diagnose the pathology of organs and systems with a high degree of probability, and at the early stages of the development of the disease. The morphological criteria formed in the process of BS dehydration have fairly clear characteristics and are indicators of pathological abnormalities in various organs and systems, the degree of stability of homeostasis, biological age, the choice of optimal therapeutic factors and regimens, and assessment of the effectiveness of the therapy [3].

Endometrial hyperplastic processes (EHP) can occur at any age, but the frequency of this disease increases significantly during perimenopause. The peak incidence of mammary glands also occurs at the age of 41-50 years [3,4,7].

The number of scientific works related to the diagnosis and treatment of endometrial hyperplastic processes indicates that this problem has been sufficiently studied [5,11]. There are studies by domestic gynecologists on the development of tactics for managing patients with combined hyperplastic processes of the uterus and mammary glands [1,12]

A factor that damages any link in the menstrual cycle regulation system may be etiological for the occurrence of this pathology. These include overwork, psychological stress, hypovitaminosis, intoxication, genital and non-genital infections, somatic diseases, abortion, pathological childbirth, tumor processes of various localizations [7, 8].



Known perimenopausal and developmental risk factors for EHP and AUB are overweight and obesity. Their effect is apparently mediated by increased synthesis of estrogens in adipose tissue or an increase in their biological activity [4].

**Aim of the study.** To study the morphological structure of the endometrium in premenopausal women with abnormal uterine bleeding.

**Materials and methods.** Taking into account our goals, we examined 55 patients with AUB who were treated in the gynecological department of the multidisciplinary clinic of SamSMU for the period from 2022 to 2023.

The control group consisted of 20 women of the same age without indications of any menstrual irregularities.

The age of the women ranged from 43 to 51 years, on average  $46.7 \pm 2.4$  years.

A comprehensive clinical and laboratory examination included examination of the external genitalia, vagina, and cervix in speculums; bimanual examination, ultrasound examination of the pelvic organs, endoscopic examination of the uterine cavity, histological examination of biopsy specimens.

Ultrasound methods for examining the pelvic organs were carried out using Aloka-500 (Japan) ultrasound scanners. At the same time, the condition of the pelvic organs was assessed, as well as the condition of the endometrium and the presence of other pathologies.

All patients of the main group were diagnosed with endometrial hyperplasia (EH), as a result of which diagnostic curettage was performed under appropriate conditions. In a detailed analysis of the data, the patients were divided into 2 groups based on the presence of hyperplasia and its recurrence: group 1, patients with primary endometrial hyperplasia ( $n=35$ ), group 2, patients with recurrent endometrial hyperplasia ( $n=20$ ).

Hysteroscopy was performed under general anesthesia in a private clinic by agreement on the 5th day of the menstrual cycle. Hysteroscopy was performed only when indicated, mainly for women of the second group with recurrent endometrial hyperplasia.

For variational and statistical processing of the research results, the Statistica6.0 program was used to determine the key variational indicators of the mean (M), error of the mean (m) and standard deviation (p). The reliability of the results obtained was determined using the Student's test. When the P value was less than 0.05, the difference between the two means was considered significant. The reliability level was at least 95%.

**Results and discussion.** When studying somatic pathology in patients, it was revealed that half of the patients in the main group - 27.27% - had chronic inflammatory diseases of the upper and lower respiratory tract, which was significantly more common than in the control group - 15%,  $p < 0.001$ . Every fifth patient in the main group - 11 (20%) suffered from chronic bronchitis. Patients with AUB were three times more likely to indicate the presence of chronic tonsillitis compared to controls,  $p < 0.001$ .

A significant proportion of patients in the main group (63.7%) of women in the main group and only 10% of the control group suffered from diseases of the cardiovascular system, mainly varicose veins and hypertension,  $p < 0.001$ . Varicose veins were diagnosed in 8 (14.54%) versus 1 (5%) in the control group,  $p < 0.001$ . Hypertension occurred twice as often in patients with AUB than in the control group,  $p < 0.05$ .

To assess the condition of the endo- and myometrium, all patients underwent an ultrasound examination at the time of treatment. In patients with bleeding, the M-echo ranged from 17 to 35

mm, with an average of  $21.7 \pm 4.5$  mm. Of the 35 women who applied with bleeding and hyperplasia, 21 (60%) had an M-echo from 17 to 23 mm, and 5 (16.13%) were diagnosed with endometrial polyps. In 15 (78.94%) patients from the second group, the M-echo ranged from 24 to 35 mm, on average -  $29.2 \pm 1.8$  mm; ultrasound revealed endometrial polyps in 5 patients (26.32%).

All patients, taking into account age, abnormal uterine bleeding and endometrial hyperplasia, were recommended to undergo diagnostic curettage. After curettage, the specimen was sent for histological analysis to determine the morphological picture of hyperplasia.

In the majority of women (80% from the first group, 70% from the second), the morphological picture was represented by a sharply thickened functional layer of the endometrium with numerous glands that are elongated, have a tortuous course, and in places form an expansion in the form of cysts. 20% of women (from the first 7-20%, from the second 4-20%) had a morphological picture of glandular cystic endometrial hyperplasia. An atypical picture was identified in 5 women from the second group, in contrast to the first where such a picture was not observed.

**Conclusion.** Hyperplasia of the endometrial layer of the uterus was expressed by anomalous bleeding in all cases, the step-by-step treatment of which once again confirms the need for a complete diagnosis. In premenopausal age, we can say that this condition is related to hormonal disorders. Taking into account the characteristics of the AUB, based on the etiological cause, the morphological picture of the endometrial layer in premenopausal women is represented by glandular hyperplasia in most cases, but glandular-cystic hyperplasia was found in 20% of cases. Atypical hyperplasia was detected in 5 women, and recurrence of hyperplasia was noted in these women.

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## LEGAL ASPECTS OF IATROGENICS IN OBSTETRICS

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**Abstract.** *The article considers the relevance and timeliness of detection of such categories as iatrogenic crimes. All over the world, the problem of iatrogenics is still reaching a new frontier of development again and again. The development of medicine and the medical industry has come to the forefront and side effects are not far behind them. Along with the progress of medical science, on the other hand, in parallel with this, the degree of danger of medical care, the number of iatrogenic diseases and mortality from them have increased.*

**Keywords:** crime, medical worker, defect of medical care, careless fault, iatrogenic.

### Introduction:

The field of obstetrics deals with the care of pregnant women and their unborn babies, ensuring their well-being throughout pregnancy, labor, and delivery. While healthcare providers strive to provide the best possible care, iatrogenic complications can sometimes occur. Iatrogenics refers to unintended harm or adverse effects caused by medical intervention or treatment.

In the context of obstetrics, iatrogenics can encompass a range of legal aspects related to potential medical errors, negligence, or malpractice that result in harm to the mother or the baby. These legal aspects are of significant concern to both healthcare professionals and patients, as they involve issues of liability, patient rights, and the need for appropriate compensation and resolution. Understanding the legal aspects of iatrogenics in obstetrics is crucial for healthcare providers to ensure they deliver care that aligns with legal standards, guidelines, and best practices. It also empowers patients to be informed about their rights and seek appropriate legal remedies if they believe they have been subjected to iatrogenic harm.

The legal aspects of iatrogenics in obstetrics are of utmost importance in ensuring the safety and well-being of both the expectant mother and the unborn child. Iatrogenic complications refer to adverse events or injuries that occur as a result of medical interventions or treatments. In the context of obstetrics, iatrogenic complications can arise during pregnancy, labor, delivery, or postpartum care. Understanding and addressing the legal implications of such complications is crucial for healthcare providers, patients, and the legal system to ensure appropriate accountability, patient rights, and the delivery of high-quality obstetric care.

Obstetric care involves a complex web of medical decisions, interventions, and procedures aimed at ensuring a safe and successful pregnancy and childbirth experience. However, despite the best intentions and efforts of healthcare professionals, iatrogenic complications can occur due to errors, negligence, inadequate communication, or unforeseen circumstances. These complications can range from maternal injuries, fetal distress, birth injuries, to long-term disabilities or even maternal and fetal deaths.

The legal aspects of iatrogenics in obstetrics encompass various aspects, including medical malpractice, informed consent, standard of care, negligence, and the rights of the patient and healthcare providers. Medical malpractice refers to the failure of a healthcare professional to provide the expected standard of care, resulting in harm to the patient. In obstetrics, medical

malpractice claims may arise from a variety of scenarios, such as misdiagnosis, improper monitoring, medication errors, surgical errors, or inadequate communication with the patient.

**Relevance.** Iatrogenic are crimes against human life or health committed by doctors as a result of improper provision or failure to provide medical care to citizens. The right to health and to medical care is guaranteed by the Constitution of Uzbekistan. The strategic demographic policy of the Uzbekistan is currently aimed at increasing the birth rate and life expectancy of citizens, as well as improving the reproductive health of women and the health of newborn children.

However, the number of iatrogenies in the field of obstetrics and gynecology is not decreasing, but is growing every year. The investigation of crimes related to poor quality medical care during obstetrics is very difficult, due not only to the need for thorough research and comprehensive analysis processes of delivery and obstetrics, but also the personal characteristics of the participants in the process. Let us pay attention to some current problems related to the identity of the subject, victim and expert. The subject of an iatrogenic crime is always a medical worker. During the investigation, his qualifications (education, certification), specialization, professional category and work experience are subject to examination.

**Main part.** Another “character” of the crime is the victim, in this case the patient, a person seeking medical help, who almost always takes an active part in the medical process, so his physiological and psychological characteristics also play a key role in the investigation. First of all, it is necessary to pay attention to the patient’s belonging to the so-called risk groups - groups of patients prone to iatrogenic manifestations. Risk groups are formed based on gender, age, chronic and concomitant diseases, intolerances, genetic predispositions, professions and bad habits. Obstetricians traditionally pay attention to the age of the woman in labor (less than 16 and more than 35), the number of births, “miscarriage” (history of miscarriages), conflicts regarding blood group and rhesus, underweight and overweight, toxicosis and gestosis, and also, most importantly, the presence genital (related to the reproductive system) and extragenital (related to other body systems) diseases.

A key role in the process of successful delivery is played by continuity - a close connection between outpatient medical institutions (antenatal clinics) and institutions where women are directly provided with obstetric care (maternity hospitals). The medical card, which is kept in the antenatal clinic (the so-called “exchange”), is given to the pregnant woman with instructions to keep it with her at all times in case labor begins. If an emergency hospitalization occurs or the patient is unconscious, the record often does not reach the hospital, and the obstetrician does not obtain a complete history.

During the investigation, it is necessary to establish criteria for risk groups to which the patient may belong. Not only documents from the institution where the birth took place, but also cards from the antenatal clinic and other medical institutions where the patient received medical care are subject to study and analysis. Many extragenital diseases (hypertension, obesity, hyperthyroidism, etc.) negatively affect fetal development and the process of delivery.

In addition to the medical history, it is necessary to pay attention to the patient’s life, profession, habits and behavior. According to ongoing research, a significant proportion of women do not attach importance to regular medical supervision during pregnancy (45.05%), early attendance at an obstetrician-gynecologist during pregnancy (42.08%), prenatal hospitalization (25.99%), and the need to attend obstetrician-gynecologist before pregnancy (22.03%).

Recently, “new methods” have become popular in Russian society: pregnancy without medical supervision, childbirth at home, childbirth with a “spiritual midwife”. In some situations, experts go beyond the scope of the questions posed and try to include in their conclusions judgments that have legal significance, for example, about the presence or absence of guilt of a medical worker, the presence of a causal relationship between his actions and the adverse consequence that has occurred, etc. Such judgments should not be made by experts.

In addition, experts tend to express an opinion about the presence of signs of extreme necessity, justified risk, or “medical error” in a doctor’s actions, which also goes beyond their competence.

**Conclusion.** Thus, if the “human factor” is not taken into account during the investigation of an iatrogenic crime, the investigation may encounter unforeseen difficulties and make mistakes that will have serious consequences, including an unjust verdict.

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## DETERMINATION OF CONSERVATIVE THERAPY METHODS IN PATIENTS WITH OVERACTIVE BLADDER SYNDROME

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**Abstract.** *Overactive bladder (OAB) is a clinical syndrome involving urinary urgency with or without urge incontinence, usually in association with urinary frequency and nocturia (urination between falling asleep and waking up). To date, it has been established that the cause of frequent and urgent urination in most patients is detrusor hyperactivity. The problem of diagnosis and successful treatment of patients with OAB requires an integrated approach involving doctors of various specialties, primarily urologists, neurologists and neurosurgeons. Attention is drawn to the fact that in most cases it is not possible to determine the true cause of the development of OAB, which makes it necessary to continue research aimed at identifying the etiological factors of OAB.*

**Keywords:** *overactive bladder syndrome (OBS), conservative treatment, stress urinary incontinence (SUI), urgent urinary incontinence (UUI),*

**Relevance.** Overactive bladder syndrome (OBS) is a clinical syndrome with or without urgency incontinence, usually associated with frequent urination and nocturnal urination. To date, it has been established that detrusor hyperactivity is the cause of frequent and urgent urination in most patients. The problem of diagnosis and successful treatment of patients with OBS is a problem that requires the involvement of doctors of various specialties, primarily urologists, neurologists and neurosurgeons. In many cases, attention is paid to the fact that it is impossible to determine the real cause of the development of OBS, which requires the continuation of research aimed at determining the etiological factors of OBS.

Excessive activity of the bladder is not a life-threatening condition, but it has a sharp negative effect on its quality, leads to social adaptation and even disability.

Recently, assessment of the role of the functional component in the development of urinary disorders such as stress urinary incontinence (SUI) combined with urge incontinence in the form of overactive bladder (OB) has become especially relevant. Urodynamic examinations together with detrusor overactivity also reveal signs of SUI.

As can be seen from the above, bladder overactivity is an urgent problem in modern medicine. A detailed study of the etiological factors contributing to the development of OBS is required, as well as the development of measures for early diagnosis and prevention of OBS.

**The aim of the study.** Determine the methods of conservative treatment of patients with OBS.

**Materials and methods.** The study was based on the clinical and laboratory examination of 50 patients with hyperactive bladder syndrome who applied to the urology department of the Samarkand State Medical University in Samarkand and were hospitalized for treatment in 2021-2024.



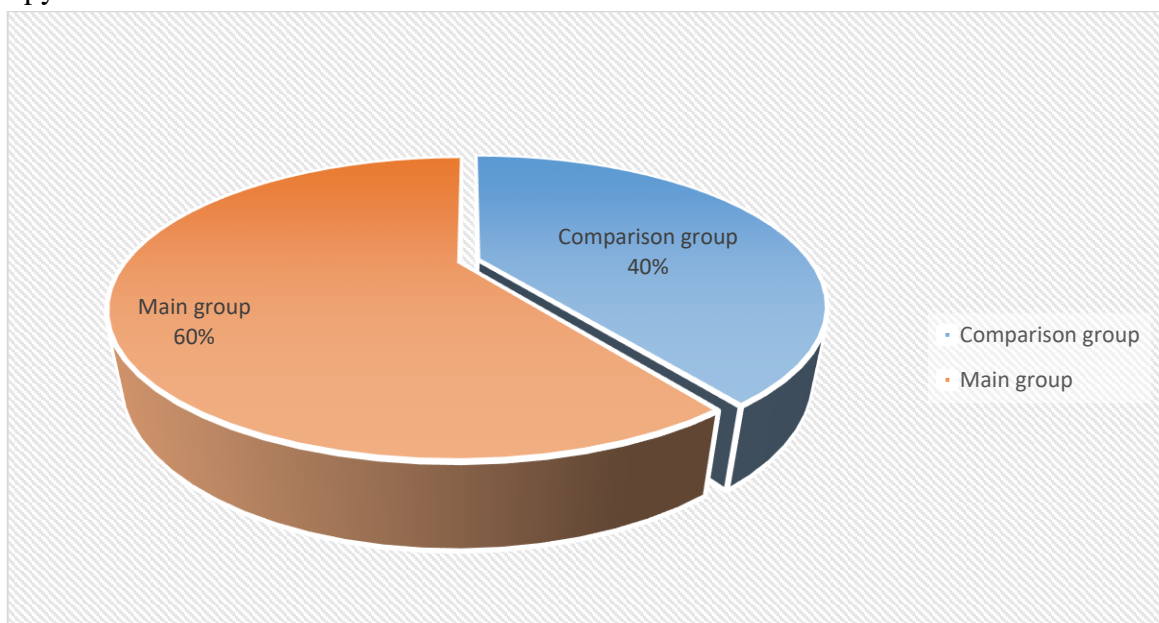
Inclusion criteria for the study:

- written consent of patients;
- patients with urgent urinary incontinence (UUI);
- early stages of stress urinary incontinence
- mixed type of urinary incontinence
- patients of comparable age without severe extragenital pathology;

Exclusion criteria from scientific research:

- presence of descent of urogenital organs
- late stages of stress incontinence
- anatomical abnormalities that cause urinary incontinence
- cystocele 2-3 degrees
- severe extragenital diseases
- oncological diseases
- acute infectious processes

The examined patients were divided into 2 groups depending on treatment methods (Fig. 1): The comparison group included 20 (40%) patients treated with conventional methods of diagnosis and treatment, and the main group included 30 (60%) patients treated with complex therapy.



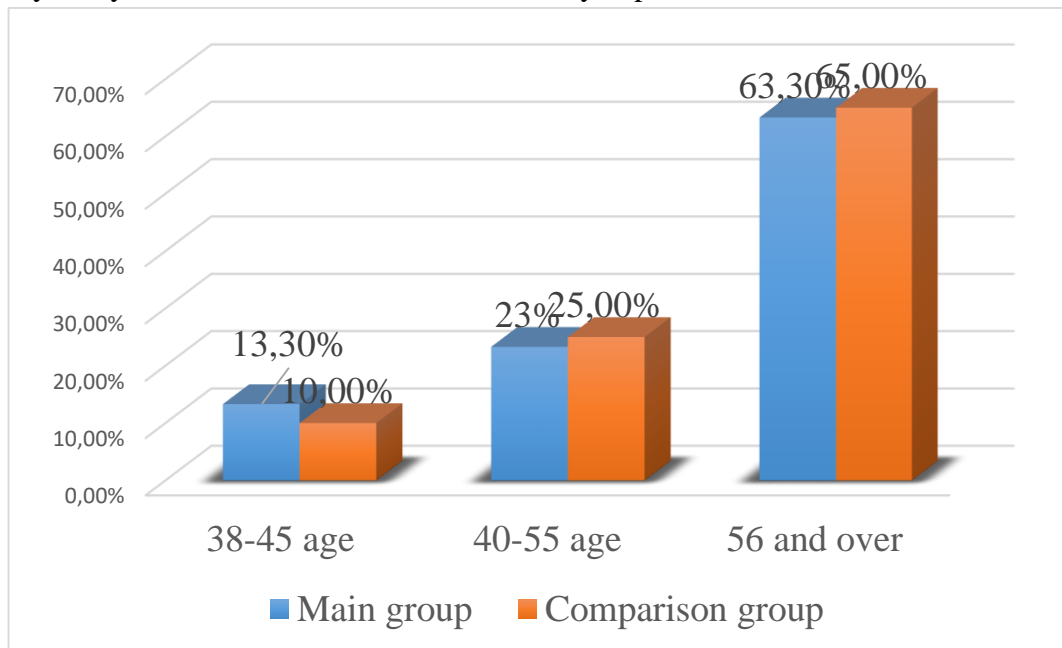
**Figure 1. Distribution of patients with urinary disorders by group**

The age of the examined patients was from 38 to 65 years. The mean age of patients in the comparison group was  $48.2 \pm 3.4$  years, and in the main group was  $49.03 \pm 4.12$  years, which is shown in Figure 2 by group, respectively.

The distribution by gender was dominated by women (73.3% in the main group, 75% in the comparison group). It should be noted that the difference between women and men was significant, that is, men in all studies were aged 55 and over, while women had patients from 38 to 56 years and older.

All patients under observation underwent a thorough study of the somatic, urological, obstetrical and gynecological anamnesis, as well as a careful clinical examination, taking into account the age, the state of the reproductive system. General examination, external and internal

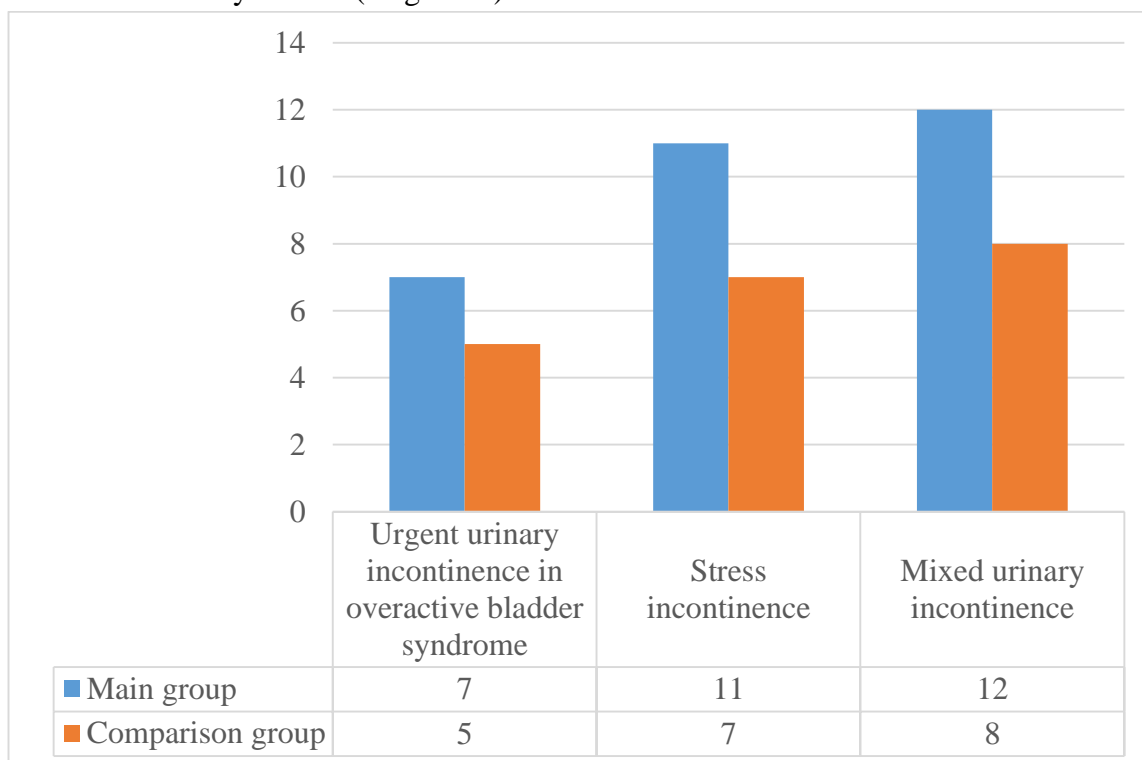
urogynecological examination, general clinical analysis of blood and urine were performed. All laboratory analyzes were conducted in the laboratory department.



**Figure 2. Distribution of the examined by age groups**

**Results and discussion.** In our study, according to the method of treatment, 50 patients were divided into 2 groups: main (n=30) and comparison (n=20) groups. Patients of the comparison group were treated conservatively with drugs. In addition to conservative drug therapy, physiotherapeutic method - BFB-training was applied to the main group of patients.

Drug therapy was prescribed according to the type of urinary incontinence. All patients were divided into Urgent Urinary Incontinence and Mixed Urinary Incontinence in Stress Overactive Bladder Syndrome (diagram 1).



**Diagram 1. Separation of patients of the main and comparison groups according to UI type**

For the treatment of urinary incontinence in hyperactive bladder syndrome, we used drugs of the M-cholinoblockers group. The mechanism of action of M-cholinoblockers is to block the muscarinic receptors of the urinary bladder, preventing the interaction of the mediator acetylcholine with them. Thus, the effect of acetylcholine on the detrusor is reduced or completely stopped, as a result of which its activity is reduced. In the treatment of detrusor hyperactivity, two types of M-cholinoblockers, differing in chemical structure, are used - tertiary and quaternary amines (oxybutynin, trospium chloride), which are the first-line drugs for hyperactive bladder syndrome and ST. Oxybutynin was prescribed in a dose of 2.5 to 5 mg 3-4 times a day (maximum dose 20 mg/day).

The duration of the daily procedure varies between 15-20 minutes. The treatment course consists of 15 treatments. If necessary, repeated courses of BFB-therapy (2-3 times a year) can be conducted to enhance the clinical effect.

A total of 12 women with UI in OBS (5 comparison group and 7 main group) were prescribed beta-3-adrenomimetics with M-cholinoblockers during the first period of treatment. As a result, out of a total of 12 women, only 2 (3.33%; 5%) had a therapeutic effect from drug therapy and a positive result was obtained. When BFB was prescribed to 7 patients in the main group, positive dynamics were observed in all of them, and UI symptoms were completely eliminated in 3 patients.

Patients with the stress form of UI were prescribed antidepressants as a conservative treatment and the outcome was evaluated after 1 month. 7 people (35%) in the comparison group and 11 people (36.7%) in the main group had UI of this form.

At the same time as conservative treatment, BFB - training physiotherapeutic treatment method was applied to women of the main group. At this stage, the effectiveness of treatment was noted as positive in only 2 women (10%) in the comparison group, and in 8 women (26.7%) in the main group. At this stage, we can see that the effectiveness of complex treatment is several times higher than that of conventional treatment. Analysis of the obtained results showed that 17 (56.7%) patients in the main group did not have UI cases after complex treatment from OBS, this indicator was recorded in 4 (20%) patients in the comparison group, which is instead proves the effectiveness of complex therapy very reliably ( $P < 0.001$ ).

**Conclusion.** Analysis of the dynamics of the results of examinations of women with urinary incontinence by means of non-invasive special tests before and after treatment showed that after complex treatment 56.7% of patients did not have spontaneous urination during the tests, 43.3% of the main group patients did not fully recover, but reported positive results in terms of overall symptoms and a significant reduction in UI episodes. In 4 patients (20%) of the comparison group, spontaneous urinary excretion was not observed at all, and in the remaining 60%, the number of excretions decreased, but complete recovery was not observed, and in 20% of patients, there was no overall change before and after treatment.

As a result of the tests, all patients had the result of treatment. However, according to the results of the effectiveness, more patients of the main group had complete treatment compared to the comparison group.

It is worth noting that during the course of treatment, they noted changes in positive dynamics from severe UI to mild UI, which led to a spontaneous reduction in the need for surgical treatment, as well as an improvement in the overall quality of life. will bring.

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## THE IMPORTANCE OF STUDYING THE STRUCTURE OF BLOOD SERUM IN GYNECOLOGY

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**Abstract.** *Currently, in the structure of population mortality, 57% are diseases of the cardiovascular system, of which 49.3% are due to coronary heart disease (CHD). The study of coronary heart disease, and in particular unstable angina (UA), its complications and the effectiveness of treatment, dictates the need to study risk factors. Goal of work was studying the short-term outcomes of unstable angina in women and men with metabolic syndrome. We examined 58 patients with ischemic heart disease and metabolic syndrome who were treated in the Internal Diseases of the Pediatric Faculty department of SamSMU for the period from 2022 to 2023. Based on the data, it can be concluded that metabolic syndrome develops earlier in women than in men, as a result of which changes in the functioning of the cardiovascular system also appear earlier. Despite this, laboratory indicators indicate that, despite gender differences, there is a tendency to worsen the lipid spectrum and glycemic parameters in patients with unstable angina due to MS.*

**Keywords:** *arterial hypertension (AH), hyperlipidemia, cardiovascular events (CVE), acute myocardial infarction (AMI), metabolic syndrome (MS), coronary heart disease (CHD), unstable angina (UA).*

**Relevance.** Over the past 20 years, a large number of studies have been conducted that have confirmed the close relationships between obesity, arterial hypertension (AH), hyperlipidemia, impaired glucose tolerance and cardiovascular diseases. The term “metabolic syndrome” combines a group of risk factors associated with coronary heart disease and/or diabetes. According to a number of authors, in patients with MS, the risks of major cardiovascular events (CVE) increase: stroke, acute myocardial infarction (AMI), sudden death. Patients with metabolic syndrome are characterized by more massive damage to the coronary arteries, a more severe course of coronary artery disease, and a decreased quality of life. Separately, it should be noted that metabolic syndrome (MS) is widespread (according to some authors, more than 20% of the planet's population).

Currently, in the structure of population mortality, 57% are diseases of the cardiovascular system, of which 49.3% are due to coronary heart disease (CHD). The study of coronary heart disease, and in particular unstable angina (UA), its complications and the effectiveness of treatment, dictates the need to study risk factors. It is known that metabolic disorders such as excess body weight, dyslipidemia and impaired glucose metabolism accelerate atherogenesis. All these disorders are components of metabolic syndrome. The issue of the effect of MS on the cardiovascular system has been studied in sufficient detail in the literature, however, the effect of

the syndrome on the results of angioplasty procedures and long-term prognosis of MS requires further study.

However, despite the active study of MS, in the available literature, including publications of leading cardiological and endocrinological associations, there are no clinical recommendations for the management of these patients. The practical importance of these unresolved issues determined the purpose of this work.

**Aim of the study:** To study the short-term outcomes of unstable angina in women and men with metabolic syndrome.

**Materials and methods.** Taking into account our goals, we examined 58 patients with ischemic heart disease and metabolic syndrome who were treated in the Internal Diseases of the Pediatric Faculty department of SamSMU for the period from 2022 to 2023.

Clinical examinations were carried out according to a standard scheme, including clarification of complaints, collection of anamneses, assessment of the condition of internal organs and systems, stress echocardiography, ECG. The status of metabolic syndrome was studied through the study of lipid and glycemic spectrum.

The data obtained during the study were subjected to statistical processing using the Microsoft Office Excel-2012 software package on a Pentium-IV personal computer, including the use of built-in statistical processing functions. The arithmetic average value (M), standard deviation, standard error of the average (m), relative values (frequency, %), statistics of the measurements obtained when comparing the average values of the studied indicator significance was determined by calculating the probability of error (P) in testing the normality of the distribution (according to the kurtosis) with Student's test (t).

**Results and discussion.** The patients were between 30 and 70 years old. The mean age was  $48.7 \pm 4.5$  years. The duration of angina was from 1 to 10 years. 15.51% had a confirmed myocardial infarction in history. Among the surveyed, men accounted for 37.93% (22), women – 62.07%. In the age category of men and women there were different ages, but according to the average BMI was higher in women even at 30 years old, while in men this indicator was higher from the age of 40-45 years.

Anthropometric parameters did not change during antihypertensive therapy. Also in the age group of 30-40 years, there were violations of doctor's orders, non-systematic use of medications, and disruption of the treatment process. Only 5 people from the total sample followed the diet regimen. Initially, the average weight of the patients was  $85.7 \pm 3.7$  kg; if we compare the indicators of women ( $91.4 \pm 2.1$  kg) with men ( $78.3 \pm 3.4$  kg), we can say that overweight was more common in women. Similar data were obtained for BMI (women  $37.2 \pm 1.4$  kg/m<sup>2</sup>, men  $35.3 \pm 1.14$  kg/m<sup>2</sup>) and waist circumference (women  $134 \pm 4.2$  cm, men  $113 \pm 2.8$  cm).

It should be noted that both women and men had metabolic syndrome and a certain degree of obesity.

When analyzing the type of activity, the majority of women were housewives, and only a third had any kind of employment. While only one fifth of men were pensioners, the remaining cases were employed. It should be noted that most men worked in office jobs, which means they did not have any physical activity.

Blood tests revealed glycemic changes, low levels of high-density lipoproteins, and elevated levels of C-reactive protein in all patients. In patients with lipid metabolism disorders, the following characteristics were observed: mild hypercholesterolemia (5-6.5 mmol/l) in 45%;

moderate hypercholesterolemia (6.5-8 mmol/l) – in 30%; mild hypertriglyceridemia (1.7-2.3 mmol/l) in 35%; moderate hypertriglyceridemia (2.3-4.5 mmol/l) - in 45%. Severe hypercholesterolemia and hypertriglyceridemia were observed in only 15%. In these indicators, when comparing gender groups, the data were identical.

When studying the immediate outcomes, negative dynamics of the disease were revealed: myocardial infarction developed in 15% of patients, symptoms of coronary heart disease progressed in 40%, and the frequency of arrhythmias increased by 30%.

Patients with metabolic disorders require more careful monitoring both during hospitalization and after discharge from hospital. Identified laboratory parameters, such as hyperglycemia on admission, low high-density lipoprotein levels, elevated C-reactive protein levels, and abnormal ECG and echocardiographic changes, may be predictors of life-threatening cardiac arrhythmias. Interpretation of these indicators will help plan stages of stay in different departments of the hospital, including identifying risk factors for longer stays in intensive care units.

**Conclusion.** Based on the data, it can be concluded that metabolic syndrome develops earlier in women than in men, as a result of which changes in the functioning of the cardiovascular system also appear earlier. Despite this, laboratory indicators indicate that, despite gender differences, there is a tendency to worsen the lipid spectrum and glycemic parameters in patients with unstable angina due to MS.

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## COMPARATIVE ASSESSMENT OF HEPATOPROTECTIVE ACTIVITY OF BRASSICA RAPA, NIGELLA SATIVA, SAMBUCUS NIGRA SUBSTANCES WITH C-4 AND PHOSPHOGLIV PREPARATIONS

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**Abstract.** *A comparative study of the hepatoprotective activity of the substances Brassica rapa, Nigella sativa, Sambucus nigra with comparison drugs C-4 and Phosphogliv in acute hepatitis induced by carbon tetrachloride (CCl<sub>4</sub>) was carried out in experiments. The results of a comparative assessment of the hepatoprotective activity of Brassica rapa, Nigella sativa, Sambucus nigra substances with C-4 and Phosphogliv preparations showed a high degree of hepatoprotective properties of Brassica rapa substances at a dose of 20 mg/kg and Sambucus nigra at a dose of 30 mg/kg, which in the future can be used to create a biologically active additive (dietary supplement) for treatment of diseases of the hepatobiliary system.*

**Key words:** *substances of medicinal plants, hepatoprotector, hepatitis, carbon tetrachloride, liver, peripheral blood.*

**Introduction.** In recent decades, there has been a significant increase in the incidence of liver and hepatobiliary diseases in the population all over the world, which is a prerequisite for expanding the range of medicines capable of enhancing regenerative processes in the liver. The annual registration of 2-3 million new cases of viral, toxic, medicinal, alcoholic, and autoimmune hepatitis indicates the relevance of the issue of modern pharmacology, which is to improve the quality and safety of pharmacotherapy of diseases of the hepatobiliary system [1, 2].

Currently, the issue of the need for the use of hepatoprotective drugs in the complex therapy of liver diseases against the background of such common comorbid conditions as obesity, diabetes mellitus and metabolic syndrome is becoming more and more urgent [3]. To date, the problem of medicinal liver lesions is one of the most important, in the standard treatment of various groups of diseases it includes a total of 8-12 drugs with a single dose, such a number of drugs can cause the development of various forms of drug-induced hepatotoxic reactions, on average, in 28% of cases [4].

Hepatoprotectors are complex preparations, mainly of plant origin, designed to increase the resistance of the liver to toxic effects, promote the restoration of its functions, normalize or enhance the activity of liver cell enzymes and prevent the destruction of cell membranes and stimulate the regeneration of hepatocytes [3]. Timely and correct selection of hepatoprotectors based on isolated substances from medicinal plants growing in Uzbekistan in the treatment of various diseases of the hepatobiliary system will help reduce the risk of liver damage. The purpose of this study was to study the effect of the substances Brassica rapa, Nigella sativa and Sambucus nigra in comparison with C-4 (developed by the Institute of Bioorganic Chemistry of the Academy of Sciences of the Republic of Uzbekistan, preparing for patenting) and Phosphogliv (Russia) on the course of experimental acute toxic hepatitis caused in mice by carbon tetrachloride (CCl<sub>4</sub>).

**Research methodology.** A model of toxic hepatitis caused by CCl<sub>4</sub> in mice. The study of hepatoprotective activity was conducted for a comprehensive assessment of the effectiveness of substances Brassica rapa, Nigella sativa, Sambucus nigra with hepatoprotective activity. The experiments were conducted on 48 male mice weighing 18-20 g according to the method proposed

in [5]. To obtain a model of toxic hepatitis, CCl<sub>4</sub>, which causes necrosis of hepatocytes, was used at a dose of LD<sub>50</sub>. According to preliminary experiments in rats, LD<sub>50</sub> = 2.7 ml/kg of animal weight. Next, the animals were divided into 6 groups (8 groups) to evaluate the effectiveness of the substances in comparison with control and intact mice, as well as with the comparison drug Phosphogliv at a dose of 450 mg/kg. An hour after intraperitoneal administration of CCl<sub>4</sub> at a dose of 20 mg/kg, the studied substances were administered intragastrically in the following doses: Brassica rapa 20 mg/kg, Nigella sativa 20 mg/kg, Sambucus nigra 30 mg/kg and Sambucus nigra 20 mg/kg, in a volume of 0.2 ml of solution, the animals of the control group were injected with saline in the appropriate volume. The animals were monitored for 6 days. Hepatitis caused by carbon tetrachloride is characterized by the development of colliquation necrosis, protein and fatty degeneration of hepatocytes localized mainly in the central zone of the renal lobule, where the maximum activity of cytochrome P-450-dependent monooxygenases and the predominant production of damaging hepatotoxin metabolites. D-galactosamine, which disrupts the synthesis of RNA and protein, causes acute hepatitis, identical in morphological and biochemical changes in the liver to viral hepatitis in humans. Studies are carried out in vivo in dynamics and after decapitation of animals under ether anesthesia a day after the last administration of potential hepatoprotectors. For further analysis, the following indicators were recorded: survival rate (%), life expectancy of dead mice (days), liver weight coefficient (ratio of organ weight in g per body weight in kg). For a comparative assessment of the results obtained, the coefficient of hepatoprotective activity – KGA was used.

**Determination of biochemical parameters of blood.** The surviving animals were slaughtered by decapitation, 0.5 ml of blood was taken at 3.8% citrate 1:9 and centrifuged at 3000 x gy for 10 minutes. Screening tests were conducted to identify the hepatoprotective properties of potential drugs: animal survival, body weight change and liver mass coefficient, CAA were determined. For the purpose of a more in-depth study of the effect of experimental substances on the course of hepatitis, the biochemical parameters of mouse blood characterizing liver function were evaluated. The activity of the enzymes alanine aminotransferase (ALT), aspartate aminotransferase (AST) and alkaline phosphatase (ALP) was determined by photometric kinetic method using kits from Cypress Diagnostics (Belgium) in animal serum. The analysis of peripheral blood parameters: hemoglobin content, number of erythrocytes, average erythrocyte volume (MCV), average hemoglobin content in a single erythrocyte (MCH), average hemoglobin concentration in erythrocyte mass (MCHC), number of reticulocytes, platelets, leukocytes was carried out on an automatic hematology analyzer Dymind DH36, Shenzhen Dymind Biotechnology Co., Ltd, China). Statistical processing of the results was carried out using the Microsoft Office software package. The data are presented in the form of an average value (M) and a standard error of the average value (m). To test statistical hypotheses about the difference between the studied groups, the Student's criterion was used.

**Analysis and results.** Generalized data from experiments to determine the hepatoprotective activity of the studied substances and comparison drugs are presented in Table 1. The development of toxic hepatitis in animals of the control group was characterized by a decrease in survival rate to 50% (in the intact group – 100%), a decrease in body weight by an average of 1.3 g and an increase in liver mass coefficient by 19.69%. The life expectancy of dead mice in the group of substances Brassica rapa, Nigella sativa, Sambucus nigra and comparison drugs was 6 days, only in the group with the substance Sambucus nigra at a dose of 20 mg /kg this indicator was 5.25 days. Carbon tetrachloride intoxication was accompanied by hyperfermentemia, indicating the destruction of hepatocytes and the development of cholestasis compared with the intact group (ALT and AST by 1.75 and 2.4 times, respectively, Table 2). The introduction of

Brassica rapa, Sambucus nigra substances and comparison drugs to experimental animals led to a decrease in the hepatotoxic effect of carbon tetrachloride: the survival rate of rats increased to 100%; animal body weight increased, liver mass coefficient decreased by 1.3 times, but in the case of Nigella sativa and Sambucus nigra substances at a dose of 20 mg/kg, these indicators remain unchanged as and in the case of model pathology. Based on the data obtained, the final indicator - KHA of the studied substances and comparison drugs was 1, which means a high degree of hepatoprotective activity of substances and drugs, except for substances Nigella sativa and Sambucus nigra at a dose of 20 mg /kg, which was 0.63 and 0.42, respectively, which means an average degree of hepatoprotective activity of substances.

**Table 1**

**The effect of substances and preparations of plant origin on the course of experimental acute toxic hepatitis, screening tests ( $M \pm m$ ,  $n=6$ )**

The Monitoring Group, the dose	Survival rate (%)	Life expectancy of dead mice (days)	Liver mass ratio, mg/g	Coefficient of changes in animal body weight, g	KHA
Intact	100	6	64,71± 2,52	(+) -1,25±0,24	1
Control	50	3,75	84,4 ± 2,85	(-) 1,3 ± 0,37	0
C4, 20 mg/kg	100	6	64,68 ± 2,25	(+) -2 ± 0,65	1,07
Phosphogliv, 110 mg/kg	100	6	63,3±1,7	(+) -1,75±0,43	1,07
<i>Brassica rapa</i> , 20 mg/kg	100	6	60,80 ± 1,18	(+) -0,25±0,13	0,95
<i>Nigella sativa</i> , 20 mg/kg	100	6	95,41± 5,86	(+) -1,5 ± 1,30	0,63
<i>Sambucusnigra</i> , 30 mg/kg	100	6	64,29 ± 0,80	(+) -2,0 ± 0,74	1,08
<i>Sambucusnigra</i> , 20 mg/kg	75	5,25	80,41 ± 4,85	(-) 0,5 ± 0,14	0,42

The introduction of the studied substances and comparison drugs stimulated the normalization of biochemical parameters of animal blood: the activity of ALT and AST significantly decreased, and there was also a tendency to decrease the activity of alkaline phosphatase. The use of Brassica rapa, Nigella sativa and Sambucus nigra substances for the treatment has led to changes in some biochemical parameters. The activity of AST decreased by 1.8 times under the action of Brassica rapa at a dose of 20 mg/kg compared with this indicator of animals in the control group. The indicators of the activity level of AST under the action of Sambucus nigra at a dose of 30 mg/kg and the comparison drug C-4 at a dose of 20 mg/kg were of the same value, which is confirmed by other studies. The activity levels of this enzyme in the groups of substances Nigella sativa and Sambucus nigra at the same dose of 20 mg /kg increased by 3.3 and 2.4 times compared with the control group. In addition, there was a decrease in the activity of alkaline phosphatase by 1.3 and 1.2 times under the action of Brassica rapa substances at a dose of 20 mg/kg and Sambucus nigra at a dose of 30 mg/kg, respectively, compared with similar indicators in mice of the control group. A change in the activity of AST indicates improved treatment, an increase in the activity of alkaline phosphatase indicates a decrease in hepatoprotective effect compared with similar indicators of animals with a high degree of hepatoprotective activity.

Therapy of animals with acute hepatitis with the studied substances was characterized by a significant improvement in the indicators of screening tests and biochemical experiments compared with similar indicators of both the control group and groups of animals receiving the studied substances *Nigella sativa* and *Sambucus nigra* at a dose of 20 mg/kg. Changes in all these parameters observed in animals treated with *Brassica rapa* substances at a dose of 20 mg/kg and *Sambucus nigra* at a dose of 30 mg/kg indicated a high degree of hepatoprotective properties of these substances.

**Table 2**

***Biochemical parameters of peripheral blood of animals under the action of herbal preparations and comparison preparations, (M±m, n=6)***

The Monitoring Group, the dose	ALT, E/L	AST, E/L	APh, E/L
Intact	34,1±2,0	20,6±1,9	93,3±4,4
Control	59,8±3,1*	49,6±2,1*	124,4±3,3*
C4, 20 mg/kg	33,5±2,3#	19,7±2,0#	96,3±1,9
Phosphogliv, 110 mg/kg	33,6±1,8#	20,4±1,8#	99,0±2,2
<i>Brassica rapa</i> , 20 mg/kg	31,4±3,9#	27,0±3,2#	94,4±2,2
<i>Nigella sativa</i> , 20 mg/kg	64,2±2,1*	68,5±1,8*#	108,3±2,2*
<i>Sambucus nigra</i> , 30 mg/kg	32,4±4,3#	19,7±3,2#	99,0±2,2
<i>Sambucus nigra</i> , 20 mg/kg	103,1±4,9*#	50,6±2,4*	104,4±4,7#

Note: \* - p<0.05 - in relation to intact data , # - p<0.05 – in relation to control

Peripheral blood parameters were measured: hemoglobin content, number of erythrocytes, average erythrocyte volume (MCV), average hemoglobin content in a single erythrocyte (MCH), average hemoglobin concentration in erythrocyte mass (MCHC), number of reticulocytes, platelets, leukocytes, lymphocyte concentrations (Lym%, %), erythrocytes (RBC, 10<sup>12</sup>/l), platelets (PLT, 10<sup>9</sup>/l). Table 3 shows the results of the analyses on the 6th day of the experiment.

**Table 3**

***Hematological blood analysis of animals with acute toxic hepatitis treated with herbal preparations (M±m, n=6)***

Indicators, groups	Intact	Control	Phosphogliv, 110 mg/kg	C-4, 20 mg/kg	<i>Brassica rapa</i> , 20 mg/kg	<i>Nigella sativa</i> , 20 mg/kg	<i>Sambucus nigra</i> , 30 mg/kg	<i>Sambucus nigra</i> , 20 mg/kg
WBC, 10 <sup>9</sup> /л	15,6±1,0	0,28±0,02	15,1±0,4	15,35±0,2	15,3±0,83	10,4±0,8	15,0±0,2	10,57±2,2
Lym%, %	0,4±0,03	0,0±0,0	0,7±0,03	0,4±0,01	0,80±0,02	0,7±0,02	0,7±0,04	0,66±0,03
Gran%, %	0,3 ±0,01	0,0±0,0	0,1±0,01	0,4±0,006	0,57±0,05	0,1±0,005	0,1±0,02	0,15±0,01
Mid%, %	0,1±0,01	0,0±0,0	0,1±0,01	0,3±0,013	0,13±0,03	0,2±0,02	0,1±0,01	0,19±0,01
Lym#, 10 <sup>9</sup> /л	0,7±0,03	0,9±0,01	0,3±0,1	0,3±0,015	0,62±0,09	0,5±0,08	0,3±0,1	0,33±0,06

Gran#, 10 <sup>9</sup> /л	0,4±0,05	0,9±0,01	0,2±0,02	0,3±0,01	0,41±0,02	0,4±0,06	0,2±0,03	0,15±0,02
Mid#, 10 <sup>9</sup> /л	0,2±0,02	0,9±0,01	0,3±0,05	0,2±0,006	0,65±0,15	0,3±0,07	0,2±0,03	0,18±0,03
RBC, 10 <sup>12</sup> /л	10,9±0,4	6,72±0,28	10,3±0,1	9,99±0,39	9,99±0,39	7,7±0,7	10,4±0,2	8,26±0,62
HGB, г/л	142,0±3,3	120,6±2,8	148,3±3,6	140,3±2,1	134,0±2,1	110,0±7,9	146,8±1,4	101,3±1,2
PLT, 10 <sup>9</sup> /л	349,8±34	237,5±65	248,0±19	225,0±22	225,0±22	106,5±10	308,5±17	141,3±2,3

Note: Leukocytes - WBC, percentage of lymphocytes - Lym%, percentage of granulocytes - Gran%, percentage of average leukocytes - Mid%, concentration of lymphocytes - Lym#, concentration of granulocytes - Gran#, concentration of average leukocytes - Mid#, erythrocytes - RBC, hemoglobin – HGB, platelets – PL.

The percentage of lymphocytes, granulocytes, leukocytes, erythrocytes, hemoglobin under the action of *Brassica rapa* substances at a dose of 20 mg/kg and *Sambucus nigra* at a dose of 30 mg/kg was 0,57±0,05, 0,13±0,03, 0,62±0,09, 134,0±2,12, also, 0,1±0,02, 0,1±0,01, 0,3±0,1, 146.8±1.4, respectively, which is consistent with the results of the intact group. In the other studied groups of substances, i.e., in the groups under the action of *Nigella sativa* and *Sambucus nigra* at the same dose - 20 mg/kg, there is a slight decrease in these indicators.

**Conclusion and recommendations.** The results of a comparative assessment of the hepatoprotective activity of *Brassica rapa*, *Nigella sativa*, *Sambucus nigra* substances with C-4 and *Phosphogliv* preparations indicate a high degree of hepatoprotective properties of *Brassica rapa* substances at a dose of 20 mg/kg and *Sambucus nigra* at a dose of 30 mg/kg, which in the future can be used to create a dietary supplement for the treatment of diseases of the hepatobiliary system.

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## MODERN METHOD OF TREATMENT OF UTERINE MYOMA

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**Abstract.** *Uterine myoma (leiomyoma) presented in this article is one of the most common tumors of the female genital organs. It is determined that 22-28 percent of women of reproductive age have the above disease. In the following decades, cases of uterine fibroids are increasing during the period of reproductive function, because for social reasons, women postpone childbearing to a later period of reproductive age. In this regard, if they have uterine fibroids or It is logical that there are more and more questions about the possibility of pregnancy after removal, its effect on pregnancy and childbirth, many other information is presented in the article.*

**Keywords:** *uterine myoma, ultrasound examination, pregnancy, uterine fibroids.*

### INTRODUCTION

Fibroids are the most common benign tumor of the uterus, with an estimated incidence of about 20–40% among women during their reproductive age [1, 2]. Most often fibroids uteri are detected in women over 35 years of age, age 35-55 years accounts for up to 90% of the total diseases, and uterine fibroids rarely occur in women under 20 and over 70 years of age. Over the past few decades, uterine fibroids have become increasingly common number of cases by the time of childbearing functions, since for social reasons women postponing having children until later reproductive age. Number of patients operated on for uterine fibroids in women in various gynecological hospitals varies from 41 to 74% [3].

Treatment of uterine fibroids is a subject of close attention attention of both world and domestic gynecology. On the one hand, the feasibility of radical surgical intervention in situations with an acute clinical picture or giant the size of the myomatous nodes is beyond doubt.

But at the same time, the question remains open regarding the high frequency of hysterectomies and treatment tactics asymptomatic uterine fibroids.

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But at the same time, the question remains open regarding the high frequency of hysterectomies and treatment tactics asymptomatic uterine fibroids.

Currently, “comprehensive” conservative management” of patients with uterine fibroids, proposed by V.I. Kulakov in 1997, under which implies a combination of early surgery with principles of minimizing surgical trauma, and chemical myomectomy. This approach provides restoration of reproductive function in most patients. Conservative plastic surgery is performed quite rarely: over the past 30–40 years, in no more than 10–12% of cases [4].

Meanwhile, among those operated on for uterine fibroids, every fourth woman is under the age of 40 years.

In this regard, the issue of performing gentle operations on young women is extremely relevant. However, the main method of treating uterine fibroids, which guarantees good results, is surgical. The possibilities of the surgical method have expanded significantly with the introduction and development of endoscopic technologies.

Currently, in operative gynecology everything the tendency towards the so-called functional surgery for various pathological conditions of the reproductive system, including in patients with uterine fibroids [5]. The group of conservative plastic surgeries that preserve both menstrual and reproductive function includes conservative myomectomy. With this operation Enucleation of myomatous nodes is performed while preserving the uterus with all its inherent functions, which allows young women to have children in the future [5].

Undoubtedly, the main goal of the operations performed is the possibility of successful implementation of the generative function after myomectomy. Numerous studies have shown that myomectomy can increase the frequency of pregnancy and pregnancy in patients with impaired reproductive function due to uterine fibroids [2]. However, even now there are many unresolved and controversial issues regarding surgical technique, choice of location and direction of the incision on the uterus, the suture material used and providing conditions for the formation of a full-fledged scar on the uterus.

According to various authors, restoration of generative function after myomectomy is observed in 5-69% of cases. According to the data given in the literature, after conservative myomectomy, you can expect pregnancy in every 2-3 women. The likelihood of restoring natural fertility within the next year after myomectomy is higher in patients with a single tumor node [3]. The desire of a woman of childbearing age to have pregnancy, despite the presence of fibroids requiring surgical treatment, is an indication for performing myomectomy in the vast majority of cases (with the exception of acute necrosis node with the development of a septic condition, when non-radical intervention is life-threatening, and cases fibromatosis of the uterus, when the organ is so injured during the operation that it is unlikely to can function adequately at full capacity) [5]. Currently, the indications for myomectomy have been significantly expanded and this operation can be performed in almost any location of myomatous nodes [1]. Scientific publications indicate sufficient effectiveness when performing myomectomy using all available approaches (laparotomy, laparoscopy, hysteroscopy), the choice of which depends not only on the size, number and location of nodes, the presence of concomitant gynecological and extragenital pathology, but and on the experience of the surgeon and the availability of the necessary equipment [2]. Surgical intervention in volume myomectomy is an effective method of treating uterine fibroids due to the elimination of the tumor, as well as accompanying clinical symptoms, except Moreover, it is an organ-preserving operation, allowing the patient to become pregnant in the future [4]. This is undoubtedly its advantage compared to other methods, but, unfortunately, it does not eliminate the cause of the disease and does not prevent from relapse, although its frequency does not exceed 6% [3].

Hormone therapy as an independent method There is currently no treatment for uterine fibroids. The basis of hormonal therapy for uterine fibroids is an attempt to interfere with the stimulating effects of steroid hormones (estradiol and progesterone) on tumor cells [1]. Antihormonal drugs, gonadotropin-releasing hormone (GnRH) agonists, are used mainly as stage of preparation for subsequent treatment by others methods. As a result of this therapy, persistent hypoestrogenism, comparable to that in menopause. Desensitization of the pituitary gland and



suppression of ovarian function lead to a decrease in the volume of the uterus and fibroids by about 50% and cessation of menorrhagia due to the development of amenorrhea [1]. However, long the use of GnRH agonists is limited by the development of severe side effects caused by estrogen deficiency, such as accelerated demineralization bone tissue; change in plasma lipid profile blood up to the development of coronary atherosclerosis; the development of psychovegetative disorders that significantly worsen the quality of life of patients. Except In addition, 4-6 months after cessation of therapy, the tumor size returns to its original size. As a stage of combination treatment, the use of drugs for 3-4 months allows achieving reducing the size of the uterus and fibroids, as well as reducing the level of blood supply to the uterus and correct anemia [4].

With the creation of antigestagens as modulators of progesterone receptors (MPRs), new opportunities for the treatment of uterine fibroids. The first generation MPR drug mifepristone is proposed for therapy of neoplasms in the 1990s. At the core the pharmacokinetics of MPRs lies in their ability to competitively bind to progesterone receptors of fibroid tissue, thus excluding the influence endogenous progesterone. Influencing the key factor in the pathogenesis of fibroids, antigestagens provided proven advantage of drug treatment for uterine fibroids. For the first time, fibroid therapy with the symptomatic stage has stepped into pathogenetic perspectives. However, obvious difficulties arose here too. The fact is that mifepristone also comes into contact with glucocorticosteroids receptors. Further search for pharmacological solutions was aimed at developing selective MPRs with a selective effect only on progesterone receptors [1]. For example, ulipristal acetate has a steroid structure and has selective tissue-specific effects on progesterone receptors [2].

Moreover, its molecule in tissues with different receptors can act both as an agonist and as an antagonist, which makes it possible to achieve the desired therapeutic result with minimal side effects. The action of selective MPR in the hypothalamus-pituitary-ovarian system uterus occurs at the level of the pituitary gland and suppresses ovulation without the formation of a menopausal effect due to a partial suppressive effect on the concentration of follicle-stimulating hormone (FSH). As a result, folliculogenesis does not stop, the concentration of estradiol is stabilized at the level of the middle follicular phase - this avoids the occurrence of undesirable effects hypoestrogenism.

After discontinuation of ulipristal acetate the growth of myomatous nodes does not resume, because that the molecule stimulates apoptosis in fibroid cells.

It is important that SPRM drugs exhibit antiproliferative, antifibrotic and proapoptotic properties effects only on fibroid cells, not affecting healthy myocytes. Ulipristala acetate has a direct effect on the endometrium: causes amenorrhea or reduces intensity bleeding already by the 10th day of use, as well as reduces the severity of pain that bothers most patients with symptomatic fibroids. After stopping the drug menstrual cycle usually resumes within 4 weeks. It is worth noting the absence of difficulties when performing myomectomy and enucleation of myomatous nodes. In contrast from GnRH agonists, drugs with ulipristal acetate do not cause estrogen deficiency and do not transform the fibroid pseudocapsule [2]. Proof the clinical efficacy and safety of ulipristal acetate have been presented in several large studies [2]. Thus, this antigestagen with highly selective action on target tissue receptors can be used in as an effective means of postponing surgical treatment of uterine fibroids.

In choosing a treatment method for patients with uterine fibroids a differentiated approach is required. It is determined by many factors: the age of the patient, clinical manifestations, size

and location myomatous nodes, intensity of tumor growth, the influence of fibroids on the generative function, etc.

Existing methods of conservative treatment uterine fibroids are not effective enough, therefore, despite the multifactorial nature emerging reproductive function disorders, surgical method in the complex treatment of patients reproductive age is decisive.

Up to 70% of patients with uterine fibroids undergo surgical treatment [5]. Attracts attention the fact that in the structure of surgical interventions radical operations prevail, the proportion of which is 60.9-95.3%.

Despite the radical nature of the solution to the problem and final relief of the patient from the disease that bothers her, an important negative feature of hysterectomy is the high probability occurrence of posthysterectomy syndrome.

According to various authors, this syndrome occurs in more than 50% of women who have undergone removal uterus. Considering the young age of patients with uterine fibroids, it is obvious that for most of them hysterectomy is an intervention that significantly reducing the quality of life, and subsequently leading to disability.

### **CONCLUSION**

Despite the long history of study, the problem of treating patients with uterine fibroids who are of reproductive age continues to be the focus of attention of domestic and foreign researchers, since this disease is one of the most common benign tumors of the female genital organs. Taking into account the interest of patients in preserving the organ (uterus) and the desire of the majority of patients to preserve reproductive function, the study the effectiveness of treatment of uterine fibroids using the FUS ablation method is of great interest and requires further research.

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## SPEED IN F<sub>6</sub> HYBRIDS OBTAINED THROUGH INTROGRESSIVE SELECTION IN COTTON

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**Abstract.** *The article analyzes the results obtained on the variability of ripening speed in F<sub>6</sub> hybrid combinations obtained by cross-breeding the lines created on the basis of introgressive selection in medium fiber cotton with the Bukhara-102 variety.*

**Keywords:** *cotton, introgressive, early maturing, cultivar, interspecies, range, variation, heredity, F<sub>6</sub> plant.*

Due to global climate change, it has not lost its relevance to create varieties adapted to soil-climate conditions, quick-ripening, productive, with high fiber yield and quality. It is also important to study the speed of ripening by the method of introgressive selection of cotton.

Cotton plant, like every other type of crop, has a decrease in productivity and quality indicators with the shortening of the growing season. Selection scientists are trying to change the natural laws as much as possible, that is, to shorten the vegetation period without reducing productivity and quality indicators. A number of researches have been carried out on early ripening, and the complexity of the sign, the length of the periods that determine it vary to varying degrees, early ripening depends on the location of the first crop branch, the number of bolls and the total weight of cotton in one boll, and other signs, along with external environment and agrotechnical factors (temperature, day length, fertilizer and irrigation rate) were also found to be related. The research was carried out at the Scientific-Research Institute of Cotton Selection, Seeding and Cultivation, and 17 introgressive lines were obtained by crossing with the Bukhara-102 variety, F<sub>6</sub> hybrids were analyzed for signs of quick ripening.

One of the important tasks is to search for samples that meet the requirements of fiber quality and quickly adapt to the soil and climate conditions of our republic and apply them to selection and genetic research. It has been noted by most scientists that, using varieties and samples of the foreign and domestic gene pool, there is a great possibility of selecting recombinants showing a high heritability coefficient of the sign of rapidity [1,2,3,4].

One of the main components that determine the growing season of the cotton plant is the period from the day of seed germination to the opening of 50% of the bolls. The speed of ripening depends on the genotype of the variety, and environmental and agrotechnical conditions also have a certain influence on the growth and development of cotton.

During the research, F<sub>6</sub> hybrid combinations were analyzed when “germination-50% flowering” was studied, including F<sub>6</sub>T-4672-73 x Bukhara-102 (55 days), F<sub>6</sub>T-470/1 x Bukhara-102 (55.2 days), F<sub>6</sub>T-4684-86 x Bukhara-102 (55.3 days), F<sub>6</sub>T-175/248 x Bukhara-102 (55.4 days) and F<sub>6</sub>T-95 x Bukhara-102 (55.5 days) had the earliest flowering. At the same time, during research F<sub>6</sub>T-158 x Bukhara-102 (57.4 days), F<sub>6</sub>T-BSG-2/06 x Bukhara-102 (57.4 days) and F<sub>6</sub>T-4747-48 x Bukhara-102 (57.1 day) late flowering hybrid combinations were observed. As a model, S-6524 flowered (in 57 days), and hybrids flowered up to 2 days earlier than the model (Table 1).

**Table 1**

**“Germination and 50% flowering” period indicators of F<sub>6</sub> hybrids**

№	Combination	M±m	σ	V%
1	S-6524	57,0±0,54	1,33	2,34
2	F <sub>6</sub> T-4672-73 x Bukhara-102	55,0±0,72	1,76	3,21
3	F <sub>6</sub> T-4674-77 x Bukhara-102	56,2±0,46	1,48	2,63
4	F <sub>6</sub> T-4679-81 x Bukhara-102	56,7±0,53	1,70	3,00
5	F <sub>6</sub> T-4684-86 x Bukhara-102	55,3±0,69	1,70	3,08
6	F <sub>6</sub> T-138 x Bukhara-102	55,8±0,46	1,48	2,64
7	F <sub>6</sub> T-470/1 x Bukhara-102	55,2±0,38	1,23	2,23
8	F <sub>6</sub> T-95 x Bukhara-102	55,5±0,65	1,84	3,32
9	F <sub>6</sub> T-158 x Bukhara-102	57,4±0,61	1,96	3,41
10	F <sub>6</sub> T-200 x Bukhara-102	55,7±0,63	1,57	2,81
11	F <sub>6</sub> T-MVG-2 x Bukhara-102	55,9±0,43	1,37	2,45
12	F <sub>6</sub> T-58 x Bukhara-102	56,6±0,56	1,78	3,14
13	F <sub>6</sub> T-1979 x Bukhara-102	55,7±0,69	1,70	3,06
14	F <sub>6</sub> T-175/248 x Bukhara-102	55,4±0,42	1,35	2,44
15	F <sub>6</sub> T-12/06 x Bukhara-102	55,7±0,49	1,57	2,81
16	F <sub>6</sub> T-4747-48 x Bukhara-102	57,1±1,03	2,92	5,12
17	F <sub>6</sub> T-BSG-2/06 x Bukhara-102	57,4±0,80	2,55	4,44
18	F <sub>6</sub> T-588 x Bukhara-102	56,7±0,85	2,41	4,24

During research, according to the index of “germination-50% ripening” period of F<sub>6</sub> hybrids, it ranged from 115.6 days F<sub>6</sub>T-4674-77 x Bukhara-102 to 121.9 days F<sub>6</sub>T-95 x Bukhara-102, respectively. Including F<sub>6</sub>T-4674-77 x Bukhara-102 (115.6 days), F<sub>6</sub>T-138 x Bukhara-102 (116.2 days), F<sub>6</sub>T-588 x Bukhara-102 (116.7 days), F<sub>6</sub>T-58 x Bukhara-102 (116.8 days) and F<sub>6</sub>T-175/248 x Bukhara-102 (116.9 days) showed earlier “seedling germination and 50% ripening” than other hybrids. The mean square deviation and the amplitude of variation among the different hybrids are relatively low in the F<sub>6</sub>T-138 x Bukhara-102 combination ( $\sigma=1.14$  V=0.98%), and relatively higher in the F<sub>6</sub>T-95 x Bukhara-102 hybrid combination ( $\sigma =4.93$ ; V=4.05%) was observed. Compared to the medium-fiber cotton variety C-6524 taken as a template variety (119.1) days, some hybrids from the template 4 days F<sub>6</sub>T-4674-77 x Bukhara-102, 3 days F<sub>6</sub>T-138 x Bukhara-102, 2 days F<sub>6</sub>T-588 x Bukhara-102, F<sub>6</sub>T-58 x Bukhara-102, F<sub>6</sub>T-175/248 x Bukhara-102, up to 1 day F<sub>6</sub>T-BSG-2/06 x Bukhara-102, F<sub>6</sub>T-4747-48 x Bukhara-102, F<sub>6</sub>T-158 x It was found that Bukhara-102 was an early bird. In addition, it was observed that some hybrids are delayed from 1 to 4 days compared to the model variety (Table 2).

**Table 2**

**“Germination and 50% ripening” period indicators of F<sub>6</sub> hybrids**

№	Combination	M±m	σ	V%
1	S-6524	119,1±0,46	1,46	1,22
2	F <sub>6</sub> T-4672-73 x Bukhara-102	118,7±1,50	3,68	3,10
3	F <sub>6</sub> T-4674-77 x Bukhara-102	115,6±0,37	1,17	1,02
4	F <sub>6</sub> T-4679-81 x Bukhara-102	119,1±1,24	3,93	3,30
5	F <sub>6</sub> T-4684-86 x Bukhara-102	117,3±1,00	2,45	2,07

6	F <sub>6</sub> T-138 x Bukhara-102	116,2±0,35	1,14	0,98
7	F <sub>6</sub> T-470/1 x Bukhara-102	119,9±1,24	3,93	3,28
8	F <sub>6</sub> T-95 x Bukhara-102	121,9±1,74	4,93	4,05
9	F <sub>6</sub> T-158 x Bukhara-102	118,1±0,91	2,88	2,44
10	F <sub>6</sub> T-200 x Bukhara-102	119,0±1,50	3,68	3,09
11	F <sub>6</sub> T-MVG-2 x Bukhara-102	120,8±1,44	4,57	3,78
12	F <sub>6</sub> T-58 x Bukhara-102	116,8±0,87	2,78	2,38
13	F <sub>6</sub> T-1979 x Bukhara-102	118,4±0,94	2,32	1,96
14	F <sub>6</sub> T-175/248 x Bukhara-102	116,9±0,56	1,79	1,53
15	F <sub>6</sub> T-12/06 x Bukhara-102	118,6±1,22	3,86	3,26
16	F <sub>6</sub> T-4747-48 x Bukhara-102	117,6±1,28	3,63	3,08
17	F <sub>6</sub> T-BSG-2/06 x Bukhara-102	117,5±0,81	2,59	2,21
18	F <sub>6</sub> T-588 x Bukhara-102	116,7±0,65	2,06	1,76

The analysis of studies showed that in hybrid combinations F<sub>6</sub>T-4674-77 x Bukhara-102, F<sub>6</sub>T-4684-86 x Bukhara-102, F<sub>6</sub>T-138 x Bukhara-102, F<sub>6</sub>T-588 x Bukhara-102 and F<sub>6</sub>T-58 x Bukhara-102 It was concluded that the separation of positive recombinants showing superiority in terms of speed during the next few years can be used as a starting material for speed in future selection processes.

Based on the results obtained from the research, we can say that by studying the heredity, variability and formation of the “germination-50% flowering” and “germination-50% ripening” periods, which are considered the main indicators of quickness, in F<sub>6</sub> hybrids created by introgressive cotton lines, the lines involved in crossbreeding of the quickness sign it can be concluded that it is inherited depending on the genotype of the parents involved in its origin and that it is formed depending on the direction of selection in the next generation.

### **Conclusion**

In conclusion, the introgressive selection approach in cotton has shown promising results in improving the speed of F<sub>6</sub> hybrids. Through careful selection and breeding techniques, cotton researchers have been able to introduce desirable traits from one variety into another, leading to the development of hybrids with enhanced speed characteristics. The use of introgressive selection has allowed breeders to incorporate traits such as early maturity, improved fiber quality, disease resistance, and higher yield potential into cotton hybrids. This approach has led to the creation of F<sub>6</sub> hybrids that exhibit improved speed in terms of growth, development, and overall performance. The increased speed in F<sub>6</sub> hybrids obtained through introgressive selection offers several advantages. It can help cotton growers achieve earlier maturation, which can be beneficial in regions with shorter growing seasons or where weather conditions are unpredictable. Additionally, improved fiber quality and disease resistance contribute to higher yields and reduced crop losses, enhancing the economic viability of cotton production.

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## USE OF REFLEXOTHERAPY IN THE REHABILITATION OF CHILDREN'S BRONCHIAL ASTHMA DISEASE

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**Abstract.** *The incidence of bronchial asthma is increasing worldwide. According to the data collected in Uzbekistan, diseases of the respiratory organs are currently in one of the most important places in the country. The incidence has increased 2.5 times over the past five years. According to statistics, 10% of people suffer from this disease. Bronchial asthma occurs at any age and any gender. But mostly boys are hit more often than girls. (Sergeeva G.R., Emelyanov A.V., Leshenkova E.V., Znakhurenko A.A., 2020). Consider adding reflexology, a non-traditional method of treatment for bronchial asthma in children.*

**Keywords:** *children, bronchial asthma, reflexotherapy, medical rehabilitation.*

Bronchial asthma is a disease characterized by chronic inflammation of the airways, manifested by bronchial hyperreactivity and its obstruction, as well as acute cough in the form of shortness of breath and discomfort, difficult to separate sputum, shortness of breath and wheezing. Bronchial asthma is based on the inflammatory process and is formed on the basis of allergic components.

Treatment of bronchial asthma with folk medicine methods is one of the useful and effective methods that has kept its place and value for centuries.

The purpose of the research: to develop a complex rehabilitation program with the use of reflexotherapy treatment in children's bronchial asthma and to evaluate its effectiveness.

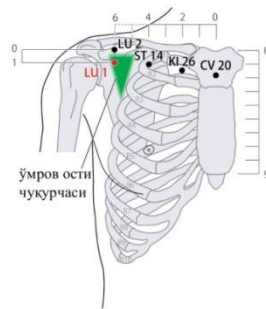
**Research materials and methods:** Children with bronchial asthma are divided into 2 groups according to age, gender and clinical features of the disease. 20 children diagnosed with bronchial asthma were examined at the multidisciplinary clinic of the Tashkent Medical Academy in order to study the effectiveness of the reflexotherapy method in children's bronchial asthma. 10 of them in the main group (4 boys and 6 girls) received medication and reflexology treatment from biologically active points P 1, P 5, P 7, GI 4, J 17, J 22, E 36, F 2, RP 6 projection. It was performed with the braking method for 20 minutes, the course of treatment consisted of 5-6 procedures. 10 (7 boys and 3 girls) patients in the comparison group were treated only with medical treatment. The age of the patients was from 6 to 8 years, children in both groups received standard medical treatment methods (corticosteroid drugs, bronchospasmolytics and mucolytic drugs).

The lung meridian is part of the *IN* meridian system. A double meridian has left and right meridians located on two hands, that is, in contact with each other. The meridian's most active time is from 03:00 to 05:00, and during this period the meridians are more "active" and have an uplifting effect. Its minimum activity time is from 15:00 to 17:00, and it is easy to stop the meridian at this time. The biorhythms of individual organs listed by ancient doctors are also confirmed by modern clinical observations. It is also well known to clinicians that bronchial asthma attacks often

occur early in the morning, from 3:00 a.m. to 5:00 a.m., which, according to traditional interpretations, is the peak of energy activity in the lung meridian.

### Topography of biologically active points in bronchial asthma.

1) P1– (LU) Zhong-fu (middle house), 3 cm below P2 from the corner of the I intercostal spine (in the lower pit of the outer edge of the spine, 6 from the midline of the sternum sun out TA: upper part of the pectoralis major muscle, branches of the mammary artery, intercostal nerve and anterior mammary nerve. Needling depth is 10 mm.



LU1

2) P5-(LU) Chi-size (elbow pool) — in elbow flexion, biceps brachii muscle, wrist edge tendons. TA: recurrent carpal artery, carpal nerve, and lateral carpal nerve. Needle penetration depth is 10 mm.



LU5

3) P7 – (LU) Le-xue (turning defect) — on the carpal edge of the carpal bone, 1.5 days above the palmar fold of the carpal bone, on the carpal bone. TA: branches of carpal artery, carpal lateral cutaneous nerve and carpal nerve. Needle penetration depth is 6 mm.



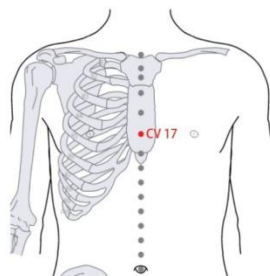


4) GI4 -(LI) "He-gu" (union of bones) - between the bones of the palm of the hand I and II, near the edge of the wrist of the bone of the palm of the hand II. TA: dorsal artery of the finger, superficial branches of the carpal nerve. The depth of needle puncture is 10-15 mm.



LI4

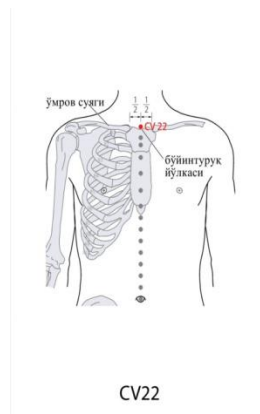
5) J17-(CV) Tian-zhun, in the middle of the sternum, along the cross section of the V rib joint. J17. Tan-chun (chest) – V rib (along the teat) along the joint section. TA: as before. Needle penetration depth is 6 mm.



CV17

6) J22 (CV)–Tian-tu (heaven path) – sternum in the center of the cervical spine, between the sternum-spinal cord and mastoid muscles. T.A.: lower thyroid artery, cutaneous branches of

neck nerves. Inside is the larynx, behind the sternum - the humerus and the arch of the aorta. The depth of needle puncture is not more than 10 mm. It is necessary to direct the needle back and down on the breast.



7) F2(LR) – Xin-xiang (place of direction) – between the heads of the I and II bones of the foot. Needle penetration depth is 10 mm.



8) E36 – (ST) Szu-san-li (three-foot distance) – 30 mm beyond the crest of the greater tibia; 3 s below the lower edge of the knee eye. T.A.: the point marking the tibialis anterior muscle and the fingers, the branching point of the anterior tibial artery, the deep small tibial nerve, the anterior cutaneous branch of the femoral nerve, and the lateral cutaneous nerve of the tibia. The depth of needle puncture is 15-25 mm, in children under 3 years the injection depth is 3-6 mm.



9) RP6 –(SP)San-yin-xiao, 3s above the center of the medial ankle, posterior to the greater calcaneus. P6 San-yin-xiao (meeting of the three points of the yin) - 3 s above the medial heel of the heel, posterior to the greater boulder bone. T.A.: large posterior artery of the calf, medial skin branches of the calf, large boulder nerve. Injection depth 12-20mm.



SP6

**Results.** When evaluating the effectiveness of treatment in groups, it was clinically observed that bronchial asthma attacks were eliminated, disease complications were prevented, the period of remission lasted longer, and their active lifestyle and work ability improved. During the analysis of the elimination of clinical symptoms, it was found that in the main group, the use of reflexotherapy together with drug treatment leads to faster elimination of bronchial asthma attacks, prevention of disease complications, longer remission period, improvement of their active lifestyle and work ability.

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## "ACUTE ABDOMEN" IN GYNECOLOGY AND MODERN POSSIBILITIES

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**Abstract.** *The frequency of acute gynecological diseases requiring surgical intervention is 26% of the total number of gynecological pathologies. purpose of the study to compare laparoscopic and laparotomic methods of treating acute abdomen in gynecological patients in the city of Samarkand. Based on the data, we can say that laparoscopy is taking the place of laparotomy in large steps, which is justified. Laparoscopy has better efficiency, less blood loss, reliable hemostasis and less trauma to organs.*

**Keywords:** *Samarkand, acute gynecological diseases, laparoscopic and laparotomic methods.*

### Introduction

Acute abdomen refers to the sudden onset of severe abdominal pain that often requires urgent medical attention. While commonly associated with surgical emergencies, such as appendicitis or bowel obstruction, acute abdomen can also occur in gynecological conditions. In this context, it refers to the acute presentation of gynecological pathologies that manifest with abdominal pain and necessitate prompt evaluation and management. Gynecological causes of acute abdomen can encompass a broad range of conditions, including ovarian cysts, ectopic pregnancy, pelvic inflammatory disease (PID), ovarian torsion, uterine fibroids, and endometriosis, among others. These conditions can present with varying degrees of severity, and timely diagnosis is crucial to prevent complications and optimize patient outcomes. Modern medicine has witnessed remarkable advancements in the diagnosis and management of acute abdomen in gynecology. Technological innovations, improved imaging modalities, and enhanced surgical techniques have significantly contributed to more accurate diagnoses, better surgical interventions, and improved patient care. One of the key modern possibilities in the evaluation of acute abdomen is the utilization of advanced imaging techniques. Ultrasound, computed tomography (CT), and magnetic resonance imaging (MRI) play pivotal roles in visualizing the pelvic organs, assisting in the identification of potential gynecological pathologies, and guiding further management decisions. These imaging modalities allow for non-invasive evaluation, providing valuable insights into the underlying cause of acute abdomen and aiding in the selection of appropriate treatment strategies. Additionally, the advent of minimally invasive techniques, such as laparoscopy and robotic-assisted surgery, has revolutionized the management of acute abdomen in gynecology. These approaches offer numerous advantages over traditional open surgery, including smaller incisions, reduced postoperative pain, shorter hospital stays, and faster recovery times. They have become increasingly utilized for the surgical treatment of conditions

like ovarian cysts, ectopic pregnancy, and endometriosis, allowing for more precise interventions while minimizing patient morbidity. Furthermore, the multidisciplinary approach to gynecological emergencies has enhanced the management of acute abdomen. Collaboration between gynecologists, general surgeons, radiologists, and other specialists ensures comprehensive evaluation, accurate diagnosis, and appropriate treatment plans. This interdisciplinary teamwork facilitates the integration of various perspectives and expertise, leading to optimal patient outcomes.

**Relevance.** The frequency of acute gynecological diseases requiring surgical intervention is 26% of the total number of gynecological pathologies [1, 3, 11]. When providing emergency care to gynecological patients, until recently and locally, laparotomic access is still used, which in the future can lead to disruption of menstrual functions, fertility, and so on. These problems can be solved by laparoscopic surgery, which has recently become increasingly important due to minimal trauma. According to data in modern gynecological clinics, these operations are gradually taking leading positions; up to 70-90% of surgical interventions in foreign countries are performed laparoscopically [8, 9, 15].

In a full-scale study including 1771 girls under 17 years old, Dyakanova E.Yu. et al., (2018) presented data on the effectiveness of laparoscopic and open operations in girls with various forms of gynecological pathology. The authors found that laparoscopic operations provide cosmetic benefits, reduce the duration of the operation and the amount of intraoperative blood loss, reduce the duration of postoperative pain relief, and restore peristalsis and enteral nutrition faster. In addition, the length of stay of patients in hospital is reduced by 2 times [4, 7, 16].

**Aim of the study.** To compare laparoscopic and laparotomic methods of treating acute abdomen in gynecological patients in the city of Samarkand.

**Materials and methods.** For comparative characteristics, 20 patients were taken who were admitted with symptoms of “acute gynecological abdomen” and who sought emergency medical care at the Samarkand branch of the Republican Scientific Center for Emergency Medical Care in 2023. The women examined during the study were divided into 2 groups depending on the method of surgical intervention used: the first group - 10 women operated on by the laparoscopic method and the second group - 10 women operated on by the laparotomy method.

The examination of women included: determination of clinical and anamnestic features, laboratory diagnostics (general blood test, general urinalysis, blood clotting test, coagulogram, biochemical blood test), instrumental methods (ultrasound diagnostics of the pelvic and abdominal organs).

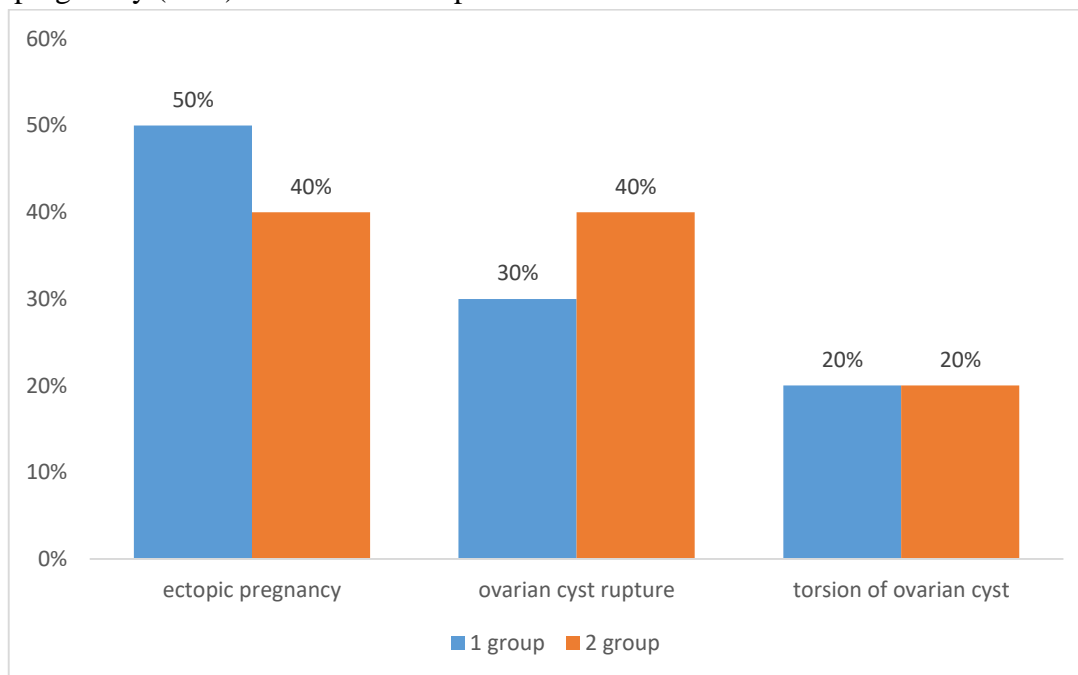
General blood test indicators were calculated automatically on hematological analyzers such as “CELL-DYN 1700” and “CELL-DYN 400” ABBOTT DIAGNOSTICS (USA), the sedimentation rate of individual erythrocytes was determined after 1 hour using a 5% 0.25 sodium nitrate solution.

Biochemical blood tests were carried out using the following devices: “EXPRESS PLUS” developed by “BAYER” (Germany). Total and indirect bilirubin, blood sugar, urea, and creatinine were determined. Blood electrolytes were monitored as indicated by Medica Corp. blood electrolytes. On an ion-selective analyzer "Easy Lyte" (USA). The study of a general urinalysis included a microscopic examination of the sediment, which revealed the presence of leukocytes, erythrocytes, bacteria, salt crystals, casts, and epithelial cells; the presence of protein was determined with a 3 or 15% solution of sulfalicylic acid.

Since the number of observations was small, only average values and their deviations were taken into account.

**Results and discussion.** The age of the patients ranged from 22 to 48 years, with an average of 33.4±2.2 years. All patients complained of acute pain in the abdomen and lower abdomen and had a clinical picture of an acute abdomen. There were no peculiarities in the life history and heredity data.

All patients underwent a standard examination based on the protocol and were given a diagnosis and indications for surgical treatment. In the structure of diagnoses (Fig. 1), ectopic pregnancy (50%) dominated in the first group, and in the second group, cyst rupture (40%) and ectopic pregnancy (40%) shared the main place.



**Figure 1. Structure of diagnoses**

In general, the volume of surgery was the same in both groups. The average operation time for the laparoscopic method took 40-45 minutes in all cases, and for laparotomy the operation time had a different variation in 5% of cases the operation was done in 15 minutes, while in 20% of cases it took 85 minutes, although in most cases also as with laparotomy, it took 40-45 minutes. Given the variations in our hearing, laparotomy took about an hour on average.

Total blood loss in laparoscopic operations ranged from 50 ml to 600 ml. Whereas in the laparotomy method this figure was much higher from 350 ml to 1200 ml. In one case, grade 3 hemorrhagic shock and hemoperitonium in a volume of 800 ml were recorded. Certain patients had complications in the form of adhesions from previously performed surgical interventions (caesarean section, myomectomy, etc.), which complicated access and lengthened the surgical site. When clarifying previously performed operations, all women had only laparotomy.

**Conclusion.** Based on the data, we can say that laparoscopy is taking the place of laparotomy in large steps, which is justified. Laparoscopy has better efficiency, less blood loss, reliable hemostasis and less trauma to organs.

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## METHODS OF MOBILIZATION OF SPINE DEFORMATION IN PATIENTS WITH SCOLIOTOMIC DISEASE

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**Abstract.** *This article presents the results of the application of the method of special physical training testing by traction in scoliotic disease. Test stretching was carried out on a specially made gravitational frame daily 1-2 times a day for 30 minutes after the patient active performed movements in a supported position. When the maximum mobility of the deformity was reached, the traction course was stopped, and the results of the study were analyzed. After the analysis, we took the tactics of the surgical decision, outlined the plan of operations and prepared the patient.*

**Keywords:** *scoliotic disease, coronary traction, preoperative preparation, children and adolescents.*

Relevance. In the complex of surgical treatment of scoliotic disease, the need for radiological assessment of mobility “mobility” and flexibility of scoliotic deformity is generally recognized and forms an integral part of preoperative planning, being an important means of making a surgical decision and predicting the outcome of the operation (Lamarre, 2009).

Despite the variety of methods, due to the lack of standard criteria among surgeons, there is no common understanding of which deformities should be considered mobile or flexible, and which ones are reliably rigid or fixed, this leads not only to the choice of incorrect treatment tactics and the occurrence of complications, but also to allows you to reliably compare treatment results and evaluate the effectiveness of the surgical correction methods used. (Kleeps, 2001; Cheh, 2007; Lamarre, 2009.)

Purpose and research: development and implementation of a method for mobilizing spinal deformity in patients with scoliotic disease.

Materials and methods of research: In the period from 2001 to 2022, patients with indications for surgical treatment for scoliotic disease, on an outpatient basis, at the clinical bases of the Republican Center for Children's Orthopedics (RCDO) and the Tashkent Pediatric Medical Institute (TashPMI MZRUZ) were given preoperative preparation in the form diagnostic and treatment complex, which included a series of tests using standardized systematic functional traction on a gravity frame. A total of 207 patients were selected for the study, 31(15.2%) male and 176(84.8%) female with a mean age of  $15.46 \pm 3.02$  (8-28), mean Risser sign value of  $3.29 \pm 1.52$  (0-5).

The main scoliotic curve is  $88.7^\circ \pm 35.4^\circ$  (39-182°). The structure of the study was dominated by “pure” scoliotic deformities 61.9% (122), thoracic localization 60.9% (120), mostly right-sided 81.7% (161). Idiopathic scoliosis was diagnosed in 179 (84.8%) cases, congenital in 18 (6.6%), Recklinghausen's neurofibromatosis in 8 (4.1%), Marfan syndrome, Ehlers-Danlos syndrome and iatrogenic causes of scoliosis in 2 (1) cases. %) of the case. The research methods used in the work were: clinical, radiological, anthropometric, statistical, functional: SSEP, FVD, clinical and laboratory ECG, MSCT, and MRI.

Results of the study : The complex impact on the patient began with the use of traditional general physical training, general strengthening physical training for the cardiopulmonary and muscular systems (running, strength exercises, lying down, pull-ups, jumping, outdoor games, etc.), in parallel, muscle massage was performed back in a course of 20 sessions once every two or three months and therapeutic exercises, the latter necessarily includes exercises to stretch the concave side of the deformity: bending in the opposite direction of the deformity, hanging on the “Wall Bar” on one arm on the concave side.

Upon completion of 3-5 massage procedures and training, we began traction on a gravity frame.

Before the start of traction, MRI studies and radiography of the cervical and upper middle spine were performed in two projections to identify anomalies and syringomyelia. The method of special physical training and traction testing through systematic repeated suspensions is not only a means of functional preventive action aimed at increasing the patient’s adaptive abilities, but also a standardized tool for systematic control by determining and assessing the test and measuring his physiological state.

Based on the results, personalized preoperative planning was carried out, prediction of treatment outcomes, development of neurological, osteo-destructive and somatic complications during instrumental correction of spinal deformity. Traction due to suspension on a gravity frame, carried out as part of a preoperative diagnostic and treatment course, was aimed at solving the following problems:

1. Standardized achievement of the physiological level of maximum mobility and flexibility by the value of the functional component of the deformity;
2. Removing the patient from a state of chronic hypoxia, increasing the reserve of physiological compensatory capabilities of the respiratory system;
3. Physiological increase in the threshold of tolerance of neurovascular elements of the spinal canal to the conditions of surgical reconstructive-corrective effects;
4. Preoperative determination of the need for mobilizing discectomy, localization of spinal fusion, resolution of the fixing elements of the implanted structure, the possibility of restoring/preserving balance;
5. Predicting the results of instrumental correction of scoliosis and the risk of developing neurological disorders;
6. Determination of the degree of mobility and flexibility of deformation.

Test traction was carried out on a specially made gravitational frame; an individual head holder was made from polyvik for the patient, which was put on the patient, fixing the neck and head; a thick soft pad (towel, foam rubber, porous rubber) was first placed between the head holder and the head, and the straps of the head holder were thrown onto the traction bracket (Fig. 1a, 1b, 1c.)

Fig. 1 (a, b, c) a) front view of the patient with the head holder on before traction; b) rear view of the patient in a standing position before traction; c) rear view of the patient, hanging in the unsupported “Free hanging” position in traction.

Traction was carried out daily 1-2 times a day, for 30 minutes, after bringing the free hanging time to 5 minutes, the patient could perform active movements in an unsupported position: “swinging to the sides”



*Fig.1a*



*Fig.1b*



*Fig.1c*



*Fig.2a*



*Fig.2b*

Rice. 2.3 a, b rear view of a patient performing the exercise “Swinging to the sides” in an unsupported position.

Rear view of a patient performing sideways rocking exercises in an unsupported position. At the stages of traction, various studies were carried out, and the data obtained were entered into individual tables and graphs. When maximum mobility of the deformity was achieved, the course

of traction was stopped, and the results of the study were analyzed. After the analysis, surgical tactics were adopted, a surgical plan was outlined, and the patient was prepared.

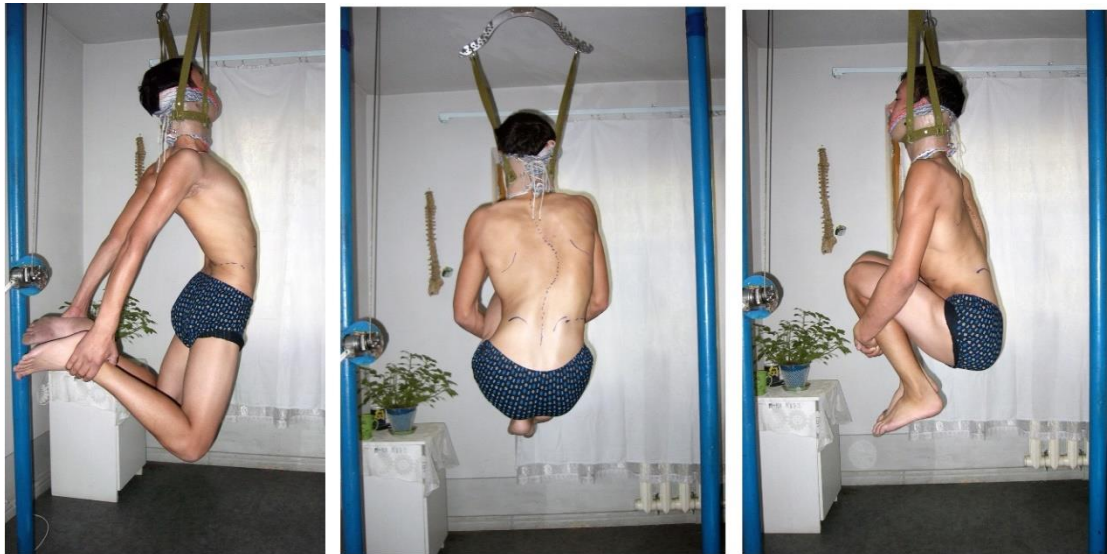


Fig. 3 (a, b, c) view of a patient performing exercises in an unsupported position: a) “bending the torso back”; b) “bringing the legs to the chest” rear view; c) “bringing the legs to the chest” side view.

At the end of each lesson, measurements of the length of the torso were taken in a standing position and when hanging freely using a spring-loaded meter tape with a division value of 1 mm. The distance between the spinous processes of the C<sub>7</sub> and S<sub>1</sub> vertebrae (posterior distance) and from the jugular notch to the pubis (anterior Makarov distance) was measured with an accuracy of 5 mm; the difference in distances while standing and when hanging was recorded. A systematic increase in the anterior Makarov distance indicated the progressive mobility of the kyphotic component of the deformity, and a similar increase in the posterior one indicated the progressive mobility of its scoliotic component; the degree of mobile deformation was quantified in centimeters by calculating the difference between the length of the body and the standing and extended position. In addition, the duration of the entire traction course, the number of classes performed in the course, the duration of one lesson and the duration of the free hang in seconds were recorded. The last value reflected the degree of patient’s tolerance to traction.

The average bed-day spent on the preoperative complex was  $48 \pm 0.23$  days (from 30 to 60 days).

The following level of spinal deformity mobility was achieved during this period: the average time spent hanging on a gravity frame in an unsupported position was  $649 \pm 2.86$  seconds; the distance in the groups increased by  $8.6 \pm 0.41$  cm; The angle of the scoliotic curve decreased by an average of  $48.3 \pm 0.63\%$  and  $31.6 \pm 0.52\%$ ; kyphotic arch by  $78.1 \pm 1.21$ .

The data obtained confirm an increase in the physical endurance of patients to traction. An increase in the posterior distance at the end of each extension indicated a gradual increase in the extensibility (mobility) of the deformed torso to an average of  $3.9 \pm 0.01$  cm, with a final stabilization of extensibility on average at  $3.6 \pm 0.01$  cm.

In the process of preoperative preparation, regression of the force paralysis that occurred in one patient was achieved.

Discussions: Determining the mobility or correctability of scoliotic deformity is a mandatory means of functional diagnosis in preoperative planning of surgical treatment of scoliosis. Traditionally, the mobility of the main scoliotic curve is tested using radiography under conditions of a non-standardized external corrective effect on scoliosis. The body is tilted to the sides “Bending radiographs”, pressure on the apex of the curvature, or various combinations of these effects in the supine position, on the stomach with manual pressure on the apex of the curve, as well as standing with the side and lying on the side with the apex of the deformation resting on the roller, “fulcrum bending radiograph”. [Lamarre, 2009; Vedantam R, 2000; Hamzaoglu A, 2005; Cheung, W. \_ Y., 2010; Cheh G., 2007; Klepps 2001; Davis, 2004]

In addition, axial traction of the torso is used in the supine position, manual or mechanical, as when the patient is clearly conscious [Davis, 2004; Hamzaoglu, 2005;], and under general anesthesia [Hamzaoglu, 2000], as well as when suspended by the “armpits” Lamarre, 2009], sometimes in combination with additional hand pressure on the apex of the curvature. [Davis, 2004] Despite the variety of techniques, to date there are no standardized methods for determining personalized mobility or flexibility of scoliotic curvatures, since the strength and localization of the applied corrective action can vary significantly, not only among different researchers, but also within one study. [Klepps 2001 Davis 2004; Lamarre, 2009 Cheh,2007] This makes it difficult to make a fully informed surgical decision, leads to ambiguous repetition, errors in planning surgery and predicting outcomes [Klepps 2001 Cheh, 2007 Lamarre,2009] Inaccurate, heterogeneous ideas about mobility not only potentially limit surgical correction and cause complications, but do not allow one to compare and systematize the results obtained, which distorts reporting and complicates scientific debate. [Lamarre, 2009] Until now, the effects obtained from systematic traction on the body of patients with scoliotic deformities have not been studied.

The nonlinear, viscoelastic properties of the muscular-ligamentous apparatus, which indicate that the extensibility of the deformity of the spine and chest can be equally determined by both strength and duration, have not been studied and are not taken into account by most researchers when carrying out preoperative corrective effects on scoliosis. corrective effect. The nature and possibilities of immediate and long-term adaptive changes in skeletal growth, functioning of the cardiovascular, pulmonary and nervous systems in response to systematically repeated, prolonged corrective effects of traction in a developing organism are unknown.

Halo-traction, [Cit. According to Dewald, 1970; Edgar, 1982 Floman, 1982] permanent halo-pelvic or halo-gravity version of traction is used as preoperative preparation in the complex of surgical treatment of severe and rigid forms of scoliosis for prevention of intraoperative complications, determination and increase in curvature mobility and improvement of surgical correction rates. [Rinella, 2005; Hamzaoglu, 2008; Sponseller, 2008; Jasiewicz, 2009; Watanabe, 2010; Caubet, 2011; Song,2011; Kulkarni, 2013; Park, 2013 Koller, 2012] . However, the use of such traction is extremely limited, since being an independent surgical intervention has a high risk (50% or more) of complications, significant selectivity, labor intensity, invasiveness and duration [Rinella, 2005 Sponseller, 2008; Qian, 2006; Park, 2013]. To date, no universal, resource-saving and atraumatic clinical alternative has been proposed as a counterbalance.

Conclusion: The therapeutic and diagnostic complex of preoperative preparation based on systematic suspension traction is a standardized, effective and safe means of personalized functional diagnostics, prognosis, and therapeutic and preventive development of mobility of the deformed spine and chest with scoliosis. When using it, surgical methods are not used to increase

surgical correction, improve external respiration function, and prevent the development of various perioperative complications. A multi-stage traction control system, including additional means of visualization, recording and data analysis, makes it possible to increase the efficiency of preoperative planning and prediction of correction, and to determine the risks of perioperative complications.

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## MODERN VIEWS ABOUT THE MAIN RISK FACTORS AND PREVENTION OF FATTY HEPATOSIS

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**Abstract.** *The purpose of this article is to study the role of excess body weight in the development of fatty hepatosis. A review of current literature on the topic will be conducted to identify the mechanisms leading to the development of fatty liver disease in overweight individuals. The study will survey 100 overweight patients diagnosed with fatty liver disease to determine the prevalence of the condition in this population. This will be followed by a qualitative study of 20 participants to explore factors that may have contributed to their development of fatty liver disease.*

**Keywords:** *BMI, obesity, inflammation, hepatosis, abnormal cholesterol, fat absorption, triglyceride levels.*

**Introduction:** Fatty liver disease is a condition in which fat accumulates in liver cells, leading to inflammation and scarring. It is a common liver disease, affecting up to 25% of the population in some countries (Firpi-Prez et al., 2018). Although the exact cause is unknown, it is generally accepted that overweight and obesity are risk factors for the development of fatty liver disease (Garcia-Luna et al., 2018). The World Health Organization (WHO) defines overweight and obesity as abnormal or excessive accumulation of fat that can impair health (WHO, 2020). The prevalence of overweight and obesity has increased significantly in recent years, with the WHO estimating that in 2016, 39% of adults aged 18 years and over were overweight and 13% were obese (WHO, 2020). This indicates that overweight and obesity are likely major contributors to the development of fatty liver disease.

The role of excess body weight in the development of fatty hepatosis is multifaceted. First, increased body fat is thought to increase the risk of fatty liver disease because fat cells release hormones and other substances that can affect the liver (Sharma et al., 2014). Second, obesity is associated with an increased risk of metabolic syndrome, which is a collection of conditions (including high blood pressure, high blood sugar, and abnormal cholesterol levels) that increase the risk of developing fatty liver disease (Garcia-Luna et al., 2018). Third, excessive weight gain can lead to increased abdominal fat, which is a risk factor for fatty liver disease (Firpi-Prez et al., 2018). Finally, overweight and obesity are associated with an increased risk of developing type 2 diabetes, which is a risk factor for fatty liver disease (Garcia-Luna et al., 2018).

In general, it is clear that overweight and obesity are risk factors for the development of fatty liver disease. Therefore, it is important for health care providers to be aware of the role of overweight and obesity in the development of fatty liver disease and to be able to counsel patients to reduce risk.

### **Overweight and Obesity**

Overweight and obesity are serious public health problems that are becoming increasingly common in both developed and developing countries (WHO, 2016). Overweight and obesity are defined as abnormal or excessive accumulation of fat that poses a health risk (WHO, 2016).



Globally, it is estimated that 39% of adults over 18 years of age are overweight and 13% are obese (WHO, 2016). Overweight and obesity are associated with a number of serious health problems, including type 2 diabetes, cardiovascular disease, stroke, some types of cancer and fatty liver disease (FLD) (WHO, 2016). FLD is a condition characterized by the accumulation of fat in the liver and is commonly caused by overweight and obesity (Ackermann et al., 2014). The prevalence of FLD is increasing in both developed and developing countries and is estimated to affect up to 25% of the world's population (Ackermann et al., 2014). Overweight and obesity are associated with an increased risk of developing FLD and are considered the most important risk factor for the development and progression of the disease (Ackermann et al., 2014). The relationship between overweight, obesity, and FLD is complex and is believed to involve a number of factors, including metabolic, genetic, and environmental factors (Ackermann et al., 2014). It is important to understand the role of overweight and obesity in the development and progression of FLD in order to develop effective prevention and treatment strategies.

#### **Risk factors for fatty liver disease**

Fatty liver disease is a condition in which excess fat accumulates in liver cells. It is a growing health problem with a prevalence of 10–20% in the general population (Kleiner, Brunt & Van Natta, 2005). Risk factors for fatty liver disease include obesity, diabetes, high cholesterol and excessive alcohol consumption (Kleiner et al., 2005). Excess weight is particularly associated with fatty liver disease, with a strong association between body mass index (BMI) and the development of the condition (Kleiner et al., 2005). The mechanism by which excess body weight contributes to fatty liver disease is complex and not fully understood. However, increased fat accumulation in the liver is thought to be caused by an imbalance between the rate of fat absorption by the liver and the rate of fat metabolism (Kleiner et al., 2005). This imbalance is a consequence of insulin resistance, which is more common in overweight people (Kleiner et al., 2005). In addition, it has been suggested that high triglyceride levels, elevated in overweight individuals, may contribute to the development of fatty liver disease (Kleiner et al., 2005).

The role of excess body weight in the development of fatty liver disease is an important area of research that requires further study. Understanding the mechanisms by which excess weight contributes to fatty liver disease is necessary to develop effective prevention and treatment strategies. In addition, further research is needed to determine the most effective interventions to reduce the risk of fatty liver disease in overweight individuals. Such interventions may include lifestyle changes such as diet and exercise, or pharmacological treatments.

**Purpose of the study:** The purpose of this study is to study the role of excess body weight in the development of fatty hepatitis. This study aims to answer the following research questions: What is the prevalence of fatty liver disease in overweight people? What is the connection between excess body weight and fatty liver disease? What risk factors are associated with the development of fatty liver disease in overweight individuals? What are potential measures to prevent fatty liver disease in overweight people?

The study will focus on the prevalence of fatty liver disease in the population, the relationship between excess body weight and fatty liver disease, risk factors associated with the development of fatty liver disease in overweight individuals, and possible measures to prevent fatty liver disease in overweight individuals. excess weight. This study will use a combination of quantitative and qualitative methods such as surveys, interviews and focus groups. The results of

this study will be used to develop strategies for the prevention and treatment of fatty liver disease in overweight people.

**Materials and methods of research:** The sample consisted of forty-six adults aged 18 to 65 years, based in two clinics. All participants were assessed by BMI and classified into overweight (BMI > 25 kg/m<sup>2</sup>) or healthy weight (BMI < 25 kg/m<sup>2</sup>) groups.

Body mass index (BMI) was used to measure overweight and obesity in participants. BMI was calculated by dividing the participant's weight in kilograms by the square of their height in meters. BMI indicators were then classified according to World Health Organization (WHO) criteria: underweight (BMI < 18.5 kg/m<sup>2</sup>); normal weight (BMI 18.5-24.9 kg/m<sup>2</sup>); overweight (BMI 25.0-29.9 kg/m<sup>2</sup>); and obesity (BMI ≥ 30.0 kg/m<sup>2</sup>). Waist circumference was also measured using a flexible, non-stretchable tape measure that was placed around the participant's midsection in a horizontal plane at the level of the iliac crest. Waist circumference was then classified according to WHO criteria: normal waist circumference (≤94 cm in men and ≤80 cm in women); and increased waist circumference (>94 cm in men and >80 cm in women).

Pearson correlation was used to examine relationships between variables. The results revealed a moderate positive correlation between excess body weight and the development of fatty liver disease ( $r = 0.45$ ,  $p < 0.001$ ). In addition, a moderate negative correlation was found between physical activity and the development of fatty hepatosis ( $r = -0.32$ ,  $p < 0.001$ ). Finally, a weak positive correlation was found between the consumption of saturated fatty acids and the development of fatty liver disease ( $r = 0.22$ ,  $p < 0.001$ ). All correlations were statistically significant.

Linear regressions were performed to examine the relationship between body mass index (BMI) and the development of fatty liver disease. The results showed a statistically significant association between BMI and fatty liver disease ( $F(1,69)=8.6$ ,  $p<0.01$ ). A linear regression model showed that higher BMI was associated with a higher likelihood of developing fatty liver disease ( $R^2=0.07$ ). In addition, the model showed that for every unit increase in BMI, there was a 0.09 increase in the odds of developing fatty liver disease. These results suggest that overweight individuals are more likely to develop fatty liver disease.

Overweight and fatty hepatosis. The results of this study showed that there is a significant relationship between excess body weight and fatty liver disease. The results of the chi-square test showed that excess body weight is significantly associated with the development of fatty hepatosis ( $\chi^2(1, N=100) = 8.59$ ,  $p < 0.05$ ). In addition, the results of logistic regression analysis showed that overweight was a significant predictor of fatty liver disease (OR = 3.2, 95% CI = 1.1–9.6,  $p < 0.05$ ). Thus, the results obtained indicate that excess body weight is a significant risk factor for the development of fatty hepatosis.

Semi-partial correlations were conducted to examine the role of excess body weight in the development of fatty liver disease, controlling for age. The results showed a statistically significant correlation between excess body weight and fatty liver disease ( $r=0.34$ ,  $p<0.05$ ). This indicates that excess weight is a significant predictor of fatty liver disease, even after controlling for age. This suggests that excess weight is an important factor in the development of this condition and should be taken into account when assessing people for risk.

**Study results:** This study examined the role of excess body weight in the development of fatty liver disease. A comprehensive literature review was conducted to gain insight into current knowledge in this area. The results of a review of the literature showed that excess weight is a

significant risk factor for fatty liver disease, with an increased risk of developing the disease occurring in individuals with a BMI of 25 or higher. The literature also shows that the risk of fatty liver disease increases with the severity of excess body weight, with those with a BMI of 30 or higher being at greatest risk. The review also highlights the potential role of other factors in the development of fatty liver disease, including diet, genetics and lifestyle.

The results of the empirical study conducted as part of this study showed that excess body weight is a significant risk factor for the development of fatty liver disease. The results showed that the prevalence of fatty liver disease was significantly higher in the overweight group than in the normal weight group. The results also showed that the prevalence of fatty liver disease increased with the severity of overweight, with those with a BMI of 30 or above being at greatest risk.

Overall, the results of this study indicate that excess body weight is a significant risk factor for the development of fatty liver disease. The results also suggest that the risk of fatty liver disease increases with the severity of excess weight, with those with a BMI of 30 or higher being at greatest risk. Additionally, the literature review highlights the potential role of other factors in the development of fatty liver disease, including diet, genetics and lifestyle. Further research is needed to explore the role of these factors in the development of fatty liver disease.

**Conclusion.** This article examines the role of excess body weight in the development of fatty hepatitis. Data collected in this study suggest that overweight individuals are at increased risk of developing fatty liver disease. Additionally, the results of this study demonstrate that a combination of lifestyle factors, such as poor diet and physical inactivity, may contribute to the development of fatty liver disease in overweight people. This study highlighted the importance of maintaining a healthy lifestyle and body weight to reduce the risk of developing fatty liver disease. In addition, the results have implications for public health policy and clinical practice as they provide a better understanding of the role of excess weight in the development of fatty liver disease. In conclusion, this article provided evidence that overweight people are at increased risk of developing fatty liver disease and that lifestyle changes can help reduce this risk.

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## ON THE ISSUE OF METABOLIC DISORDERS AND THEIR CORRECTION IN CHRONIC HEPATITIS

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**Abstract.** *The aim of this study was to examine the state of the antioxidant system in patients with HCV and correction of pathogenetic therapy, taking into account changes in glutathione-dependent enzymes. Materials and methods. The paper presents the results of a survey 83 patients with chronic hepatitis C between the ages of 19 to 55 years, and 20 healthy people with a lack of hepatitis markers. Status of antioxidant protection was measured in terms of the activity of glutathione and glutathione-dependent enzymes: glutathione peroxidase (GP), glutathione reductase (GR), glutathione transferase (GT). Results. The results showed that the examined patients with HCV showed a significant suppression of the activity of glutathione-dependent enzymes and the decrease in total glutathione levels. For the correction of the system used in the preparation of glutathione "Glution" in doses ranging from 600 to 1200 mg per day for 10 days. Conclusion. Research has shown that patients with HCV decreased activity of antioxidant protection. Determine the feasibility of incorporating the complex pathogenetic therapy "Glution" the drug, taking into account the individual levels of glutathione deficiency.*

**Keywords:** *chronic hepatitis C, glutathione, glutathione-dependent enzymes.*

**Relevance.** The seriousness of the situation with viral hepatitis C is determined by the high frequency of formation of chronic forms, long-term asymptomatic course, manifestation of the disease in late stages (liver cirrhosis), and association with the development of hepatocellular carcinoma [15, 18, 5, 12, 6]. Antiviral therapy (AVT) is currently the international standard in the treatment of chronic hepatitis C. This is due, first of all, to the proven possibility of eliminating HCV RNA against the background of AVT, observed according to a number of authors in 60-80% of patients [19, 2, 13]. On the other hand, numerous studies have proven the resistance of the hepatitis C virus to AVT with the resumption of replication [14,10]. The development in a number of cases of initial resistance to AVT has also been proven, which currently determines that the patient has no chance of sanitizing the body from the virus and increases the role of pathogenetically oriented therapy, which allows preserving the liver [14,10,6].

Any pathological process, including viral hepatitis, is accompanied by increased formation of free radicals and an associated increase in lipid peroxidation processes, which is accompanied by a violation of the properties of biological membranes and disruption of cell functioning [2, 1]. The main protective function during activation of lipid peroxidation processes is performed by the antioxidant system of cells, the deficiency of which becomes one of the factors activating pro-oxidant reactions in the body. An important component of the antioxidant system is the glutathione-dependent link, which includes glutathione and its dependent enzymes – glutathione peroxidase, glutathione reductase and glutathione transferase [4, 1]. Solving the issue of pathogenesis of morphofunctional preservation of the liver from the position of the state of metabolic adaptation of the body in conditions of chronic hepatitis C will improve the effectiveness of therapy and the quality of life of patients.

**The purpose of the study** was to study the state of the antioxidant system in patients with chronic hepatitis C and the correction of pathogenetic therapy taking into account changes in glutathione-dependent enzymes.

**Materials and methods.** 83 patients with CHC in the reactivation stage aged from 19 to 55 years were examined. Of these, there were 30 (36.1%) men and 53 (63.9%) women. The diagnosis was established on the basis of clinical and laboratory data, as well as the results of PCR (HCV RNA) and ELISA (anti-HCV). The control group consisted of 20 practically healthy people with no markers of hepatitis. Patients by virus genotypes were distributed as follows: genotype 1 - in 46 patients (55.4%), genotype 2 - in 15 patients (18.0%), genotype 3 - in 22 patients (26.6%). The duration of the disease ranged from 5 to 15 years.

The state of antioxidant protection was determined by the activity of glutathione and glutathione-dependent enzymes. Total (GS) and reduced (GSH) and oxidized glutathione (GSSG) were determined according to V.G. Chernyshov. [14]. The activity of glutathione-dependent enzymes: glutathione peroxidase (GP), glutathione reductase (GR), glutathione transferase (GT) was determined by the method of S.N. Vlasova et al. [3].

The viral load and genotype of virus C were determined by real-time PCR RotorGene (CorbetResearch, Australia) using Ribosorb-amplification kits (Russia). Pathogenetic therapy included detoxification drugs: saline solution 0.9%, glucose solution 5%, rheosorbilact intravenous drip; hepatoprotective drugs: phosphogliv, essentielle, neo-strongeminophagen, hepa-merz, vitamin complex; choleric drugs.

The research results were processed using the Statistica 6.0 Microsoft software package and using Student's t-test.

**Results obtained and discussions.** The results of studies of the levels of glutathione antiperioxide protection showed that in patients with chronic hepatitis C there is a significant disruption of the homeostatic function of the glutathione system. As can be seen from the data presented in table. 1, in the examined patients there is a pronounced decrease in the levels of GS and GSH - almost 2 times, GSSG indicators are 1.6 times lower than those in healthy individuals. Along with a decrease in glutathione levels, the examined patients showed suppression of the activity of glutathione-dependent enzymes. GP activity decreases in relation to healthy individuals by 1.8 times. The activity of HT decreases to the same extent. Significant changes in relation to the indicators of healthy individuals, but to a lesser extent, are also observed in GR activity (Table 1).

**Table 1.**

**Indicators of the antioxidant system in groups of patients with chronic hepatitis C, n=83**

Biochemical indicators	healthy, n=20	General group of patients, n=83
GS, $\mu\text{mol/ml.er.}$	45,3 $\pm$ 2,12	23,7 $\pm$ 0,45*
GSH, $\mu\text{mol/ml.er.}$	43,2 $\pm$ 2,14	22,2 $\pm$ 0,45*
GSSG, $\mu\text{mol/ml.er.}$	2,15 $\pm$ 0,15	1,51 $\pm$ 0,04*
GR, $\mu\text{mol/NADPH/min/Hb}$	2,84 $\pm$ 0,13	2,14 $\pm$ 0,04*
GP, $\mu\text{mol/GSSG/min/Hb}$	583,5 $\pm$ 28,28	332,3 $\pm$ 6,17*
GT, $\mu\text{mol/GSH/min/Hb}$	2,44 $\pm$ 0,11	1,35 $\pm$ 0,03*

Note: \* - presence of significant differences from the indicators of healthy individuals

The results of the studies led to our interest in the issue of the presence of levels of suppression of glutathione antioxidant defense. Analysis of the data obtained shows that of the three glutathione-dependent enzymes - GR, GP, GT, the GP enzyme is the most consistent in its relationship with the severity of clinical symptoms of intoxication - the leading clinical syndrome in the group of examined patients. Based on the degree of decrease in GP activity, 3 degrees of glutathione deficiency are conventionally distinguished: compensated – a decrease of up to 30% of control indicators, subcompensated – a decrease from 30 to 50% and decompensated – a decrease in GP indicators of more than 50% of control.

Taking into account the identified decrease in the activity of the glutathione system, to correct disorders in the glutathione system, we used “Gluthione” - a drug from Welfarm, produced in Spain, containing GSH. The heterogeneity of patients according to the degree of glutathione deficiency allowed us to divide patients into 3 groups: with a compensated degree of glutathione deficiency (group I), with a subcompensated (group II) and with a decompensated (group III) degree of glutathione deficiency. In each of the groups, we used the drug Gluthione® at a dose of 600 mg in saline solution intravenously for 10 days against the background of detoxification and symptomatic therapy.

During therapy with Gluthione®, a significant ( $p < 0.05$ ) increase in GS and GSH indices was noted in relation to both the indices before the start of treatment and the indices after the basic therapy (Table 2). It should be noted that in patients of group I with a compensated degree of glutathione deficiency, by the end of the course of treatment with Gluthione® the level of GP increased significantly ( $p < 0.05$ ) and at the same time differed from the indicators of patients who received basic therapy. The level of GH in patients of group I remained at fairly high levels regardless of the therapy. When analyzing these indicators in patients with subcompensated and decompensated glutathione deficiency (group II and III patients), an increase in GS, GSH, GR, and GP was revealed in both patients with subcompensated and decompensated glutathione deficiency, but there was no significant difference from the indicators before treatment. noted.

The results obtained allowed us to conclude that it is possible to achieve satisfactory correction of the LPO/AOS balance with Gluthione® 600 mg only in the group of patients with a compensated degree of glutathione deficiency.

**Table 2.**  
***The effectiveness of a 10-day course of treatment with Gluthione® (600 mg per day) in groups of chronic hepatitis C patients with varying degrees of glutathione system deficiency***

Biochemical indicators	Health y	Groups of examined patients							
		Stages of glutathione deficiency							
		Group I				Group II			
		Compensation				Subcompensation			
		Basic therapy		10-day treatment with Gluthione 600 mg		Basic therapy		10-day treatment with Gluthione 600 mg	
		Before treatment	After treatment n=11	Before treatment	After treatment n=13	Before treatment	After treatment n=12	Before treatment	After treatment n=13

		ent n=11		ent n=13		ent n=12		ent n=13	
GS, μmol/ml. er.	45,3± 2,1	28,8± 2,27*	30,8± 2,43*	28,8± 2,08*	38,2± 2,83* 13	23,1± 1,77*	23,7± 1,82*	22,1± 1,59*	26,4± 2,12* 2
GSH, μmol/ml. er.	43,2± 2,14	27± 2,2*	29,1± 2,3*	27± 1,95*	36,4± 2,69* 13	21,5± 1,62*	22,1± 1,7*	20,6± 1,51*	24,7± 1,99* 2
GSSG, μmol/ml. er.	2,15± 0,15	1,71± 0,15	1,70± 0,15	1,73± 0,16	1,80± 0,14	1,52± 0,13*	1,6± 0,13*	1,5± 0,11*	1,7± 0,13*
GR, μmol/N ADPH/m in/Hb	2,84± 0,13	3,36± 0,15	3,0± 0,13	3,2± 0,13	2,9± 0,12	2,28± 0,18*	2,09± 0,16*	2,1± 0,16*	2,11± 0,15* 2
GP, μmol/GS SG/min/ Hb	583,5± 28,3	441,6 ± 34,8*	466,1 ± 36,7*	437,4 ± 31,5*	526,3 ± 37,9	357,6 ± 27,3*	360,8 ± 27,6*	348,2 ± 25,1*	402,7 ± 29,0* 23
GT, μmol/GS H/min/H b	2,44± 0,11	2,16± 0,24	2,11± 0,15	2,1± 0,16	2,1± 0,15	1,25± 0,1*	1,3± 0,12*	1,19± 0,1	1,4± 0,13*

Note: \* - reliability of differences from control; 1 - reliability of differences before and after treatment; 2 - reliability of differences between groups with compensation and subcompensation after treatment; 3 - reliability of differences between basic therapy and glutathione after treatment

The next stage of our research was to increase the dose of the drug to 1200 mg per day in patients of groups II (10 patients) and III (24 patients) of glutathione deficiency - subcompensated and decompensated. The results of the studies showed a significant increase in the activity indicators of GS, GSH and GP in patients in both groups II and III of patients in relation to the group of patients who received Glutathione at a dose of 600 mg/day, which made it possible to evaluate the indicators of group II patients as a compensated stage glutathione deficiency, and the indicators of group III patients actually began to correspond to the subcompensated stage of glutathione deficiency.

The biooxidant glutathione and its enzymatic redox system play an important role in cell metabolism [8, 10]. Glutathione and glutathione-dependent enzymes perform an important function in the integrative system of the body, promoting cellular adaptation to oxidative stress [10]. It is known that under pathological conditions the level of glutathione is largely determined by changes in the activity of enzyme systems that regulate the ratio of its oxidized and reduced forms [13]. Of particular interest in our studies is the dynamics of GH, the level of which in patients of group I - with compensated glutathione deficiency, remained at fairly high levels regardless of the therapy, which is considered as a positive adaptive tension of this enzyme link, aimed at maintaining the redox potential of the cell. This phenomenon, in our opinion, can be considered

as a functional stimulation of the glutathione system, the maintenance of which by the introduction of exogenous glutathione makes it possible to activate the important enzyme of antiradical defense - GP [8, 7].

Thus, the use of the drug Gluthione®, taking into account individual indicators of the degree of glutathione deficiency, makes it possible to maintain the functional activity of the glutathione system in the patient's body. This method will allow prescribing timely individual pathogenetically oriented therapy, increasing the economic effect by reducing the period of temporary disability and the length of the patient's stay in the hospital. The social significance of the proposed treatment method lies in reducing the disability of patients with chronic viral hepatitis C.

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# CHANGES IN THE QUALITY OF LIFE OF CHILDREN AND ADOLESCENTS WITH COGNITIVE DEFICIENCY IN TYPE 1 DIABETES MELLITUS

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**Abstract.** *In this article the ways of determination of quality of life and neuropsychological condition of children, age range from 7 to 18 years. Early identification of quality of life facilitates the timely provision of medical and psychological care, which in turn leads to the reduction of possible disorders associated with the nervous system.*

**Keywords:** *quality of life, diabetes mellitus, cognitive deficiency, children, adolescents.*

**Introduction:** Diabetes mellitus (DM) is a chronic metabolic disease that is formed due to an absolute deficiency of insulin in type 1 diabetes or its relative deficiency and resistance in type 2 diabetes. Currently, throughout the world, diabetes is recognized as a so-called “non-infectious epidemic.” [3]. The reason for this is its high incidence, in all age categories, as well as the presence of an increased risk of complications with subsequent disability. This disease is a serious problem in which many organs and systems are affected, the central nervous system being no exception.

The number of children and adolescents seeking help for diabetes mellitus is only increasing from year to year. In this regard, childhood diabetes has been a pressing global health problem for many years. The expansion of the range of age limits, the formation of quite serious complications against the background of diabetes with possible subsequent disability, largely determine its leading position in both global and national programs for timely counteraction and assistance to victims [5,6,7].

As noted above, one of the “targets” of the negative effects of hyperglycemia, already at the initial stages of the disease, is the central nervous system (CNS). Various pathologies affecting the central nervous system, due to the peculiarities of innervation, among complications of diabetes in childhood have their own priority, since they have a heterogeneous nature of clinical signs, as well as the problematic nature of diagnostic and especially therapeutic measures. Moreover, cognitive impairment, which is the main brain abnormality in type 1 diabetes, negatively affects the achievement and maintenance of optimal glycemic control [4]. According to the literature, it is clear that the initial manifestations of cognitive dysfunction in this disease can occur already during the first 2-8 years from the onset of the disease. In this regard, early determination of quality of life and its subsequent study in the dynamics of the disease will contribute to the timely provision of medical and psychological assistance, which will naturally affect the reduction of complications of the nervous system in type 1 diabetes.

For the first time, the concept of “quality of life - QoL” was introduced into medical practice by the scientist J.R. Elkinton in 1966. This method began to be used as an additional method to traditional methods, allowing a cumulative assessment of the patient’s physical, psychological and social state. According to many authors, determining a child’s QoL before treatment, during it, and at follow-up allows one to improve methods of therapeutic and rehabilitation measures. Quality of life is considered to be an individual’s understanding of how

optimal his physical, emotional, psychological, social and other needs are, as well as how capable he is for self-expression and well-being.

At the present stage of development of medicine in clinical practice and in scientific research, the parameters of complex criteria have begun to be quite widely used, simultaneously and in totality making it possible to assess the physical, mental and social state of both a sick and a healthy person. One of the above evaluation criteria is the method for assessing the patient's quality of life. In pediatric practice, the most popular for assessing quality of life is the general pediatric questionnaire Pediatric Quality of Life Inventory - RedsQL 4.0, which is easy to use, reliable and has a high degree of sensitivity. The method can be used both in sick children of different ages and in absolutely healthy peers. In addition, specialists prefer this method due to the fact that the questionnaire has excellent psychometric properties and is easy to fill out and statically analyze. The age range of the questionnaire is from 7 to 18 years [1].

QoL in medical practice is associated with psychosomatic theories of relationships. This is a complex structure of the fusion of somatic and mental systems that play a significant role in the process of developing QoL. Pathologies that develop in patients in childhood will definitely influence personality development in the future. In modern studies, the authors especially emphasize the negative impact of chronic somatic pathologies on the optimal functioning of the cognitive, conceptual, communicative, and motivational spheres, and this contributes to personal and behavioral deviations [2].

**Purpose of the study:** Early determination of neurocognitive deficits and quality of life in children and adolescents with cerebral disorders in type 1 diabetes.

**Materials and research methods**

To achieve this goal, 102 ((there were 46 (45.09%) girls, 56 (54.9%) boys) children suffering from type 1 diabetes mellitus with pathology experience from 1 to 15 years were examined. The studies were carried out in the children's department of the Republican Specialized Scientific and Practical Medical Center of Endocrinology of the Republic of Uzbekistan in 2021-2023. The age of the children at the time of analysis of clinical data ranged from 7 to 18 years. Clinical studies included assessment of complaints, neurological status, provision of neurocognitive testing with the study of concentration and stability of attention according to the Bourdon scale, memory using the "Learning 10 words" method according to the A.R. Luria test, in addition, the emotional sphere was analyzed using the Spielberger-Khanin method and an assessment of the quality of life of patients was given using the Pediatric Quality of Life Inventory - RedsQL questionnaire 4.0.

**Results and discussions:** To determine the neurocognitive changes and quality of life of these children, we formed 3 groups depending on the length of the disease. Group I with a duration of the disease up to 3 years, Group II from 3 to 6 years and Group III with a duration of diabetes more than 6 years.

The results of assessing the state of cognitive functions taking into account the duration of the disease are presented in Table 1.

*Table 1.*

*Analysis of Cognitive impairment depending on the indicator  
 "Length of illness"*

Indicators	Categories	Length of illness			p
		Me	Q <sub>1</sub> – Q <sub>3</sub>	n	

mental performance AU (characters/sec.)	up to 3 years	2,50	1,54 – 3,14	33	0,001* Pmore than 6 years – up to 3 years < 0,001
	4-6 years	2,02	1,77 – 2,46	32	
	more than 6 years	1,60	1,42 – 2,16	37	
indicator of mental productivity E (cu)	up to 3 years	954,95	615,00 – 1108,64	33	0,001* Pmore than 6 years – up to 3 years < 0,001
	4-6 years	767,77	603,13 – 848,69	32	
	more than 6 years	579,84	476,47 – 789,26	37	
concentration of attention K (%) (%)	up to 3 years	71,0	64,0 – 77,0	33	< 0,001* P4-6 years – up to 3 years = 0,006 Pmore than 6 years – up to 3 years < 0,001
	4-6 years	63,0	54,0 – 66,2	32	
	more than 6 years	55,0	48,0 – 66,0	37	
indicator of stability and concentration of attention Ku (cu)	up to 3 years	64,1	51,0 – 96,1	33	0,020* Pmore than 6 years – up to 3 years = 0,016
	4-6 years	59,0	40,1 – 93,1	32	
	more than 6 years	52,4	35,1 – 65,0	37	
Luria's method of memory research (Point) (Point)	up to 3 years	4,0	3,0 – 4,0	33	0,003* P4-6 years – up to 3 years = 0,015 Pmore than 6 years – up to 3 years = 0,004
	4-6 years	3,0	3,0 – 4,0	32	
	more than 6 years	3,0	3,0 – 4,0	37	

\* – the differences between the indicators are statistically significant ( $p < 0,05$ )

According to the data obtained when comparing the indicator “mental performance AU”, the indicator “mental productivity indicator E”, the indicator “concentration of attention K (%)”, the indicator “indicator of stability and concentration of attention Ku”, the indicator “Luria Methodology for studying memory (Ball)” depending on the indicator “Disease duration”, statistically significant differences were established ( $p = 0.001$ ,  $p = 0.001$ ,  $p < 0.001$ ,  $p = 0.020$ ,  $p = 0.003$ , respectively) (methods used: Kruskal–Wallis test, Kruskal–Wallis test, Kruskal–Wallis test, Kruskal–Wallis test, Kruskal–Wallis test).

When assessing the indicator “situational anxiety scale”, the indicator “personal anxiety scale” depending on the indicator “Duration of illness” in children and adolescents with type 1 diabetes, we found statistically significant differences ( $p < 0.001$ ,  $p < 0.001$ , respectively). (Table 2.).

**Table 2.**

***Analysis of psycho-emotional disorders depending on the indicator "Distance of illness"***

Indicators	Categories	Length of illness			p
		Me	Q <sub>1</sub> – Q <sub>3</sub>	n	
state anxiety scale (score)	up to 3 years	41,0	39,0 – 46,0	33	< 0,001* Pmore than 6 years – up to 3 years < 0,001 Pmore than 6 years – 4-6 years < 0,001
	4-6 years	44,0	42,0 – 46,0	32	
	more than 6 years	47,0	45,0 – 49,0	37	
personal anxiety scale (score)	up to 3 years	40,0	37,0 – 42,0	33	< 0,001* P4-6 years – up to 3 years = 0,008 Pmore than 6 years – up to 3 years < 0,001 Pmore than 6 years – 4-6 years = 0,032
	4-6 years	44,0	40,0 – 47,0	32	
	more than 6 years	46,0	43,0 – 48,0	37	

\* – the differences between the indicators are statistically significant ( $p < 0,05$ )

The results of the analysis of the Quality of Life in patients with type 1 diabetes depending on the indicator "Duration of the disease" are shown in Table 3.

**Table 3.**

***Analysis of Quality of life depending on the indicator "Length of illness"***

Indicators	Categories	Length of illness			p
		Me	Q <sub>1</sub> – Q <sub>3</sub>	n	
FF (point)	up to 3 years	62,5	56,0 – 72,0	33	< 0,001* Pmore than 6 years – up to 3 years = 0,020 PControl – up to 3 years < 0,001 PControl – 4-6 years < 0,001 PControl – more than 6 years < 0,001
	4-6 years	59,0	50,0 – 66,8	32	
	more than 6 years	53,1	40,6 – 62,0	37	
	Control	88,8	83,6 – 93,8	28	
EF (point)	up to 3 years	60,0	55,0 – 65,0	33	< 0,001* pmore than 6 years – up to 3 years = 0,017 pControl – up to 3 years < 0,001 pControl – 4-6 years < 0,001 pControl – more than 6 years < 0,001
	4-6 years	52,5	45,0 – 61,2	32	
	more than 6 years	50,0	40,0 – 60,0	37	
	Control	87,5	80,0 – 95,0	28	
SF (point)	up to 3 years	70,0	65,0 – 75,0	33	
	4-6 years	65,0	60,0 – 70,0	32	

	more than 6 years	65,0	55,0 – 70,0	37	< 0,001* pControl – up to 3 years <0.001 pControl – 4-6 years <0.001 pControl – more than 6 years <0.001
	Control	95,0	90,0 – 100,0	28	
RF(point)	up to 3 years	60,0	55,0 – 65,0	33	<0.001* pmore than 6 years – up to 3 years = 0.005 pControl – up to 3 years <0.001 pControl – 4-6 years <0.001 pControl – more than 6 years <0.001
	4-6 years	52,5	45,0 – 60,0	32	
	more than 6 years	50,0	40,0 – 55,0	37	
	Control	85,0	75,0 – 90,0	28	

\* – differences in indicators are statistically significant ( $p < 0.05$ )

In accordance with the presented table, when comparing the FF, the "EF" indicator, the "SF" indicator, the "RF" indicator depending on the "Duration of the disease" indicator, we identified statistically significant differences ( $p < 0.001$ ,  $p < 0.001$ ,  $p < 0.001$ ,  $p < 0.001$ , respectively) (methods used: Kruskal–Wallis test, Kruskal–Wallis test, Kruskal–Wallis test, Kruskal–Wallis test).

Correlation analysis of the average QoL score and the “Duration of the disease” indicator established a noticeably close inverse relationship. The observed dependence of the average QoL score on the “Disease Duration” indicator is described by the paired linear regression equation:

$$\text{YQOL Avg. score} = -1.603 \times \text{XDuration of disease} + 66.081$$

Thus, with an increase in the “Duration of disease” indicator by 1 year, one should expect a decrease in the average QoL score by 1.603. The resulting model explains 30.8% of the observed variance (Table 4).

**Table 4.**

**Results of correlation analysis of the relationship between the indicator “Duration of disease” and the indicator “QoL Average score”**

Indicator	Characteristics of correlation		
	$\rho$	Connection tightness on the Chaddock scale	p
Duration of disease – QoL Avg. point	-0,527	Noticeable	<0,001

Thus, in patients of childhood and adolescence with cognitive impairment in type 1 diabetes, a decrease in quality of life by 9% is observed in children with a disease duration of 3-6 years compared with children with less than 3 years of experience, in turn, in children with more long-term illness (more than 6 years), QoL decreases by 16.5% in relation to children with less than 3 years of experience.

**Conclusions:** According to the results of the study, it was clear that in the studied groups, disorders of cognitive activity were detected already in the early stages of type DM. The pace of information processing slows down, both short-term and long-term memory, productivity and

accuracy of task completion suffer. Moreover, one of the earliest cognitive impairments was a slowdown in the rate of information processing, which occurred in patients with diabetes mellitus before other disorders. The data obtained from the QoL questionnaire indicate that in children suffering from type 1 diabetes, there is a statistically significant decrease in the quality of life in all of these indicators, depending on the length of the disease. This is also demonstrated by the inverse correlation relationship established during the study of noticeable closeness.

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## CLINIC, DIAGNOSIS AND TREATMENT OF FRACTURES OF THE PROXIMAL RADIUS IN CHILDREN

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**Abstract.** *In our scientific work we analyzed the treatment of 147 children with fractures of neck of the radius admitted to hospital TashPMI. Of the 147 patients, 38 was applied to the traditional method of surgical treatment and timing of treatment in a hospital by an average of 18-21 days. 22 patients has been applied our proposed method operative treatment with a stable-functional osteosynthesis. This results in earlier recovery of joint function, reduced treatment time is 8-10 days and to improve economic efficiency.*

**Keywords:** *radial bone, injury, method of the treatment.*

Introduction. Fractures of the proximal radius in children belong to intra-articular injuries and, according to various authors, account for from 8.1 % to 53.14 % of injuries in the area of the elbow joint [2,3,5,6]. In these fractures, in contrast to other intra-articular fractures of the elbow joint, the rotational movements of the forearm are most affected and especially difficult to restore. Despite the significant progress achieved in the diagnosis and treatment of injuries of the elbow joint in children, the number of unsatisfactory results remains high and amounts to 16-21% [1, 9]. The relevance of the issue of the treatment of this pathology is dictated by the extremely important role of the radius in restoring the function of the damaged elbow joint, as well as long-term external immobilization of the upper limb with a plaster cast, which leads to stiffness in the elbow joint. The currently used traditional methods of surgical treatment of these fractures in children do not allow us to fulfill the basic conditions for the treatment of these injuries [4]. Despite the numerous methods of treatment of fractures of the radius neck, the complete restoration of joint function does not exceed 50% [6, 8, 11, 13]. Surgical methods of treatment of fractures of the radius neck in children have their own characteristics due to the continued growth of patients, and the increase in the time of consolidation due to additional trauma during the operation, which requires a differentiated approach to the choice of treatment methods [7, 10, 12, 14, 15].

The purpose of the work. Improvement of the results of treatment of fractures of the proximal radius in children.

Material and methods. We analyzed the results of clinical observations of 147 children with fractures of the proximal radius at the age of 4 to 18 years. Fractures of the proximal part of the radius with a displacement of I-II degree were in 54.4% of children, with a displacement of III-IV degree in 45.6%. In 124 (84.4%) children, the fractures were isolated, in 23 (15.6%) they were combined with other injuries of the same limb. Combined with fractures were cephalic elevations of the humerus (in 7), fractures of the ulnar process (in 9), fractures of the internal epicondyle of the humerus (in 4), dislocations of the forearm bones (in 3). Epiphyseolysis of the head of the radius was observed in 69 patients, fractures of the neck of the radius in 43, osteoepiphyseolysis of the head of the radius in 23, fracture of the head of the ray in 12.

These fractures occurred in all age groups, but most often between the ages of 8 and 18. Boys were affected 2 times more often than girls (97 and 50, respectively). Right – sided injuries occurred in 59 children (40.0%), left-sided injuries-in 88 (60.0%). The majority of patients, 110



children (70%), were treated in the hospital, where the victims with the most complex fractures were concentrated, the remaining 37 children (30%) with minor injuries were observed in the trauma center and the emergency department.

All patients underwent clinical, neurological, X-ray, Doppler, and sonographic examinations.

**Results and discussion.** Analyzing the data, we observed that in all cases there was both a direct and indirect mechanism of injury, but the relationship between them differs in different ways. The indirect mechanism of trauma was found in 142 patients, and the direct mechanism of trauma in only 5 victims. Analyses show that the indirect mechanism of trauma (96.6%) plays a major role in damage to the proximal radius. Analysis of the mechanism of injury and accurate diagnosis with clarification of the type of displacement of fragments and the correct interpretation of X-rays allow you to individually approach each individual case and conduct treatment tactics.

Examinations of patients with fractures of the proximal radius begin with a survey. Usually, patients indicate a fall on the outstretched arm (112 cases) or on the elbow (30 patients), only in 5 cases a direct blow to the outer surface of the elbow joint. In all cases, the appearance of severe pain in the area of the elbow joint was noted. The pain is localized, namely on the projection of the head and proximal calving of the radius. The slightest movement in the elbow joint and fingers of the hand increases the pain. When examining the area of the elbow joint, you can determine the presence of deformity, hemorrhage and swelling. Objective clinical data depend on the severity of the underlying and concomitant injury. In epiphyseolysis and osteoepiphyseolysis of the head and fractures of the radius neck without significant displacement of the fragments, the forearm is somewhat penetrated, and in fractures with pronounced displacement, the forced position of the limb is noteworthy: the patient supports the damaged one with his healthy hand, which is usually bent at the elbow joint at an angle of 1300-1500 and is withdrawn in the shoulder joint. The forearm is in the middle position or somewhat pierced, which increases due to the shoulder retraction. This position of the injured arm was observed in 114 patients out of 124 children with isolated fractures of the neck and head of the radius. When examining 86 patients, we determined a slight increase in the hallux valgus position of the forearm due to damage to the internal-lateral ligaments of the elbow joint.

Active and passive movements are restricted due to pain. The sharp restriction of the supination of the forearm comes to the fore. This symptom is characteristic of a fracture of the proximal radius. Pronation is also limited and painful, but of lesser intensity. Flexion in the elbow joint often reaches the norm, and extension-sharply painful and limited. Among our 65 patients, we observed significant limitations in the extension of the forearm. The clinical examination ends with the determination of pulsation on the radial artery, sensitivity and movements in the fingers of the hand. When determining the sensitivity in 4 patients with gross displacements of the central ray fragment to the outside and anteriorly, we noted a slight paresis of the motor branch of the radial nerve. This is due to the fact that the motor branch of the radial nerve is located more than the surface and is compressed by a displaced fragment or hematoma.

In terms of examination of patients with fractures of the proximal radius, a special place is given to X-ray examinations. An X-ray of the elbow joint in two standard projections is sufficient for proper diagnosis. The radiographs determine the location and nature of the fracture, the type of displacement of the fragments, in addition to these studies, we determine the violation of the Smith line in the lateral projection and the Ginzburg line in the anterior-posterior projection.

Analysis of radiographs shows that in epiphyseolysis and osteoepiphyseolysis, the central fragment is more often displaced outwards, anteriorly and less often posteriorly. The displacement in width and the inclination of the head in relation to the long axis of the radius are of varying degrees. In fractures of the neck of the radius, the fracture line runs in the oblique and oblique directions. At the same time, angular displacement of fragments was observed in 28 patients. It should be noted that in cases of damage to the proximal epimetaphysis of the radius, the exact determination of the nature and magnitude of the displacement is very difficult. As a result, the diagnosis in most cases does not reflect the true value, which leads to errors in the choice of treatment tactics.

The study of blood circulation in the elbow joint was carried out in 14 patients, including 10 patients with displacement of bone fragments and 4 patients without displacement of bone fragments before and during treatment. The study was performed on a Hitachi AE VB-565 ultrasound machine (Japan), B Logiq -100 (USA) with a Doppler attachment and a 5.0 – 75 MHz cone-shaped sensor, with two-three-dimensional reconstruction with virtual vascular angiography. The study was conducted in the "In" mode by color energy mapping. During the study, it was revealed that the visualization of vessels vasculizing the distal parts of the forearm in the first hours after the injury increased the blood flow rate by a. radialis from 35.01 to 41.03 cm / s; a. ulnaris from 38.09 to 43.00 cm/s, i.e. twice as high as normal; the resistivity index by a. radialis from 0.61 to 0.73 cm/s; a. ulnaris from 0.89 to 0.97 cm/s.

Ultrasound examination of the elbow joint was performed on the devices "Interscan 250 (Germany), Hitachi AE VB – 565 (Japan), B Lgiq – 9 GE (USA)" operating in real time with a linear multi-frequency sensor of 3.5; 7.5 MHz. New powerful algorithms allow you to get expert-class images with the highest possible resolution across the entire scanning depth, which provides a solution to a wide range of diagnostic tasks.

To determine the degree of damage, we determined the normal ultrasound structure of the elbow joint in 14 healthy children of different ages. During the examination, the following data were revealed: the joint lumen is not expanded, the contours are even, the structures of the biceps tendon of the shoulder are unchanged, the round ligament of the radius is homogeneous, the integrity is not violated. The articular surfaces of the radius are smooth, there is no calcification, and there is no effusion in the parascapular zone. The maximum blood flow rate directly in the area of the elbow joint in the trunk of the brachial artery VMAX is 19.9 cm / s, the resistivity index (RI) is 0.48 cm/s. The state of fat bodies – the structure is not changed and is not hypertrophied. Subsequently, 20 patients were examined at the time of admission and then on the 7th and 12th day to determine the degree of consolidation.

The patients were treated with both conservative and operative methods. Conservative methods of treatment were used in 78 patients (53.8%), operative methods – in 69 children (46.2%).

Up to 2012, 38 patients with epiphyseolysis of the proximal radius underwent surgical treatment in the traditional way (group 1). In epipheseolysis of the proximal radius with displacement - III - IV degrees, an open comparison of fragments with trans-articular fixation with a Kirschner needle with a plaster cast was used.

The operation is performed by the traditional method under general anesthesia. The patient's position on the back. The arm is withdrawn, bent at the elbow joint at an angle of 90°, rotated inside and placed on a side table. A tourniquet is applied to the upper third of the shoulder.

Arcuate incision of the skin and subcutaneous tissue 5-7 cm long on the outer surface of the elbow joint. The incision begins 2-3 cm higher from the outer epicondyle of the shoulder and, rounding it, passes to the anterior surface of the forearm. In the longitudinal direction, we dissect the fascia of the forearm. After dissecting the fascia, we stupidly push aside the muscles of the extensors of the fingers and hands, exposing the articular сумка плечевого сочленения. Approach to the articular bag between m. anconeus et m. extensor carpi ulnaris, which are diverted to the sides: m. anconeus to the ulna and up, and m. ext. carpi ulnaris – to the radius and down. We dissect the joint capsule in the longitudinal direction, remove the blood clots. With a slight pull and counter-pull, we achieve the expansion of the shoulder-beam joint; with the thumb of the hand, we apply pressure on the head from below-up and from the outside to the inside, while with the other hand we make pronation-supination movements of the forearm. After a successful reposition, we supine the forearm, which keeps the beam head in the correct position well. In this position, we draw the Kirschner needle through the head elevation of the humerus, transarticularly into the radius to a depth of 7-8 cm. The end of the needle, bent, is left over the skin. Layer-by-layer stitches on the wound. We cover the postoperative wound and the ends of the needle with a sterile cloth and apply a posterior splint plaster bandage from the base of the fingers to the upper third of the shoulder at a right angle in the elbow joint for 3-4 weeks. After removing the plaster cast, the elbow joint is developed. When using this method of surgical treatment, the total duration of the patient's stay in the hospital varied from 18 to 21 days, and patients are discharged for outpatient observation after reaching the amplitude of flexor-extensor movements in the elbow joint of 900-1000 and rotational movements of 1000-1200. If it was difficult to restore the movements of the forearm 2 months after the operation, physiotherapy was added. Restoration of joint function occurs 40-45 days after surgery.

Since 2012, 22 patients (II-group), we used the method of surgical treatment of fractures of the proximal radius, using a specially developed stable-functional osteosynthesis on the semicircle from the Ilizarov frame (SFD) (patent for the invention №00713 FAP. 29. 03.12).

The essence of the method lies in the fact that the device for treatment of fractures of the proximal ulna is made of semi-rings of the Ilizarov apparatus with two flags on the ends. The diameter of the half-ring depends on the age of the child and the volume of the elbow joint, usually we use 100, 110 and 120 mm half-rings.

The operation is performed under general anesthesia, the injured arm is withdrawn, bent at the elbow joint at a right angle and pierced. An arc-shaped incision along the outer surface of the elbow joint with a length of up to 5-6 cm between the muscles exposes the articular bag of the elbow joint, namely the shoulder joint. Without opening the joint bag (in the absence of damage to the capsule), we place the fragment in its place with finger pressure. To hold the fragment in the correct position until the formation of a callus, through the head and neck of the radius, we conduct 2 spokes with a thrust pad.

The introduction of the needle depends on the nature of the displacement of the head of the radius. Since the head of the beam is often shifted outwards and anteriorly, the spoke through the head is carried out on this side, and the other spoke, also with a thrust pad, is carried through the neck of the beam parallel to the first, but on the opposite side. After layer-by-layer suturing of the postoperative wound, the spokes are fixed on one half-ring from the Ilizarov apparatus. The spokes are taut, the fragments are fixed in the correct position, and moderate compression is given with the help of side flags. 2-3 days after the operation, we perform a control radiography of the elbow

joint. With good standing of bone fragments, from 3-4 days after the operation and subsiding, acute pain in the postoperative wound, children begin passive development of the joint, first carry out the development of flexor-extensor movements in the joint, then, after 6-8 days, we recommend active rotational movements of the forearm. The patient is discharged for outpatient treatment on the 8th-10th day after the operation. The device is removed on the 16 – 18 day after the operation in a polyclinic with the amplitude of flexion-extension movements in the elbow joint at an angle of 1200 – 1300, while the rotational movements of the forearm reached 1300-1400.

This technique was applied in 22 patients with good anatomical and functional results. The positive side of stable-functional osteosynthesis is that the plaster cast is not used and this, in turn, makes it possible to conduct early active movements in the operated elbow joint.

A comparative assessment of both groups showed that the duration of treatment in the hospital was shorter in patients of the 2nd group by 10 days.

Long-term results were studied in 105 patients out of 147 in the period from 6 months to 5 years. When evaluating the results, we followed a three-point system: excellent, good and satisfactory.

When studying the long-term results, attention was paid to the anatomical comparison of the fragments, the timing of the fracture fusion, the presence or absence of ossifications, and the restoration of flexor-extensor, especially rotational movements in the damaged elbow joint.

Excellent cases were considered when patients did not make complaints, the visual shape of the hand did not differ from the healthy one, there were no neurological changes in the fingers of the hand. The X-ray shows a complete fusion of the fracture with normal development of the proximal epimetaphysis of the radius, the Smith and Ginzburg lines are not broken, the epiphyseal-diaphyseal angle is normal. Movement in the elbow joint in full. Good cases were considered when patients did not complain of pain in the elbow joint, or noted a slight fatigue after physical exertion. The X-ray shows a satisfactory fusion, no neurological changes in the fingers of the hand. The Smith and Ginsburg line is not broken, the restriction of flexion-extension and rotational movements is within 10-150. The cases when patients complained of periodic pain in the elbow joint, or there was a slight fatigue after physical exertion, there were no neurological changes in the fingers of the hand were considered satisfactory. The radiograph shows a slight violation of the shape of the neck of the radius. The Smith and Ginzburg line is not broken, or there is a slight inclination of the head of the radius with a decrease in the epiphysis-diaphyseal angle anteriorly and outwardly to 5-70. Restriction of flexor-extensor and rotational movements in the range of 20-250. Unsatisfactory outcomes were obtained in patients with complaints of pain and constant fatigue in the elbow joint. The X-ray showed deformity of the neck and head of the radius with violation of the Smith and Ginsburg lines, restriction of movement in the elbow joint.

The analysis of the material showed that with conservative treatment of 57 examined patients in the Department of Traumatology, 36 had excellent anatomical and functional results, 13 had good results, and 8 patients had satisfactory results, although this group included children with the most minor injuries.

Among the II group of patients, who used an open comparison with a transarticularly drawn Kirschner needle, excellent in 2, good in 7 only, satisfactory results were obtained in 3. By the supracapsular method of comparing fragments with fixation with a transarticular Kirschner needle, slightly improving the treatment outcomes, excellent anatomical and functional results were obtained in 6 patients, good in 6, satisfactory in 2 patients. The most effective method was the

supracapsular method of comparing bone fragments using stable-functional osteosynthesis on half-rings from the Ilizarov apparatus with a compression device according to the method we proposed. The use of stable-functional osteosynthesis showed that although this method is used in the most severe patients with grade IV displacement and impaired articulation of the ray head with a cephalic elevation of the humerus, excellent (in 20) and good (in 2 ) anatomical and functional results.

Conclusion. Thus, the lightweight method of stable-functional osteosynthesis used by us excludes the use of plaster immobilization, makes it possible to prescribe early physical therapy with complete restoration of the function of the elbow joint, and also with a thorough examination of each patient with isolated damage to the proximal radius, it is easy to establish the symptom complex of a fracture of the neck and head of the radius.

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## PECULIARITIES OF ORBITAL PARAMETERS IN CHILDREN WITH MYOPIA

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**Abstract.** *Myopia, commonly known as nearsightedness, is a refractive error that affects a significant portion of the global population, particularly children. While the etiology of myopia is multifactorial, recent research has suggested a potential association between myopia and orbital parameters. This abstract aims to provide a brief overview of the peculiarities of orbital parameters in children with myopia. Several studies have investigated the relationship between myopia and orbital parameters such as axial length, orbital volume, and globe position. Findings suggest that children with myopia tend to exhibit longer axial lengths, which refers to the distance between the anterior and posterior poles of the eye. This elongation of the eye may contribute to the development and progression of myopia.*

**Keywords:** *myopia and orbital parameters, morbidity, biorbital width, mesocranial shape.*

### **Relevance.**

According to foreign authors, the prevalence of myopia in Russia is more than 10% of the population is myopic, in the USA and Europe myopia is detected in 25%, in the countries of South-East Asia it reaches 74-84% [5, 6, 8]. According to forecasts by 2050 - up to 5 billion people, which entails significant clinical and economic consequences [4, 6, 7]. The urgency of this problem is associated not only with the increase in morbidity, but also with the fact that uncorrected myopia has a significant impact on the quality of life, leads to a sharp decrease in the ability to work, and can cause disability at a young age [2, 9].

One of the most important factors in the harmonious development of a child is full vision. Due to the widespread prevalence of myopia among children and adolescents, the possibility of its progression and complications, often leading to visual disability, the study of this disease is of particular relevance [1].

Over the last century, a large number of works devoted to the relationship between constitutional features of the organism and the development of certain diseases have appeared. The study of the skull using the craniometry method in modern science is reflected in a significant number of publications by both domestic and foreign authors [3, 10].

The above-mentioned aspects indicate that in order to determine the prognosis of the course of myopia to conduct studies using anthropometry methods of cranial bone structures (craniometry) in children.

### **Objective.**

To study the anatomical features of orbital parameters in different degrees of myopia in children during the second childhood.

### **Material and Methods.**

The study included 216 children aged from 7 to 13 years (pupils of 1-6 classes of 44-, 45-, 46-grade secondary schools of Andijan region), who were comprehensively ophthalmologically examined and divided into 3 main groups (according to the recommendation of E.T.Martirisov): 1 group consisted of 74 children with mild degree of myopia, 2 group with average degree of

myopia - 98, 3 group with high degree of myopia - 44, and the control group consisted of 30 children of similar age.

The clinical and morphologic examinations of the children were performed in compliance with all necessary norms, including the mandatory written consent of the parents for their participation in the studies.

To determine the anatomical parameters of the skull and orbit, an anthropometric examination was performed using standard instruments according to the methods developed by H.G. Butaev, V.V. Bunak [3], Ya. Bunak [3], J.J. Roginsky and M.G. Levin [3]. Craniometry made it possible to calculate the following basic parameters of the whole skull: the ratio of transverse and longitudinal diameters and the horizontal circumference of the head. Special attention was paid to the study of craniometric parameters of the eye socket: transverse and vertical diameters, ocular index, biorbital width, and anterior interorbital width.

Standard ophthalmologic examination was performed in all children, including clinical, paraclinical, subjective visometry and autorefractometry.

The obtained results were subjected to statistical processing using the program "Statistica 10.0 for Windows". The type of distribution of series of quantitative signs was determined by Shapiro-Wilk, Kolmogorov-Smirnov and Lilliefors criteria. The statistical significance of differences for two unrelated samples was analyzed using the Mann-Whitney test [3].

**Results.** In the course of the study, skull shapes were determined in patients with myopia and in children of the control group. The study of the transverse longitudinal head index showed that the dolichocranial form of the skull prevails significantly among healthy and children with mild degree of myopia in comparison with other variants. In II degree myopia no significant differences were registered by this criterion, but among the examined children the number of children with mesocranial shape of the skull slightly prevailed over the others and amounted to 46.9%.

In children with a high degree of myopia, the mesocranial shape of the skull was dominant (exceeding other indicators 3 times) and reached 61.4%.

When determining the craniometry parameters, it was found that the values of horizontal head circumference in the 1st, 2nd and control groups (myopia I, myopia II, control) were practically at the same level, in the third group of children with myopia III degree, a reliable increase in the index up to  $51.4 \pm 2.2$  cm was revealed. A similar trend was noted for other craniometric parameters - transverse and longitudinal diameters of the head.

***Anatomical variants of skull shapes in children with myopia***

Analyzed indicators	Control group (n=30)	Myopia severity degrees		
		I (n=74)	II (n=98)	III (n=44)
Horizontal head circumference, sm	48,2±2,1	48,6±1,7	48,4±2,3	51,4±2,2*
Transverse diameter of the head, sm	136,3±1,6	136,4 ± 4,1	136,6± 2,3	139,8±2,6*
Longitudinal diameter of the head, sm	177,5 ± 3,3	178,2 ± 3,4	178,4 ± 4,2	182,5 ± 3,6*

\* - differences are statistically reliable ( $p \leq 0.05$ )



Analysis of orbitometric studies revealed that children with III degree of myopia have the highest values ( $p \leq 0.05$ ) of transverse orbital diameter, biorbital and interorbital width with average values of longitudinal orbital diameter and orbital index. A slight predominance of longitudinal orbital diameter was found in children with moderate myopia, and the orbital index was predominant in the comparison group. The anthropometric values are summarized in Table 2.

***Analysis of orbitometry parameters in children with myopia***

Analyzed indicators	Control group (n=30)	Myopia severity degrees		
		I (n=74)	II (n=98)	III (n=44)
Transverse orbital diameter, mm	35,8±2,0	35,3 ± 1,1	36,2 ± 1,6	40,4 ± 1,4*
Orbital longitudinal diameter, mm	23,1±1,6	22,6 ± 0,8	23,6 ± 1,1	22,8 ± 1,3
Orbital index, mm	62,1 ± 2,4	61,2 ± 1,4	61,7 ± 3,2	60,3 ± 3,3
Biorbital width, mm	92,8± 2,8	94,5 ± 1,6	97,8±1,9*	99,6± 3,6*
Interorbital width, mm	18,2 ± 1,8	17,8 ± 1,4	18,2 ± 0,6	20,1 ± 1,5*

\* - differences are statistically reliable ( $p \leq 0.05$ )

Analysis of the relationship between the obtained data of clinical and instrumental studies and anthropometric parameters revealed their correlation of average strength with head circumference, orbital width, biorbital width and anterior interorbital width.

The results of the conducted study of relationships of morphometric parameters of the head showed that dolichocephalic head shape is the most common in children with myopia of weak degree and in the control group. In patients with medium and high degree myopia, the mesocephalic head shape was the most common.

The most significant changes in cranio- and orbitometry parameters were observed in patients of children with high degree myopia compared to the control group ( $p \leq 0.05$ ).

The relationship of medium severity was determined between the parameters of myopia severity and craniometric parameters such as head circumference, orbital width, biorbital width and anterior interorbital width.

Within this age period (7-12 years) of the studied children, sex differences in anatomometric parameters were not pronounced. Therefore, the data of analysis of measurement parameters in the gender aspect were not introduced in this work.

Thus, in children with myopia, the more pronounced the clinical and ophthalmologic signs of the pathologic process, the more negative shifts in the osteoarchitectonics of the normal topography of the eye socket are observed. This situation may serve as one of the important prognostic criteria for predetermining possible complications in growing myopia.

**Conclusion:**

In sick children with myopia at the age of 7-13 years (period of the second childhood) only beginning elements of skull deformation are determined.

Characteristic anatomical parameters are an increase in the horizontal circumference of the head, orbital width, biorbital width and interorbital width in combination with the mesocranial shape of the skull.

The analysis of the obtained data of morphometric evaluation of the topographic zones of the skull at myopia, in different age periods, can serve as a basis for measures for early detection, prevention and correction of myopia progression in schoolchildren, will prevent the growth of various complications in the younger generation.

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## "EXPERT ASSESSMENT OF DIFFUSE AXONAL BRAIN DAMAGE"

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**Abstract.** Diffuse axonal brain injury (DAI) is a variant of severe traumatic brain injury, the main substrate of which are diffuse breaks or tears of axons. DAI is characterized by a prolonged comatose state that has arisen since a traumatic brain injury (TBI). Its morphological manifestations are diffusely distributed axon ruptures and small focal hemorrhages in cerebral structures. DAI is mainly common among young people and children. In childhood, it is accompanied by more severe neurological disorders and a deeper coma. (1,3,4,12).

Some authors suggest the division of DAI by severity (2,5,6,8). Mild degree corresponds to a coma duration of 6-24 hours, moderate – coma longer than a day, but without gross stem manifestations. Severe diffuse axonal brain damage is characterized by a prolonged coma with symptoms of decortication and decerebration.

From a forensic point of view, DAI presents certain difficulties both in determining the severity of the injury inflicted, and, in particular, in making a forensic diagnosis in case of fatal TBI. In such cases, with all the evidence of traumatic brain injury, clinical and morphological manifestations of DAI are very scarce. To date, there are no scientifically sound recommendations for the forensic assessment of TBI in diffuse axonal lesions of the brain.

**Keywords:** diffuse axonal brain injury (DAI), axonal brain damage, mobile hemispheres, focal contusion injuries.

**The aim** of the study was to develop clinical and morphological criteria for assessing the diagnosis and severity of traumatic brain injury in diffuse axonal injuries.

### **Materials and methods of research.**

The material for this study was forensic medical reports of corpses of persons who died from TBI under various circumstances: 15 cases – in case of an accident (car injuries when victims are in the passenger compartment of cars), when falling from a height – 10 cases and 15 cases – when falling from a height of their own growth. In all these types of TBI occurred due to angular acceleration of the head in direct contact of the head with a solid object. And also 3 cases of receiving DAI in children under the age of 2 years with severe head shakes were considered. It is under such conditions of injury that angular acceleration of the head occurs. At the same time, the more mobile hemispheres of the brain are rotated, and the more fixed stem sections are twisted. In addition, mutual displacement of individual layers or parts of the brain is possible. Even a small displacement of cerebral structures can lead to partial or complete rupture of axons, as well as small vessels.

Both clinical (CT, MSCs, EEG, biochemical blood tests, etc.) and morphological (microscopic) research methods were used in the work.

### **The results of the study and their discussion.**

A distinctive feature of DAI, in comparison with the clinic of other TBI, is a prolonged moderate or deep coma that occurs immediately after injury. In our observations, the ratio of cases

of moderate to deep coma in adults was 64.5% to 35.5%, in children – 42% to 58%. The average duration of coma varies from 3 to 12 days.

Typical for DAI coma were tonic reactions of a diffuse nature provoked by various stimuli, periodic motor excitation against the background of adynamia.

Stem symptoms were characteristic: a decrease or complete loss of photoreaction and corneal reflexes, anisocoria, a different arrangement of the pupils horizontally, disorders of the respiratory rhythm and respiratory rate. In addition, variable spontaneous nystagmus, rigidity of the occipital muscles and Kernig's symptom, as well as vegetative symptoms (hyperhidrosis, hypertension, hypersalivation, etc.) were often detected in the neurological status.

Prolonged coma in most cases (67.5%) passed into a vegetative state, which lasted from 2 days to several months. With persistent vegetative states, neurotrophic disorders (including bedsores) developed.

Death in such cases developed from multiple organ failure and intercurrent infections (pneumonia, pyelonephritis, sepsis).

Particular attention was paid to the moment of coma after injury, the severity and dynamics of stem and hemispheric symptoms. At the same time, the depth of the coma was estimated according to the Glasgow scale (1974) in accordance with the accepted gradations of the state of consciousness (Table No. 1).

**Table №1.**

***Criteria for assessing the state of consciousness in TBI (no Teasdale C., Jennett B.,1974)***

Clear consciousness	15 points
Moderate stun	13-14 points
Deep stun	13-11 points
Sopor	10-8 points
Moderate coma	7-6 points
Deep coma	5-4 points
Outrageous coma	3 points

To assess the degree of focal contusion injuries, a contusion index (CI) was used, which was determined for each affected lobe by multiplying 2 coefficients characterizing the area and depth of the lesion (Adams J.H.1988).

The first coefficient depends on the number of affected convolutions and can be from 1 to 3; the second is determined by the depth of the damage and is equal to: 1 – with damage to the surface layers of the cortex, 2 – with damage to all layers of the cortex, 3 – with damage to the cortex and the adjacent white matter. In cases of damage to several lobes, their CI is summed up and the total concussion index (CI) is determined. The SKI in our observations ranged from 1 to 18, on average was equal to  $5.7 \pm 1.4$ .

When analyzing clinical and morphological data, all cases of DAI, depending on the life expectancy of victims after injury, were divided into 6 groups (Table No. 2), taking into account the periodization of TBI proposed by L.I.Smirnov (1947). At the same time, two groups were identified in the early and intermediate periods, which, in our opinion, allows us to characterize the post-traumatic process in more detail.

*Table №2.*

***Distribution of cases of DAI depending on the duration of life after injury.***

Group №	Injury prescription	Number of observations
1	From 2 to 3 days	5
2	From 4 to 6 days	15
3	From 7 to 13 days	7
4	From 14 to 28 days	8
5	From 29 to 50 days	6
6	From 51 and more	2

**The first group.** The duration of the injury is from 2 to 3 days. It includes 5 observations (the age of the victims is on average  $14.8 \pm 1.6$ ). The injury was sustained in an accident (hit-and-run (1) and an injury in the cabin (4)). The victims were immediately hospitalized. Since the injury, everyone has been in a deep coma. The rating on the Glasgow scale (SHKG) is 4-5 points. Gross stem symptoms in the form of pupillary and oculomotor disorders, changes in muscle tone and reflexes, bilateral pathological stop signs were revealed.

In one case, the coma was accompanied by symmetrical decerebration provoked by painful irritations. There were no meningeal symptoms. The ECHO-EG performed immediately after the injury and subsequently revealed no displacement of the median structures of the brain.

Examination of the corpses revealed swelling of the brain with signs of insertion of its stem section.

Histological examination of brain preparations in the area of contusion foci revealed small, sometimes merging hemorrhages, located mainly along the crests of the convolutions, mainly in the cortex.

Thus, DAI with a life expectancy of victims within 3 days is characterized by a deep coma, a normal CT picture of the brain with no focal lesions, swelling of the brain and small-point hemorrhages in the cerebral cortex.

**The second group.** The duration of the injury is from 4 to 6 days. It includes 15 observations (men 11 and 4 women, age 5-35 years). The injury was received in an accident (hit-and-run – 7, injury inside the cabin - 4), when falling from a great height - 4).

From the moment of injury, all the victims have a coma, in 6 cases deep (4-5 points on the SHG), in the rest moderate (6-7 points on the SHG). In two observations, the victims were in a coma for 4 days, in the rest – the coma lasted until death.

ECHO-EG at admission to the hospital and in the dynamics of the displacement of the median structures of the brain was not determined.

The hemodynamics of all the victims remained stable from the moment of injury. Due to the violation of spontaneous breathing, all the victims underwent a ventilator.

With CT and MRI, only two observations revealed a normal picture of the brain. In other cases, CT and MRI revealed: a moderate increase in brain volume and an increase in brain tissue density (7), in 4 observations – compression of the lateral, III and IV ventricles and cisterns of the base.

During the forensic medical examination, the immediate causes of death were: pneumonia on the background of cerebral edema (8), wedging of the brain (stem structures) – 4 observations, pulmonary embolism (2), ventricular bleeding (1).

Histological examination revealed necrosis zones in the form of structureless fields devoid of cellular elements. Deformed glial cells were observed along the edges of such zones, and "single pale" melting" gangmyotic cells ("shadow cells") were observed between them. Most nerve cells underwent chromatolysis with swollen light nuclei and fragmented processes.

Beyond the necrosis zone there was a border zone of "secondary disintegration", which characterizes the accumulation of granular balls in the form of a dense cellular shaft.

Thus, DAI with a life expectancy of victims ranging from 7 to 13 days is characterized by clinically gross cerebral and focal neurological symptoms. With CT and MRI – the absence of focal lesions, a moderate increase in brain volume. Macroscopically – the presence of small focal hemorrhages in the deep structures of the brain; microscopically – multiple axonal balls in the areas of damage to the white matter.

**The third group.** The duration of the injury is from 7 to 13 days. It includes 7 observations (men – 3, women – 2 and children under 2 years old who were injured as a result of a sharp shake). Men and women received TBI as a result of falling from a height of their own height with their heads on a hard surface.

All the victims were treated after injury at the Republican Center of Neurosurgery.

In all cases, stem symptoms in the form of pupillary and oculomotor disorders, as well as pathological stop signs on both sides, pyramidal and extrapyramidal disorders were detected in the victims against the background of a comatose state. Meningial symptoms are noted in children, and in the absence of shell hemorrhages.

There was no ECHO-EG displacement of the median structures.

Hemodynamics remained stable.

CT and MRI – in one observation showed a normal picture of the brain. In other cases, CT showed a marked increase in brain volume with an increase in tissue density.

The immediate causes of death were pneumonia, cerebral edema. During macroscopic examination of the brain, small focal hemorrhages were recorded in the area of the ammonic horn, in the bridge and in the middle legs of the cerebellum.

When microscopy of the brain, both in the areas of the foci of bruises and in the area of hemorrhages, a picture of vascular neoplasms was observed, granular balls and small extravasates were detected.

Thus, DAI with a life expectancy of victims within 13 days is characterized by clinically gross stem and hemispheric neurological symptoms against the background of a comatose state; with CT and MRI – the absence of focal lesions, an increase in brain volume. Microscopically pronounced degenerative changes of axons in the area of damage to the white matter and the formation of granular balls.

**The fourth group.** The duration of the injury is from 14 to 28 days. It included 8 observations (5 men and 3 women; average age  $25.4 \pm 5.3$ ).

In all cases, the victims developed a coma from the moment of injury, which was assessed by the SHG from 4 to 6 points. All had gross hemispheric and stem symptoms. Meningial symptoms were detected in two victims in the absence of shell hematomas. ECHO-EG at admission to the hospital and in the dynamics of displacement of brain structures was not determined. Hemodynamics remained stable for all.

In CT, in three out of 8 cases, there were no changes in volume and density. In the rest, a moderate increase in brain volume and narrowing of the ventricular system were recorded.

The immediate cause of death in this group were: pneumonia (4), sepsis (3) and pulmonary heart failure (1), against the background of bronchiectatic disease.

The macroscopic picture was unchanged. Microscopy of the brain in the injury area showed gradual mixing of the necrosis focus with a glial-mesenchymal scar, profusely vascularized by newly formed vessels.

Thus, DAI with a life expectancy of victims within 28 days is characterized clinically by the transition of coma into a persistent vegetative state. The morphological picture is the organization of small focal and focal hemorrhages in the deep structures of the brain, pronounced degeneration of nervous tissue in the areas of injury and necrosis.

**The fifth and sixth groups** clinically and morphologically had no special differences, which made it possible to combine them. All the victims in these groups received treatment at the Republican Center of Neurosurgery of the Ministry of Health of the Republic of Uzbekistan.

Upon admission, in addition to coma, all the victims had severe focal neurological symptoms.

ECHO-EG during the post-traumatic period, there was no displacement of the median structures of the brain. Hemodynamics remained stable.

CT studies did not differ much from the data of previous groups of victims.

The cause of death was: pneumonia, sepsis, pulmonary embolism.

Macroscopically: in most of the observations, no special changes were detected in these groups.

In 3 observations of the 5th group and in the 2nd - sixth group of victims, small-point brown tassels occurred in the corpus callosum, the xiphoid nucleus and the roof of the midbrain during histological studies.

Thus, DAI in groups 5 and 6 of victims with a long period of survival after TBI is characterized by a clinically persistent vegetative state with the appearance of a syndrome of separation of the hemispheres, subcortical and stem parts of the brain.

Morphologically – the presence of brown cysts in the deep structures of the white matter, demyelinization of the white matter and pronounced degenerative changes in the nervous tissue.

#### **Conclusions:**

The information given in the previous sections allows us to state that DAI is quite isolated, one of the most severe forms of TBI and is characterized by severe neurological symptoms with an initial traumatic coma, turning into a persistent vegetative state with a detailed picture of the syndrome of separation of the large hemispheres, subcortical structures and the brain stem.

It should be noted that the morphological picture of DAI is characterized by minimal manifestations in the deep structures of the brain and widespread traumatic changes of axons in various parts of the brain.

Because of this, and also taking into account that questions of DAI (as a form of TBI) may arise during forensic medical examination in cases of non-fatal head injury, the basis for the study of axonal trauma should be based on the clinical and morphological principle, which allows not only to substantiate the regularity of the change of some phenomena by others during traumatic illness, but it is also more accurate to set their time limits.

This allows the medical examiner to determine not only the severity of the injury, but also the time of receiving a TBI.

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## FORMATION OF A HEALTHY LIFESTYLE IS A PATH TO IMPROVED HEALTH

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**Abstract.** *A healthy lifestyle helps us fulfill our goals and objectives, successfully implement our plans, cope with difficulties, and, if necessary, with colossal overloads. Good health, maintained and strengthened by the person himself, will allow him to live a long and joyful life. The main component of a person's lifestyle is his work, which represents the purposeful activity of a person aimed at creating material and spiritual values. A person's lifestyle must be subordinated, first of all, to his effective work activity. A working person lives in a certain rhythm: he must get up at a certain time, perform his duties, eat, rest and sleep.*

**Keywords:** *formation, healthy, lifestyle, path, improved, component, health.*

Relevance. A healthy lifestyle is an individual system of human behavior that provides him with physical, mental and social well-being in the real environment (natural, man-made and social) and active longevity. A healthy lifestyle creates the best conditions for the normal course of physiological and mental processes, which reduces the likelihood of various diseases and increases human life expectancy. Good health, maintained and strengthened by the person himself, will allow him to live a long and joyful life. [5] The main component of a person's lifestyle is his work, which represents the purposeful activity of a person aimed at creating material and spiritual values. A person's lifestyle must be subordinated, first of all, to his effective work activity. A working person lives in a certain rhythm: he must get up at a certain time, perform his duties, eat, rest and sleep. And this is not surprising - all processes in nature are subject to a strict rhythm to one degree or another: the seasons alternate, night follows day, day again comes to replace night. Rhythmic activity is one of the basic laws of life and one of the foundations of any work. A rational combination of elements of a lifestyle ensures more productive human work and a high level of health. The whole organism as a whole participates in human labor activity. The work rhythm sets the physiological rhythm: at certain hours the body experiences stress, as a result of which metabolism increases, blood circulation increases, and then a feeling of fatigue appears; at other hours and days, when the load is reduced, rest comes after fatigue, strength and energy are restored. Proper alternation of load and rest is the basis for high human performance. Now we need to dwell on the issue of rest. [2] Rest is a state of rest or active activity leading to restoration of strength and performance. The most effective way to restore performance is active rest, which allows you to rationally use your free time. Alternating types of work, a harmonious combination of mental and physical labor, and physical education ensure effective restoration of strength and energy. A person needs to rest daily, weekly on weekends, annually during the next vacation, using free time to strengthen physical and spiritual health. A healthy lifestyle is a set of forms and methods of everyday cultural activity of an individual, based on cultural norms, values, meanings of activity and strengthening the adaptive capabilities of the body and ensuring harmonious development, maintaining and strengthening health, high performance, and also allows you to reveal the most valuable qualities of the individual, necessary in the conditions of the dynamic development of our society[1]. Preserving the health of the younger generation is one of the most important social

tasks of society; in order to prepare highly qualified specialists, it is necessary to strengthen and form a healthy lifestyle and promote the working capacity of young people. Today, this category of the population is experiencing the negative impact of the environment, since physical and mental development coincides with the period of adaptation to new, changed living conditions, learning, and high mental stress. Adolescence may be critical to future health and illness because there is some evidence that habits learned during this period can be followed into adulthood. For example, alcohol habits during adolescence increase the likelihood of heavy consumption in adulthood, and food consumption during adolescence is an indicator of consumption in adulthood. For this reason, some chronic diseases may have their origin and disease progression in adolescence. To improve adolescent health, it is important to promote healthy behaviors at an early age, especially during adolescence. The main health behaviors associated with adolescents are physical activity, less time on multimedia, healthy eating and avoidance of alcohol and tobacco use, as well as caffeine/stimulant use, sleep deprivation, drug use, condomless sex and unhealthy relationships [5]. The results from the literature, conducted in different countries, indicate that currently the following are essential for modern student youth: money, education and profession, business career and pleasure. For the majority of modern youth, the desire for well-being, which is based on enrichment and success in life, achieved at any cost, sometimes at the expense of their individual health and the health of the people around them. [2] At the same time, the forms, methods, and teaching aids implemented in practice today do not allow us to fully ensure the implementation of a person-oriented approach to the formation of a healthy lifestyle for young people and do not meet the requirements for the training of a modern specialist. The reason for this situation is, on the one hand, insufficient promotion of a healthy lifestyle. Research on adolescent health habits has focused on the relationship between individual behavior and its health outcomes. Average values of healthy behavior decreased significantly in all countries from age 11 to age 15. Adilson Marques highlighted the fact that much work still needs to be done to promote healthy lifestyles and increase adolescents' awareness of the potential benefits to their health status. Given that it is known that health behaviors are established during this period of development, understanding how best to promote healthy lifestyles is critical during this stage of life. Research on adolescent health habits has focused on the relationship between individual behavior and its health outcomes. Average values of healthy behavior decreased significantly in all countries from age 11 to age 15. Adilson Marques highlight the fact that much work still needs to be done to promote healthy lifestyles and increase adolescents' awareness of the potential benefits to their health status. Given that it is known that health behaviors are established during this period of development, understanding how best to promote healthy lifestyles is critical during this stage of life. [3] The problem of developing a healthy lifestyle for young people is multifaceted. The younger generation studying in colleges, institutes and universities are supporters of a certain lifestyle, in which cigarettes, alcohol and drugs are the ideal. The results of the research conducted by the author Kobenko D.V. shows that the factors influencing the formation of a healthy lifestyle for young people are factors that improve health and worsen health Factors that improve health include: absence of bad habits, balanced nutrition, physical education and sports, morning exercises, study and rest regime, hardening of the body, the following positive emotions, absence of harmful factors in educational activities, walks in the fresh air, favorable climatic conditions life, a high level of preventive measures, timely and comprehensive medical care. Factors that improve health include: absence of bad habits, balanced nutrition, physical education and sports,

morning exercises, study and rest regime, hardening of the body, the following positive emotions, absence of harmful factors in educational activities, walks in the fresh air, favorable climatic conditions life, a high level of preventive measures, timely and comprehensive medical care. Factors that worsen health include: improperly organized daily routine, bad habits, stressful situations, intensification of the educational process, mental overload, unbalanced nutrition, physical inactivity, unsatisfactory sanitary and hygienic conditions of classrooms, poor material resources, lack of constant medical supervision. [4] To form a healthy lifestyle, it is necessary to find out what causes an unhealthy lifestyle and what contributes to maintaining a healthy lifestyle. To determine the cause, preventive work is being carried out in many places to promote a healthy lifestyle, as well as to identify the physical, social and psychological health of young people. A diagnostic analysis of the state of their physical, social and mental health confirms that all students have different lifestyles, different health, and different goals. To create a healthy lifestyle, you must follow the following daily routine:

- it is advisable to get up at the same time every day;
- try to regularly do morning exercises;
- eat at set hours;
- alternate mental and physical work;
- observe the rules of personal hygiene;
- work and sleep in a well-ventilated area, go to bed at the same time.

The formation of a healthy lifestyle in the educational process is the most important task of society. In this regard, it is necessary to encourage young people to preserve and improve health, to promote and support a culture of a healthy lifestyle. It is necessary to introduce into the educational process knowledge aimed at developing a healthy lifestyle, starting from a very early age, and engage in self-education of the individual. Thus, organized propaganda of medical and hygienic knowledge helps reduce the level of diseases and helps raise a strong generation. The formation of a healthy lifestyle in the educational process is the most important task of society. In this regard, it is necessary to encourage young people to preserve and improve health, to promote and support a culture of a healthy lifestyle. It is necessary to introduce into the educational process knowledge aimed at developing a healthy lifestyle, starting from a very early age, and engage in self-education of the individual. Thus, organized propaganda of medical and hygienic knowledge helps reduce the level of diseases and helps raise a strong generation. In the formation of a healthy lifestyle, the most important role should be the role of educational programs aimed at preserving and strengthening the health of young people, the formation of active motivation to care for their health and the health of those around them. Protecting our own health is the obligation of each of us, and this obligation should not be transferred to others. After all, it happens that by the age of 30 a person brings himself to a hopeless state through an incorrect lifestyle. And therefore, from an early age it is necessary to take care of your health, because “the disease will not catch up with the quick and agile” [5]

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## THE INTENSITY OF RESPIRATION IN PLANTS DEPENDS ON THE ENVIRONMENT, SEASONS, TEMPERATURE, HUMIDITY DEPENDING ON THE CHANGE

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**Abstract.** "During the production of aluminum by electrolysis, various types of raw materials are released, as well as solid and gaseous substances, harmful substances are observed that are released during the operation of production enterprises, which have a negative impact on the environment, and have a harmful effect on mulberry leaves. and other plants.

**Keywords:** gaseous substance, mulberry, leaf, aluminum plant, fluorine, chemical, biological, cocoon, chlorine.

The aluminum plant mainly releases toxic fluorine compounds into the environment (Konyukhov 1991). It is known that fluorinated compounds downwind from the aluminum plant have a harmful effect on plants 60-70 km away, affecting their germination, growth and development (Norboev, Samatova et al. 1991, Khaidarov et al. 1991).

The mulberry leaf plays the role of an accumulator that collects the toxic hydrogen fluoride from the aluminum plant (Azimjonova et al.).

In the essence of the decision of the President of the Republic of Uzbekistan dated January 12, 2018 "Measures for the further development of the sericulture industry of the Republic" PQ-3472, the task of establishing orchards from good varieties of mulberry trees is envisaged, so we aimed to conduct experiments with mulberry trees.

The process of respiration is closely related to the process of metabolism in living organisms. If breathing stops for a minute, the order of vital processes occurring in a living organism is disrupted, and as a result, the organism dies. In the process of respiration, that is, in the oxidation of organic substances, part of the energy released is spent in the form of heat and light. About 40-50% of energy is stored in ATF molecules and is used in life activities of organisms.

N.T. Based on Saussure's reasoning, he conducted quantitative analyzes and proved that in the dark, plants release as much carbon dioxide as they absorb oxygen.

Therefore, "During the production of aluminum by electrolysis method, various types of raw materials and solid and gaseous substances are released, harmful substances released during the operation of production enterprises that have a negative impact on the environment are observed to have a harmful effect on mulberry leaves and other plants.

Hydrogen fluoride gas emitted from aluminum plants pollutes the environment by 50% of fluorine in the production of phosphorite (apatite) in industry. Sodium fluoride is more toxic than hydrogen fluoride, and its inhalation is extremely dangerous for the mulberry tree and its leaf productivity, which has been observed to be more active than other plants.

We observed and determined the changes in the respiration intensity of plants, especially the mulberry tree, depending on the environment, seasons, temperature, irrigation in Sariosia district of Surkhandarya region.

The results of the experiments showed that the intensity of respiration in all analyzed plants decreases by 82% from June 10-15

***Changes in respiration intensity in mulberry leaves growing under the influence of an aluminum plant.***

№	The name of the plant	Control Jarkurgan district	Experience Dashnabad, Sariosia district	%
1.	Mulberry leaf	136+ 3.5	102+2.4	82%

Seasonal variation of respiration intensity in plants growing under the influence of the aluminum plant (1 gr. per wet leaf in 1 hour, on the basis of moles) The experiment was conducted in the fields of Sariosia district. In our experiments, mulberry leaves collected in field conditions were brought in bags made of black cloth. Immediately after removing the bags from the leaf, the results of the reaction were checked using experimental methods carried out under field conditions.

***Changes in the intensity of respiration during the vegetation period.***

***control***

The name of the plant	April	May	June	July	August	September
Mulberry leaf	96.5+5.4	119.7+5.2	138+3.3	132.6+2.5	126.8+4.0	113.0+5.0

***Comparative***

The name of the plant	April	May	June	July	August	September
Mulberry leaf	82.9+5.3	94.5+3.4	85+5.1	80.0+3.9	71.4+2.2	68.4+1.0

Experiments were carried out on the example of mulberry seedlings planted with different amounts of solutions of substances such as succinic acid, chiberylene, and auxin from the stimulator, which were taken from the aluminum plant. The result of the experiment showed that the solution of succinic acid 15-20 mg/l brings the intensity of respiration in the mulberry leaf closer to the control (comparative).

A.N. Bach (1897) created the peroxide theory of slow oxidation. According to him, oxygen taken from the air cannot directly and directly oxidize organic matter. Since oxygen in molecular form is an “inert” compound, it can oxidize organic substances only after entering the active atomic state. Anaerobic respiration occurs when plant roots or seeds are immersed in water.

Academician S.P. Kostichev called this process the process of anaerobic respiration, taking into account the formation of alcohol in plant tissues during respiration without oxygen. In plants

adapted to a container of water, the respiration process continues without interruption due to the oxygen accumulated in special tissues. But in most terrestrial higher plants, the absence of plants is observed due to the action of alcohol, which is formed when anaerobic conditions are maintained for a long time.

In 1991, I.V. Palladin developed the theory of oxidation of organic substances under anaerobic conditions. In his opinion, in living organisms Water and organic matter must contain compounds that release hydrogen. I. V. Palladin called substances that attach hydrogen to themselves “respiratory pigments.”

When we checked the respiration rate of a mulberry leaf, we saw that respiration slows down as autumn approaches. It has been noticed that the respiration rate of mulberry leaves varies depending on the season.

From the above data, it is clear that the amount of fluorine compounds on earth is increasing year by year, that is, compared to the first years of our century, it has increased several times.

Development of national economy and agriculture, satisfaction of material and spiritual needs of mankind must deal with fluorine compounds.

So, in conclusion, studying the consequences of the harmful effects of fluorine compounds on living organisms is considered one of the problems of science in the field of agriculture.

### **Conclusion**

In conclusion, the intensity of respiration in plants is influenced by various environmental factors such as seasons, temperature, humidity, and other changes. Respiration is an essential metabolic process in plants that involves the breakdown of organic molecules, releasing energy for various cellular activities. The rate of respiration can fluctuate depending on the prevailing environmental conditions. Seasonal variations play a significant role in plant respiration. During the warmer months of spring and summer, when temperatures are generally higher, respiration rates tend to increase. This is because higher temperatures accelerate metabolic processes, including respiration. In contrast, during colder seasons like autumn and winter, respiration rates may decrease due to reduced metabolic activity in response to lower temperatures. Temperature is a crucial factor affecting respiration in plants. As temperatures rise, the metabolic rate of plant cells increases, leading to enhanced respiration. Conversely, as temperatures drop, respiration slows down. However, extreme temperatures can have detrimental effects on respiration, as very high or very low temperatures can disrupt cellular processes and hinder respiration. Humidity levels can also impact plant respiration. High humidity can limit the evaporation of water from plant tissues, which can lead to reduced transpiration rates. Consequently, this may result in decreased respiration rates since respiration and transpiration are interconnected processes. On the other hand, low humidity levels can increase the rate of transpiration, which may influence respiration accordingly.

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## CELLULOLYTIC AND ANTIMICROBIAL PROPERTIES OF SOME BACTERIA ISOLATED FROM DOMESTIC ANIMALS

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**Abstract.** *In recent years, there has been an interest among researchers in the search for new microorganisms with probiotic properties. Among them, many studies in this regard are devoted to Bacillus subtilis, which is widespread in nature and is not pathogenic for animals and humans. Some results of a study of the biological properties and antagonistic activity of Bacillus subtilis are presented, which was carried out with the aim of developing methodological approaches to identifying strains with antagonistic activity against certain types of opportunistic microorganisms and their further use as probiotic preparations. According to cultural, morphological and biochemical characteristics, the studied bacterial strains corresponded to the species characteristics of Bacillus subtilis and were confirmed by genetic identification using the 16 S rRNA method. As a result of the experiments, the antagonistic activity of Bacillus subtilis strains against Staphylococcus aureus, Candida albicans, and E. coli was established. The growth inhibition zone of these crops ranged from 15 to 25 mm. The studied Bacillus subtilis strains can be proposed for use as probiotics.*

**Keywords:** *microorganisms, cellulose, probiotics, antimicrobial activity, opportunistic bacteria, carboxymethylcellulose, cellobiose.*

### INTRODUCTION

There are many questions about increasing productivity, which are determined by the physiological and biological characteristics of animals. Organizing the establishment of adequate, high-quality nutrition and the creation of a new feed base for livestock farming, eliminating the causes of shortage and inferiority of feed are serious problems, the solution of which would help to increase the safety and productivity of farm animals.

A promising area of microbial biotechnology is the development of probiotic preparations for feed use. At the same time, much attention is paid to probiotics with cellulolytic properties in connection with the problems of domestic feed production. In recent years, the structure of feed raw materials in the country has undergone significant changes, which have led to the forced introduction of difficult-to-digest and low-calorie components (bran, rye, oats, barley) into feed. Of great importance is the refusal to use meat and bone meal in the feed of farm animals and replacing it with protein of plant origin (soybean meal, corn gluten), the commercial forms of which contain fiber impurities. This leads to an increase in the proportion of difficult-to-digest fiber in feed and poses the challenge of increasing its absorption, since fiber has a significant impact on the use of dietary nutrients by animals. The accumulation of plant waste enriched with fiber (brewer's grain, various types of meal, pulp, etc.) prompts attempts to utilize it by introducing it into the feed of farm animals, which also necessitates the development of drugs that stimulate the digestion of fiber [1;2]. Therefore, it is important to study the internal food chains of herbivorous animals with a high degree of digestibility of cellulose fibers, to isolate from them cellulolytic and other symbiont bacteria involved in digestion, and to develop biotechnology for the industrial production and use of such microorganisms. Cereal crops (oats, rye, barley, wheat, etc.) are widely used for the production of feed used in livestock farming. However, these nutrient sources contain non-starch polysaccharides (NSPs), which negatively affect feed digestibility. The

entry of soluble NPS with feed into the gastrointestinal tract of monogastric animals (poultry) leads to the formation of viscous jelly-like substances that impede the access of digestive juices to nutrients, impairing their digestibility [2, 3, 4]. In this regard, difficulties arise in the assimilation of polysaccharides, cellulose, and feed, respectively.

Studying the characteristics of the cellulolytic activity of rumen symbiont microorganisms is necessary to improve digestion and absorption of fiber in ruminants, and is also important for the physiological basis of their nutrition [10,15,17].

The main problem is that cellulose is very resistant to various influences. Therefore, there is a constant search for new strains of microorganisms with a higher level of cellulase biosynthesis, and biotechnological methods for using cellulose and, first of all, cellulose-containing crop waste and organic fertilizer are being developed. Such developments are impossible without the search for new strains that produce cellulolytic enzymes [16,18]. Our research is aimed at searching for bacteria with cellulolytic activity from the rumen of some domestic animals (rabbits, domestic goats and birds), and some insects. So, the purpose of this work is to isolate microorganisms-bacteria from the rumen of animals and select strains with cellulolytic activity.

More than 20 isolates of various bacteria have been isolated from animals. Opportunistic bacteria were excluded from the list of bacteria studied. The dominant group among all isolated microorganisms are bacteria of the genus *Bacillus*. The selected strains were identified as representatives of the species *Bacillus subtilis*, *Bacillus megaterium*, *Bacillus pumilis*. To identify the species of microorganisms, a Bruker MicroFlex LR MALDI-TOF mass spectrometer and specialized Maldi Biotyper software (Bruker) were used. These bacteria were identified using molecular genetic analysis of the nucleotide sequence of the 16S ribosomal RNA gene and their harmlessness was determined by the State Veterinary Service of the Republic of Uzbekistan [19]. Cellulolytic bacteria of the genus *Bacillus*, which are an important link in the carbon cycle in nature and an essential part of the ecosystem, are of great interest. In this regard, it seems promising to study the possibility of using them as a basis for obtaining a new producer of cellulolytic enzymes. Previously, we conducted studies to determine the endoglucanase activity of local termites *Anacanthotermes turkestanicus*; strains isolated from insects showed more active cellulase activity than animal bacteria [20].

**Research methods.** The work used strains of microorganisms capable of biodegrading cellulose, isolated from the rumen of domestic animals.

Cultivation of bacteria was carried out in flasks on rocking chairs for 2 days at a temperature of 37°C in MPB (meat-peptone broth) medium containing: meat extract, dry enzymatic peptone, sodium chloride. 0.5% sodium salt of carboxymethylcellulose (Na-CMC) and cellobiose were added as a carbon source. The formation and activity of enzymes of the cellulase complex were assessed by their effect on substrates: on Na-CMC - endoglucanases, on cellobiose - cellobiases ( $\beta$ -glucosidases). Screening for bacterial activity was carried out in two stages. The first stage consisted of direct selection of cultures of various bacterial species from their inoculations on the surface of an agar medium with various cellulose-containing substrates as a carbon source. Based on the diameter of the color clearing zones around the grown colonies after staining the dishes with Congo red dye, the activity of enzymes produced by the cultures was judged [11,13]. The activity of enzymes in strains selected as a result of primary screening was assessed by the ability to hydrolyze soluble, medium-viscosity carboxymethylcellulose and cellobiose.

**Determination of total reducing sugars (TS)** Among the various methods for the quantitative determination of TS, the Somogyi-Nelson method and the 3,4-dinitrosalicylic acid (DPS) method are most widely used. Our studies used the Somogyi-Nelson method. [5,7,14].

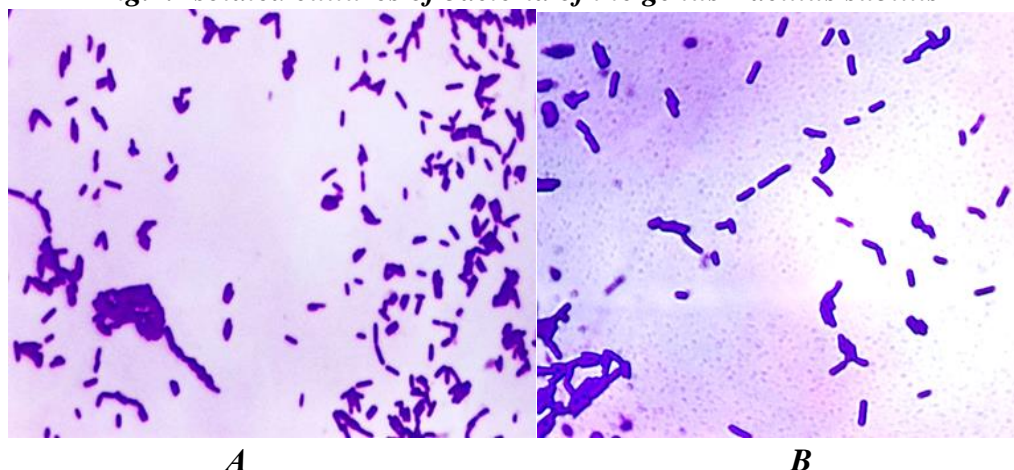
Results and its discussion.

Isolation of strains of microorganisms promising for use as producers of cellulolytic enzymes from the rumen of domestic animals was carried out at the Department of Animal Physiology of Samarkand University. Cultures of microorganisms were isolated by seeding directly from the submitted samples. Liquid media were used as accumulation media for isolating microorganisms. Strains were selected for their ability to hydrolyze CM cellulose and cellobiose.

As a result, 10 bacterial strains exhibiting cellulase activity were isolated. Based on the data obtained from the study of the physiological and biochemical properties of isolated cellulolytic microorganisms [12], according to Bergey's determinant [13], 6 strains based on a set of characteristics were identified as representatives of the genus *Bacillus* (gram-positive straight rods forming endospores, motile, aerobes or facultative anaerobes, 2 catalase-positive cultures), which were selected for further work. The selection of strains of spore-forming bacteria as potential producers of cellulases when sowing cultures on the surface of agar media corresponding in composition showed that cultures that are capable of forming active cellulases gave clearing zones around the colonies, clearly visible after staining with a dye (Fig. 1-3).



**Fig.1. Isolated cultures of bacteria of the genus *Bacillus subtilis***

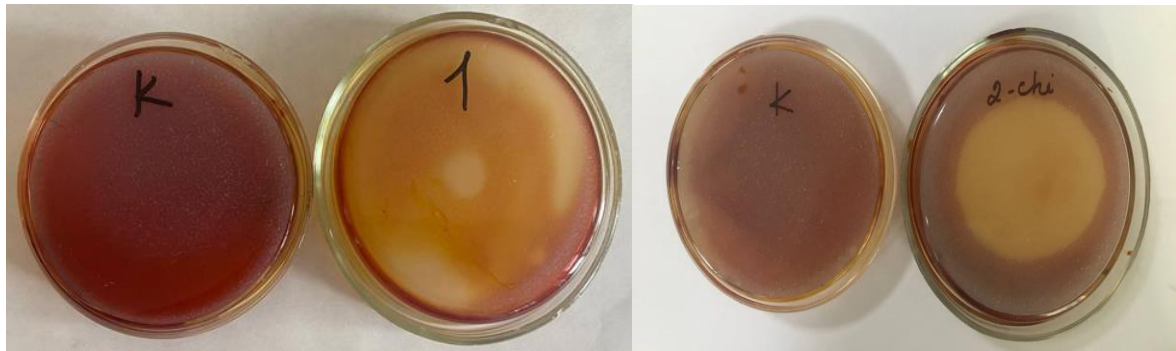


**Fig.2. Isolated strains of bacteria from the gastric juice of a domestic goat *Bacillus megaterium* (A); *Bacillus pumilis* (B).**

K (control) - there is no zone, cups with clarification show cellulose hydrolysis.

Starch hydrolysis was studied on potato peptone agar. Petri dishes with seeded agar were filled with Lugol's solution after 48 hours of incubation at 37°C. Light zones around the crops indicated starch hydrolysis.

Methods for testing sensitivity to antibiotics. (Disk method) [21].

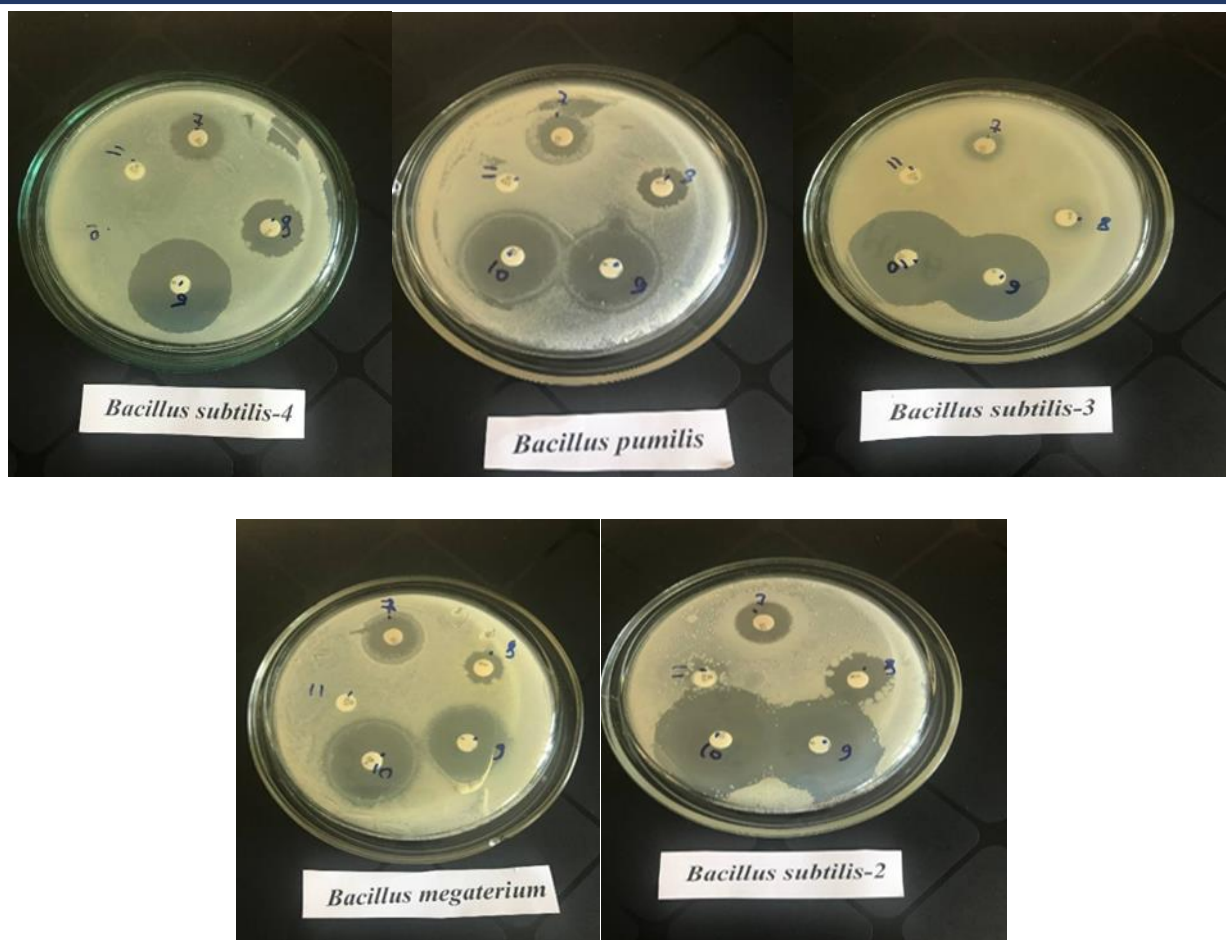


**Fig. 3. Zones of hydrolysis of Na-CMC by bacilli cultures.**

The sensitivity of the isolated bacteria to various antibiotics was determined: rifampicin, ofloxacin, cefotaxin, ampicillin, azithromycin, erythromycin, tetracycline, gentamicin, chloramphenicol, ciprofloxacin. Antibiotic sensitivity testing allows us to determine the resistance and sensitivity of microorganisms to drugs. Special disks of filter paper, which are impregnated with various antibiotic solutions, are placed on top of colonies of microorganisms on a nutrient medium. The presence or absence of bacterial growth reveals the degree of sensitivity to a spectrum of antibiotics.

**Table 1.**

Antibiotiklar	Bacillus subtilis-1	Bacillus subtilis-2	Bacillus subtilis-3	Bacillus subtilis-4	Bacillus megaterium	Bacillus pumilis
Rifampicin	16	20	4	10	7	9
Ofloxacin	30	30	26	26	22	20
Cefotaxime	0	0	0	0	0	0
Ampicillin	0	0	0	0	0	0
Azithromycin	15	12	10	25	25	
Erythromycin	0	0	0	0	0	0
Tetracycline	14	18	8	10	14	10
Gentamicin	0	0	0	0	24	26
Chloramphenicol	25	20	25	25	25	
ciprofloxacin	32	32	28	0	24	22



**Fig. 4. Determination of sensitivity to antibiotics. (Disk method).**

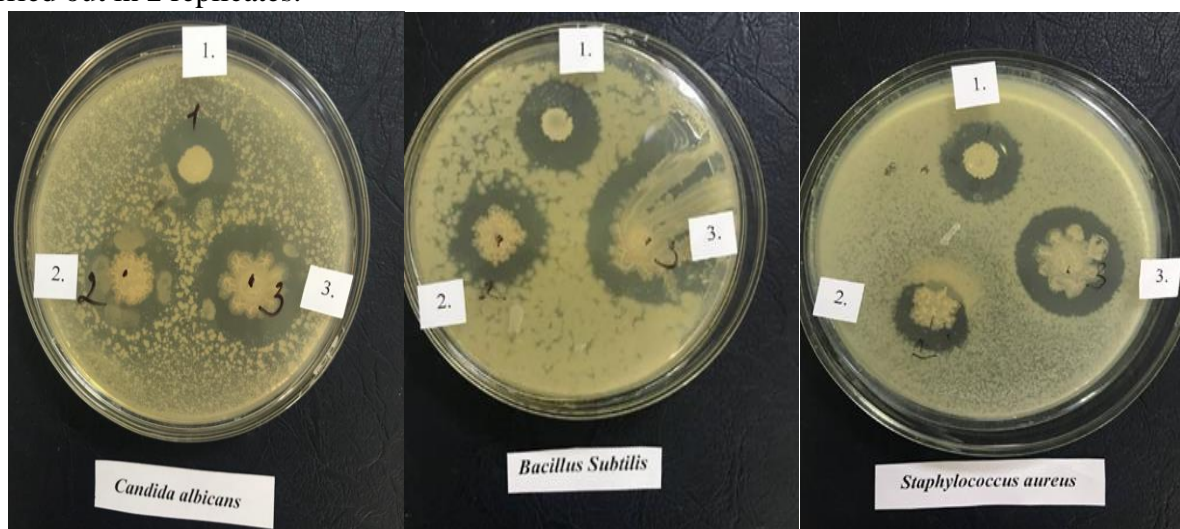
Antibiotic susceptibility studies have shown high sensitivity to ofloxacin, chloramphenicol and ciprofloxacin. (Table 1.) The zone of growth inhibition ranged from 25 to 32 mm. It should be noted that all the studied cultures showed resistance to the antibiotics cefotaxin, ampicillin, erythromycin and gentamicin. *Bacillus megaterium* turned out to be sensitive to gentamicin. The sensitivity zone was 24 mm.

Primary screening showed that in most of the studied strains, hydrolyzing soluble CMC, they have the ability to form a complex of extracellular cellulases. Thus, strains of the species *Bacillus subtilis*, *Bacillus megaterium*, *Bacillus pumilis* had the ability to form extracellular enzymes that break down Na-CMC.

*Methods for determining the antimicrobial effect of some cellulolytic strains.*

Antimicrobial activity was studied using the droplet method [22]. For this purpose, spore cellulolytic bacteria were incubated in MPB broth for 48 hours. A 5  $\mu$ l sample of these bacteria was then dropped onto soft Mueller-Hinton agar. The inoculated plates were left at room temperature for 30 minutes and incubated at 37°C for 48 hours. The experiments used opportunistic microorganisms stored in the collection of the Institute of Microbiology of the Academy of Sciences of the Republic of Uzbekistan, as well as kindly provided by the Department of Microbiology, Immunology and Molecular Genetics of the Center for the Development of Professional Qualifications of Medical Workers. Selected opportunistic bacterial strains were cultivated on MPA media, and yeast of the genus *Candida* on Sabouraud media. After incubation, isolates grown in broth at 37°C for 48 hours were adjusted to 0.5 McFarland turbidity in 0.85% saline. After thorough mixing, 7 ml of soft agar was slowly poured onto the surface of Petri dishes inoculated with spore bacteria. After cooling the agar, the Petri dishes were incubated at 28-30°C.

After incubation, the diameters of the zones of grown colonies were measured. The study was carried out in 2 replicates.



**Fig. 5. Determination of the antimicrobial activity of some isolated strains of cellulolytic bacteria of the genus *Bacillus subtilis*, *Bacillus pumilis* (diameter zones of antimicrobial action are indicated in mm)**

**Table 2.**

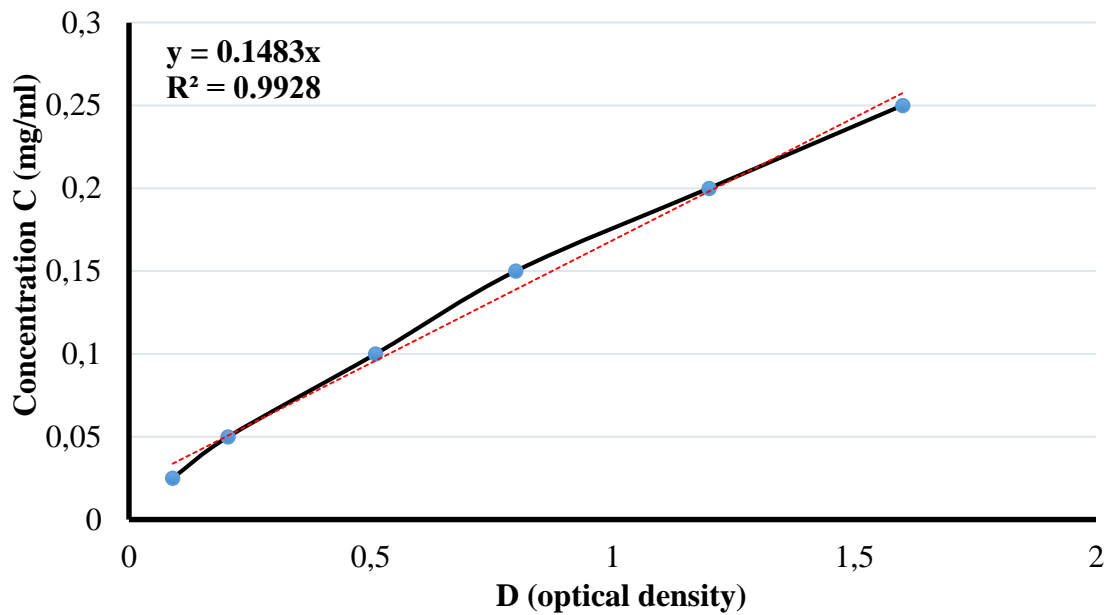
Isolated strains	<i>Staphylococcus aureus</i>	<i>Candida albicans</i>	<i>Bacillus subtilis</i>	<i>E.coli</i>
<i>Bacillus subtilis</i> - (термит)	17мм	20мм	25мм	15мм
<i>Bacillus pumilis</i> -(домашняя коза)	15мм	15мм	23мм	12мм
<i>Bacillus subtilis</i> - (кролик)	25мм	22мм	25мм	17мм

As a result of the experiments, the antagonistic activity of *Bacillus subtilis* strains against *Staphylococcus aureus*, *Candida albicans*, and *E. coli* was established. The growth inhibition zone of these crops ranged from 15 to 25 mm. The studied strains of the genus *Bacillus* can be proposed for use as probiotics for animals.

Cellulase activity was determined by a calorimetric method based on the determination of reducing sugars (RS) formed by the action of enzymes of the cellulolytic complex on the substrate - Na-CMC and cellobiose. The method is based on the quantitative determination of reducing sugars formed as a result of the action of the enzyme cellulase on the substrate sodium salt of carboxymethylcellulose (Na-CMC), cellobiose, at a temperature of 50 °C. The amount of reducing sugars was determined using the Somogyi-Nelson method [6-9].

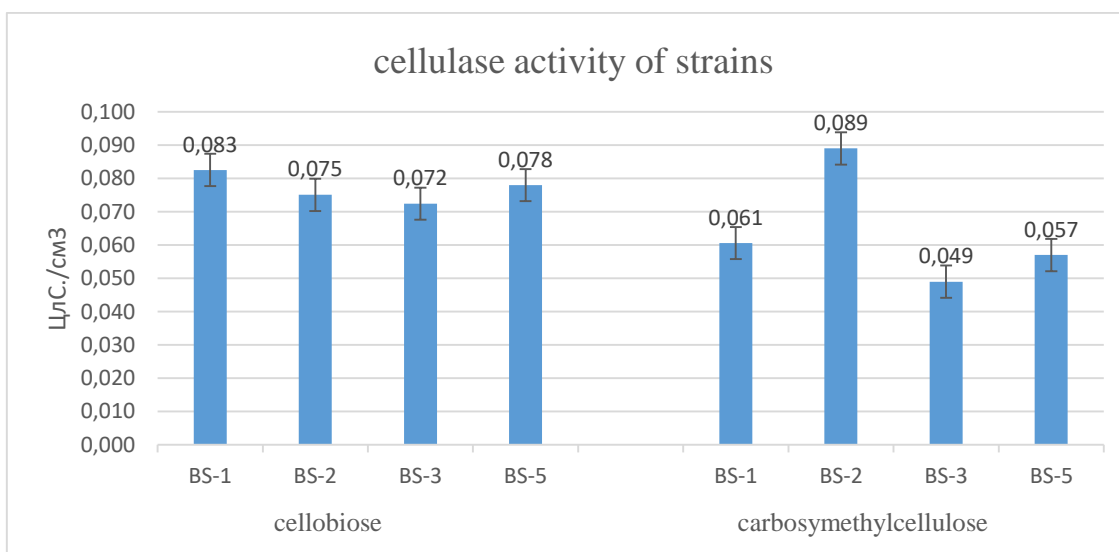
*Calibration curve for determining the amount of reducing sugars*

Calculations are performed using a calibration curve. When creating a calibration curve, D (optical density) values are entered on the X-axis and concentration values are entered on the Y-axis. The absorbance of the samples was measured on a Shimadzu UV-1800 spectrophotometer at wavelength  $\lambda = 610$  nm. The results obtained were processed using Excel. The arithmetic mean (M), standard deviation ( $\pm m$ ) and statistical significance (R) were examined. Results less than  $R < 0.05$  were considered statistically significant.



**Table 3.**

Experienced options, samples №	Cellulase activity (CIC/cm <sup>3</sup> )
(cellobiose)	
BS-1	0,083±0,003
BS-2	0,075±0,002
BS-3	0,072±0,003
BS-4	0,078±0,0025
(carboxymethylcellulose)	
BS-1	0,061±0,0016
BS-2	0,089±0,001
BS-3	0,049±0,0013
BS-4	0,057±0,0027



## CONCLUSIONS

Studies determining the degree of sensitivity of the studied cellulolytic strains to a range of antibiotics showed high sensitivity to ofloxacin, chloramphenicol and ciprofloxacin. The growth inhibition zone is up to 32 mm. It should be noted that all the studied cultures showed resistance to the antibiotics cefotaxin, ampicillin, erythromycin and gentamicin. This indicates that bacteria isolated from domestic animals are resistant to these antibiotics. These antibiotics cannot be used to treat animals.

The first stage of screening showed that the majority of the studied strains hydrolyze soluble CMC and cellobiose. Most of the studied bacilli strains synthesized endoglucanase and cellobiase. Culture No. 2, which was isolated from the rumen of a domestic goat, had the highest synthesis of endoglucanase. Endoglucanase activity was  $0.089 \pm 0.001$  (CIC/cm<sup>3</sup>). All cultures had the highest synthesis of cellobiase. Strain No. 1 has a  $\beta$ -glucosidase synthesis of  $0.083 \pm 0.00$  (CLS/cm<sup>3</sup>) (Table 2). Cellulase capacity (CIC) is calculated in the analyzed sample in units of CIC/g or units of CIC/cm<sup>3</sup>.

Thus, as a result of screening studies, 4 strains of bacteria of the genus *Bacillus* belonging to *Bacillus subtilis*, *Bacillus megaterium*, *Bacillus pumilis* have endoglucanase and cellobiase activity. When determining the cellulase activity of cultures, all studied strains had the highest synthesis of  $\beta$ -glucosidase. All studied cultures also have endoglucanase activity. The studies carried out confirmed the presence of endoglucanase and cellobiase activity in all 4 selected bacterial cultures. These strains can be used in further biotechnological research as part of biological products used as a feed additive for farm animals and for the treatment of organic and plant waste. Further research is planned using these bacteria in feed additives to determine some of the physiological processes of digestion in domestic animals.

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## PHYSIOLOGY OF THE ACT OF URINATION. STRESS INCONTINENCE IN WOMEN

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**Abstract.** *The anatomic structures that forestall stress incontinence, urinary incontinence during elevations in belly pressure, can be divided into two systems: a sphincteric system and a supportive system. The motion of the vesical neck and urethral sphincteric mechanisms at rest constrict the urethral lumen and hold urethral closure strain greater than bladder pressure.*

**Keywords:** *urethral closure; urination; vascular tissues; incontinence.*

The striated urogenital sphincter, the easy muscle sphincter in the vesical neck, and the circular and longitudinal smooth muscle of the urethra all make a contribution to closure pressure. The mucosal and vascular tissues that encompass the lumen furnish a hermetic seal, and the connective tissues in the urethral wall additionally aid coaptation. Decreases in striated muscle sphincter fibers take place with age and parity, but the other tissues are no longer properly understood. The supportive hammock under the urethra and vesical neck offers a company backstop towards which the urethra is compressed during increases in stomach strain to hold urethral closure pressures above rapidly increasing bladder pressure. The stiffness of this supportive layer is presumed to be essential to the degree to which compression occurs. This aiding layer consists of the anterior vaginal wall and the connective tissue that attaches it to the pelvic bones thru the pubovaginal element of the levator ani muscle and additionally the tendinous arch of the pelvic fascia. Activation of the levator muscle at some point of stomach pressurization is essential to this stabilization process. The integrity of the connection between the vaginal wall and tendinous arch also plays an essential role. Urinary incontinence is a common situation in women, with occurrence ranging from 8.5% to 38% relying on age, parity, and definition.<sup>1, 2</sup> Most ladies with incontinence have stress incontinence,<sup>3</sup> which is handled the use of conservative remedy or surgery. Despite the common incidence of this problem, there have been few advances in our appreciation of its motive in the previous 40 years. Most of the many surgical procedures for alleviating stress incontinence contain the precept of improving bladder neck support.<sup>4</sup> five Treatment determination primarily based on specific anatomic abnormalities has awaited identification in each case of the muscular, neural, and connective tissues involved.

Understanding how the pelvic ground structure/function relationships supply bladder neck guide can help information remedy choice and effect. For example, if for the duration of a vaginal start a girl has misplaced the parts of her pelvic muscles that impact continence, then pelvic muscle workouts are unlikely to be effective. This report therefore critiques purposeful anatomy and the outcomes of age on urethral support and the urethral sphincter and clarify what is known about the extraordinary constructions that have an effect on stress continence. This mechanistic data should assist information research into pathophysiology, therapy selection, and prevention. Urethral closure strain must be increased than bladder pressure, each at relaxation and all through will increase in belly pressure, to hold urine in the bladder. The resting tone of the urethral muscle mass maintains a favorable stress relative to the bladder when urethral strain exceeds bladder pressure. During things to do such as coughing, when bladder strain increases a number of times higher than

urethral pressure, a dynamic process increases urethral closure pressure to enhance urethral closure and hold continence. Both the magnitude of the resting stress in the urethra and the make bigger in strain generated in the course of a cough determine the strain at which leakage of urine occurs. Although evaluation of the diploma of resting closure stress and pressure transmission offers beneficial theoretical insights, it does not exhibit how specific accidents to the man or woman element structures affect the passive or active factors of urethral closure. A distinctive examination of the sphincteric closure and the urethral assist subsystems is required to understand these relationships. The dominant element in the urethral sphincter is the striated urogenital sphincter muscle, which incorporates a striated muscle in a round configuration in the center of the urethra and strap-like muscle mass distally. In its sphincteric portion, the urogenital sphincter muscle is intermixed with a few circular clean muscle cells and surrounds a well-developed layer of longitudinal muscle and the mucosal vascular core. Support of the urethra and vesical neck is decided by using the endopelvic fascia of the anterior vaginal wall thru their fascial connections to the arcus tendinous fascia pelvis and connection to the medial component of the levator ani muscle.

It is our working hypothesis that each of these factors contributes to continence. Constriction of the urethral sphincter keeps urine in the bladder at rest. During increases in abdominal pressure, the vesical neck and urethra are compressed to a closed position when abdominal stress exceeds urethral pressure. The stiffness of the supportive layer under the vesical neck offers a backstop against which stomach pressure compresses the urethra. This anatomic division mirrors the 2 aspects of pelvic flooring function relevant to stress incontinence: urethral closure strain at relaxation and the amplify in urethral closure brought about through the impact of stomach pressure. Urinary incontinence symptoms are enormously everyday among women, have a great effect on health-related high-quality of existence and are associated with big private and societal expenditure. Two most important types are described: stress urinary incontinence, in which urine leaks in association with bodily exertion, and urgency urinary incontinence, in which urine leaks in association with a unexpected compelling want to void.

Women who journey each signs and symptoms are regarded as having blended urinary incontinence. Research has revealed overlapping viable causes of incontinence, which includes dysfunction of the detrusor muscle or muscles of the pelvic floor, dysfunction of the neural controls of storage and voiding, and perturbation of the nearby surroundings within the bladder. A full diagnostic contrast of urinary incontinence requires a clinical history, physical examination, urinalysis, assessment of pleasant of lifestyles and, when preliminary treatments fail, invasive urodynamics. Interventions can encompass non-surgical preferences (such as way of life modifications, pelvic ground muscle coaching and drugs) and surgical alternatives to support the urethra or increase bladder capacity. Future instructions in lookup may also increasingly goal foremost prevention via understanding of environmental and genetic dangers for incontinence. Urinary incontinence is the grievance of involuntary loss (leakage) of urine<sup>1</sup>. The condition takes place in both sexes, but is a whole lot greater normal in women. Although some overlap in pathophysiology is evident between sexes, incontinence in guys is frequently a consequence of prostatic expansion or from damage to continence mechanisms at some point of surgical procedure or radiotherapy for prostate cancer. By contrast, incontinence in women is typically associated to dysfunction of the bladder or pelvic ground muscles, with such dysfunction frequently bobbing up

at some stage in being pregnant or childbirth, or at the time of menopause. This Primer focuses on girl urinary incontinence because of its greater incidence and special pathophysiology.

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# IMPROVING ALGORITHMS FOR CALCULATING THE COST OF MEDICAL SERVICES FOR IMPLEMENTING STATE HEALTH INSURANCE

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**Abstract.** *With the development of market relations and the growing demands of the population for the quality and volume of medical care, there is a lack of funding in many, including developed countries of the world. Healthcare is one of the high-cost industries in modern economic conditions. Even in industrialized countries, health care cannot be both cost-effective and accessible to the entire population. The system of estimated financing of the healthcare sector operating in the Republic of Uzbekistan is based on outdated mechanisms that do not correspond to international practice, which leads to inefficient use of financial resources and chronic underfunding of the industry.*

**Keywords:** *algorithm, calculation, medical services, implementation, state health insurance.*

**Introduction.** With the development of market relations and the growing demands of the population for the quality and volume of medical care, there is a lack of funding in many, including developed countries of the world. Healthcare is one of the high-cost industries in modern economic conditions [3]. Even in industrialized countries, health care cannot be both cost-effective and accessible to the entire population [4]. The system of estimated financing of the healthcare sector operating in the Republic of Uzbekistan is based on outdated mechanisms that do not correspond to international practice, which leads to inefficient use of financial resources and chronic underfunding of the industry. With the introduction of market mechanisms, including voluntary health insurance, paid medical services and the development of the private healthcare sector in the healthcare system, patients' choice of medical institutions begins to depend on their cost [6]. This may be the reason for directing the flow of consumers of medical services with weak ability to pay towards inexpensive, but not always effective services. Therefore, it is important to determine what causes the difference in prices in medical institutions that provide similar services and are often located in the same territory [7].

With the aim of providing accessible healthcare services to all citizens, many countries have implemented state health insurance programs. These programs often cover a wide range of medical services, ensuring that individuals receive the necessary care without financial burden. However, accurate and efficient cost calculation algorithms are crucial for the successful implementation of such programs.

Calculating the cost of medical services is a complex task that involves various factors, including the type of service, healthcare provider fees, geographical location, and prevailing market rates. The accuracy of these calculations directly impacts the financial sustainability of state health insurance programs and the equitable distribution of resources. Therefore, improving algorithms for cost calculation is essential for achieving efficiency and accessibility in healthcare.

One key objective of enhancing cost calculation algorithms is to accurately determine the fair and reasonable reimbursement rates for healthcare providers. Inaccurate or outdated algorithms may lead to either underpayment, discouraging providers from participating in the state health insurance program, or overpayment, straining the program's financial resources. By developing advanced algorithms that consider relevant factors and dynamically adjust reimbursement rates, the system can ensure that healthcare providers are adequately compensated while maintaining financial sustainability.

**Purpose of the study.** Scientific substantiation and implementation of modern methods for determining the cost of medical services for the introduction of state health insurance.

**Materials and research methods.** We assessed the opinions of managers and doctors of medical institutions working in the Syrdarya region. The questionnaire consisted of 13 questions that were sent to study the issues of relations and mechanisms for the implementation of compulsory health insurance in inpatient and outpatient clinics. The study was conducted in 2022. The target group consisted of 116 managers and doctors of medical institutions. The survey results were entered into a computer program based on Microsoft Excel. In addition, the MIS (medical information system) information system was studied, according to which the methodology for introducing relative cost weighting and the weighting coefficient of medical services were determined.

**Results and discussions.** Studying the opinions of health care facility managers, conducting explanatory work about the essence of reforms, explaining ways and methods of introducing modern information and communication technologies is one of the urgent tasks and can directly influence the results of ongoing reforms in the healthcare system. Therefore, studying the opinions of health care facility managers using a survey method can help and identify difficulties in implementing some areas of reform when introducing compulsory health insurance. One of the objectives of the study was to determine the impact of financing methods on the quality of medical care. Respondents were asked the question: - Is the current method of financing healthcare effective in improving the quality of medical care? Respondents' opinions on this question were divided. The majority, that is, 91 (79%) respondents YES and they believe that the current financing system is effective in improving the quality of medical care and 24 (21%) disagree and answered in contrast to the current system of financing healthcare facilities with compulsory health insurance, depending on There are significant differences in the methods of providing medical care and financing health care facilities. If outpatient clinics receive funding based on the assigned population, while inpatient medical facilities are funded based on the work done, that is, the number of patients treated. Thus, only 5% of respondents chose the most correct answer, and according to this we believe that managers and doctors should know the method of financing, because their direct salaries depend on their fulfillment of the amount of financing, which differs significantly from the current system of financing inpatient health care facilities and may stimulate improvements in the quality of medical care. Financing of staff units based on the norms of the assigned population 60 (52%), payment is calculated for services provided per capita at a fixed rate 44 (38%), financing from private funds of patients 3 (3%), and I don't know 9 answered (8%) respondents.

**Conclusions.** Thus, in conditions when reforms are being carried out to change financing methods in the Syrdarya region and, in connection with this, the survey and analysis of their results leads to the following conclusions: the heads of medical institutions and doctors who took part in

the survey by developing a questionnaire know about the ongoing financing reforms in healthcare system. Only 5% of respondents answered correctly to the question what do you understand by the concept of financing for a treated case. However, the majority or 94 (81%) of respondents are ready to change the method of financing from switching to compulsory health insurance.

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## IMPROVING HYGIENIC REQUIREMENTS FOR RATIONAL NUTRITION

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**Abstract.** *Nutrition is an important aspect of human health and well-being. The modern world has undergone significant changes in diets, leading to an increase in the prevalence of foodborne illnesses. Modern hygiene requirements have been developed to ensure optimal nutrition and reduce the risk of disease. This article discusses the latest trends and recommendations for balanced nutrition, taking into account modern hygienic requirements.*

**Keywords:** *nutrition, hygienic requirements, foodborne diseases, rational nutrition, diet.*

Introduction. Nutrition is the intake of essential nutrients to maintain good health and functioning of the body. In the modern world, people have shifted from traditional eating patterns to processed foods, which has led to an increase in the prevalence of foodborne illnesses. According to the World Health Organization (WHO), approximately 1 in 10 people worldwide suffer from foodborne illnesses each year, and most of these cases can be prevented through good hygiene and safe food practices (1). Consequently, modern hygienic requirements have become necessary for a balanced diet.

In today's fast-paced world, where convenience often takes precedence over health, it has become crucial to emphasize the importance of hygienic requirements for rational nutrition. Rational nutrition refers to the practice of consuming a balanced and wholesome diet that meets the nutritional needs of individuals, promoting their overall health and well-being. However, the significance of hygiene in achieving rational nutrition is often overlooked. Hygiene plays a pivotal role in ensuring that the food we consume is safe and free from harmful contaminants. It encompasses various practices, including proper handling, storage, and preparation of food, as well as maintaining clean and sanitary environments where food is prepared and served. By adhering to hygienic requirements, we can significantly reduce the risk of foodborne illnesses and improve the overall quality of our diets. One of the primary reasons for emphasizing hygienic requirements in rational nutrition is the increasing prevalence of foodborne diseases. According to the World Health Organization (WHO), approximately 600 million people worldwide fall ill each year due to consuming contaminated food. These illnesses can range from mild gastrointestinal discomfort to severe and life-threatening conditions. By implementing and maintaining strict hygienic practices, we can minimize the occurrence of such diseases and safeguard public health.

Modern hygiene requirements cover various aspects of food safety, from production to consumption. Food safety starts with food producers, who must follow strict guidelines and hygiene practices to ensure that products are free of contaminants. The food industry must also follow regulations to ensure that food products meet safety standards. At the consumer level, proper food handling, preparation and storage methods are vital to eliminating microbial contamination.

In addition to food safety, modern hygiene requirements also concern the nutritional value of food products. WHO recommends a balanced diet consisting of carbohydrates, proteins, fats, fruits and vegetables (1). A balanced diet ensures adequate intake of essential vitamins and minerals that are vital for optimal health. Food processing, such as canning, freezing or drying, can affect the nutrient content of a food product. Thus, modern hygiene requirements ensure that food processing methods do not reduce their nutritional value (8).



Modern hygienic requirements are necessary to ensure a balanced diet and prevent foodborne illnesses. Food safety and hygiene practices from production to consumption are critical to eliminating microbial contamination (2). Additionally, a balanced diet enriched with essential nutrients is critical for optimal health. The article provides recommendations and information on the latest trends in hygienic requirements for a balanced diet (5).

**Methods and results.** This article is a review of modern literature on modern hygienic requirements for rational nutrition. The review included an extensive search of scientific databases including PubMed, Scopus and Web of Science for articles published in the last five years. The search was carried out using keywords such as “nutrition”, “hygiene requirements”, “food safety”, “dietary regime”, “foodborne diseases” (7).

Articles selected for review were limited to those written in English and containing detailed information on modern dietary hygiene requirements. Articles were critically reviewed and the most relevant information was extracted and synthesized (3).

The synthesis involved grouping information into topics including food safety, nutritional requirements, food processing, hygiene practices, and consumer behavior (4). The information was analyzed to identify knowledge gaps and highlight areas for further research (6).

**Conclusion.** Thus, modern hygienic requirements are necessary for rational nutrition, since they provide the basis for the safe production and consumption of food. The review found that food safety is critical to preventing foodborne illnesses, and good hygiene practices are necessary to eliminate microbial contamination. Additionally, a balanced diet enriched with essential nutrients is critical for optimal health.

The review identified some knowledge gaps, for example about the impact of new food processing methods on nutritional value and food safety. Further research in these areas may provide additional insight into best practices for healthy nutrition. Additionally, increasing awareness among the general public about safe food handling practices, hygiene practices in production areas and adherence to international standards can lead to safe, nutritious and healthy diets.

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# DIAGNOSTIC VALUE OF ENDOTHELIN 1 AND VASCULAR ENDOTHELIAL GROWTH FACTOR AND SIGNIFICANCE FOR DETERMINING THE THERAPEUTIC EFFECTIVENESS OF L-ARGININE ASPARATE IN CORONARY HEART DISEASE

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**Abstract.** *Coronary heart disease is the most common cause of death in the world. According to WHO, 740 million people die every year in the world, of which 13.2% die due to coronary heart disease. Therefore, the search for new markers that make it possible to predict coronary heart disease before an accident, as well as monitoring the therapeutic effectiveness of methods is one of the important and effective ways to reduce mortality. Through our study, we found that VEGF and ET-1 factor analysis is a very reliable candidate for predicting CAD and a very useful factor for evaluating the therapeutic effect of L-arginine aspartate.*

**Keywords:** VEGF; ET-1; Myocardial infarction; cardiac ischemia; L-arginine aspartate; EZVD.

## Introduction.

Vascular endothelial growth factor (VEGF) was discovered as a signaling molecule that increases vascular permeability by breaking intercellular contacts [1,3,5,8]. VEGF-A induces myocardial angiogenesis and increases vascular permeability and BM proliferation [2,6,7,12]. CMs are not only producers, but also targets for VEGF-A. A rat model has shown that VEGF-A inhibits apoptosis and activates the expression of genes involved in BM metabolism and contraction [9,10]. Under conditions of myocardial repair, VEGF-A promotes stem cell migration through the PI3K/Akt pathway [6,11].

In conditions of inflammation and neoplasia, isolated VEGF-A can be released by proteases, in particular metat metalloproteinases, plasmin, urokinase-like plasminogen activator, elastase and tissue kallikrein. These proteases increase the activity of VEGF-A by influencing the clearance of the molecule, its activation and degradation, which activates angiogenesis, a key component of carcinogenesis, and can also suppress the VEGF angiogenic effect.

## Materials and methods.

The study included 52 patients with coronary artery disease who were undergoing outpatient observation at the N.A. Semashko Ministry of Health of the Republic of Uzbekistan. The diagnosis was based on the clinical picture - clinical signs of angina pectoris of functional classes II-III, a history of myocardial infarction (MI) or electrocardiographic signs. Verification of the diagnosis was based on coronary angiography and coronary revascularization.

The average age of the patients was 55.94±1.29 years, height – 170.24±1.12 cm, weight – 77.72±1.79 kg. The study included 20 healthy volunteers without signs of damage to the cardiovascular system, comparable age and anthropometric characteristics, as a control group (CG).

In all patients, the presence of underlying diseases was recorded - arterial hypertension, type 2 diabetes mellitus, insulin resistance syndrome (according to the insulin resistance index in patients with glycemic levels within reference standards), hyperuricemia.

### **Laboratory research**

VEGF concentrations were determined in serum obtained from peripheral venous blood. The concentration of VEGF was measured by enzyme-linked immunosorbent assay using the VEGF-ELISA-BEST reagent kit produced by Vector-Best CJSC (Russia) with a measurement range of 6.25-4000 pg/ml, the reference norm in blood serum is 6.25-600 pg /ml.

The concentration of ET-1 was determined in peripheral venous blood obtained by vacutainer from the cubital vein. The measurement was carried out by enzyme immunoassay; the range of values was 0-10 fmol/l.

**Endothelial function.** The assessment of endothelium-dependent vasodilation was based on the change in brachial artery diameter at 5 seconds after artery decompression during a 5-minute cuff test. The diameter of the artery was determined sonographically at 2 cm above the elbow. An ultrasound scanner equipped with a linear transducer with a frequency of 15 MHz was used. After measuring the diameter of the brachial artery and the maximum systolic blood flow velocity above the location site (on the shoulder), a tonometer cuff was applied and the pressure was injected 50 mmHg above systolic (PA 0). The compression was held for 5 minutes, after which the cuff was removed (sharp decompression) and at the 5th and 60th seconds the diameter of the brachial artery and the maximum blood flow velocity (PA 1) were re-measured. The dynamics of brachial artery diameter and flow velocity were recorded as a relative change expressed as a percentage.

After the initial examination, all patients included in the study were additionally included in the treatment regimen with L-arginine aspartate in a daily dose of 3 g. per day in 3 doses. The observation period was 3 months, after which a control examination of the condition of the myocardium and endothelium was carried out. Thus, the effectiveness of L-arginine aspartate in terms of endothelial and myocardial ischemic dysfunction in patients with coronary artery disease was studied, including depending on the concentration of VEGF and ET-1.

### **Results.**

The study found that humoral markers of endothelial dysfunction were significantly increased in patients with coronary artery disease compared to a group of healthy volunteers (Table 1). Thus, the concentration of VEGF in patients with coronary artery disease was increased by 10.1 times ( $p < 0.001$ ), ET-1 – by 9.68 times ( $p < 0.001$ ).

**Table 1**

***Comparative characteristics of the structural and functional state of the endothelium in patients with coronary heart disease and healthy individuals***

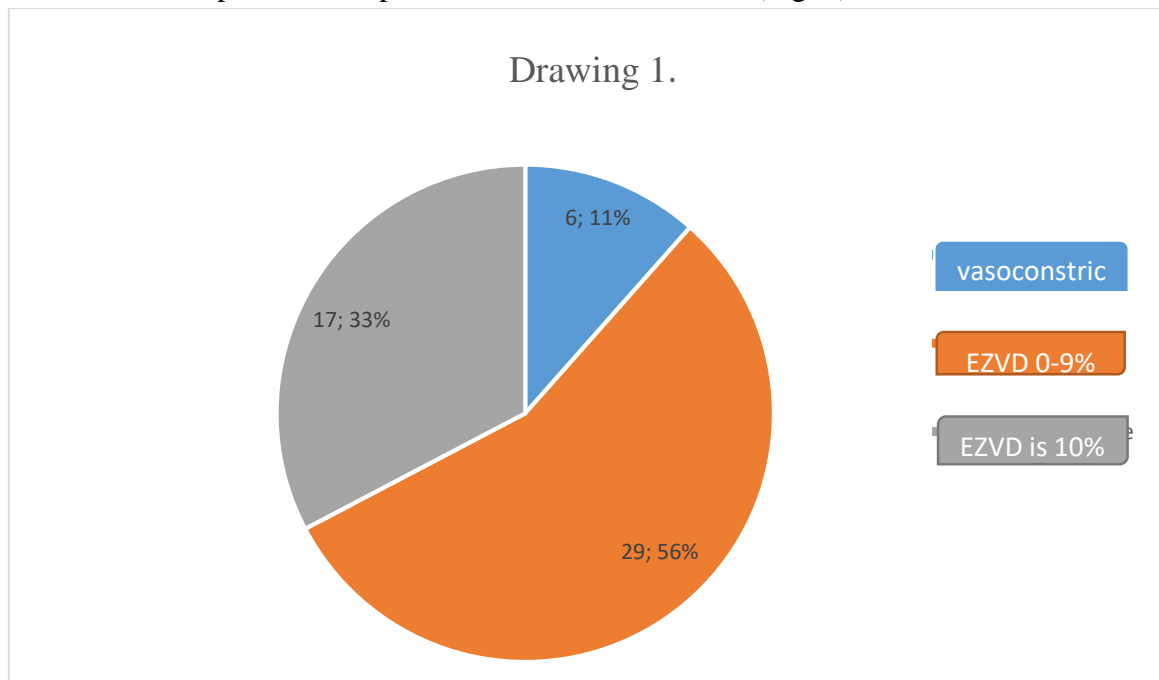
Sign	CG (n=20)	IHD (n=52)
VEGF, pg/ml	76,45±10,90	774,10±96,70 <sup>a</sup>
ET-1, fmol/l	0,22±0,02	2,13±0,21 <sup>a</sup>
PA 0, mm	4,19±0,15	4,17±0,10
PA 1, mm	4,35±0,15	4,25±0,10
EDVD, %	16,55±0,46	7,73±0,89 <sup>a</sup>

*Note: a - significance of the difference between groups –  $p < 0.05$ .*

In patients with IHD, despite the development of endothelial dysfunction, the diameter of the VA did not differ from the diameter of the vessel in the group of healthy individuals, both

initially and after 5-minute compression of the artery (results of VA in patients with IHD compared with the group of healthy volunteers) (Table 1).

In the group of patients with coronary artery disease, the majority of patients (55.5%) had insufficient EDVD (less than 10%), and in a smaller number of patients (33%), more than 10% of EDVD and 11% of patients had paradoxical vasoconstriction (Fig. 1).



**1-drawing. Distribution of patients with coronary artery disease depending on the response of VA to the cuff compression test.**

In addition, when the patients we studied were divided into groups depending on the results of EDVD, we found that patients with EDVD with 1-9% and patients with vasoconstriction showed that the markers VEGF, ET-1, PA and PA 1 were 3.1 ( $p < 0.05$ ) and 8.7 ( $p < 0.05$ ); 1.48 ( $p < 0.05$ ) and 2.78 ( $p < 0.05$ ); 1.044 ( $p > 0.05$ ) and 1.035 ( $p > 0.05$ ); 1.03 ( $p > 0.05$ ) and 1.005 ( $p > 0.05$ ) times higher compared to patients with a result of 10% or more EDVD (Table 2).

**Table 2**

**Functional state of the endothelium and myocardium in patients with coronary artery disease depending on endothelial endothelium and myocardium**

Sign	10% or more (n=29)	1-9% (n=17)	0% (n=6)
VEGF, pg/ml	268,36±44,40	848,66±76,13 <sup>a</sup>	2336,50±178,61 <sup>ab</sup>
ET-1, fmol/l	1,52±0,26	2,26±0,16	4,22±0,35 <sup>ab</sup>
PA 0, mm	4,06±0,11	4,24±0,10	4,20±0,22
PA 1, mm	4,19±0,11	4,30±0,10	4,21±0,22

*Note: a - reliability of results in relation to 1-9% EDVD; –  $p < 0.05$ ; b - reliability of the results relative to 0% EVD –  $p < 0.05$ .*

Correlation analysis showed that there is a significant negative relationship between the value of endothelial dysfunction and the concentration of endothelial dysfunction markers: strong with the concentration of VEGF and moderate with the concentration of ET-1. Also, correlation analysis showed the presence of significant negative relationships between the blood flow velocity in the VA at all stages of the test with humoral markers of endothelial dysfunction, more

pronounced with the concentration of VEGF and less pronounced with the concentration of ET-1 (Table 3).

**Table 3.**

***Correlation analysis between VEGF and ET with other indicators***

Sign	VEGF	ET-1
VEGF	-	0,68 <sup>a</sup>
ET-1	0,68 <sup>a</sup>	-
EDVD, %	-0,80 <sup>a</sup>	-0,61 <sup>a</sup>
Vmax 0	-0,53 <sup>a</sup>	-0,29 <sup>a</sup>
Vmax 1	-0,58 <sup>a</sup>	-0,34 <sup>a</sup>
Vmax 2	-0,57 <sup>a</sup>	-0,32 <sup>a</sup>

*Note: a - correlation significance –  $p < 0.05$ . Vmax 0, Vmax 1 and Vmax 2 are the maximum speed in the initial conditions, 5th second and 60th second of decompression, respectively.*

Moreover, by assessing the predictive performance (AUC) of VEGF and ET-1, statistically significant indices such as sensitivity (SE) and specificity (SP) as independent markers were determined to obtain the diagnostic performance of these markers for coronary artery disease (Table 4).

**Table 4.**

***Prognostic efficacy of VEGF and ET-1 against coronary heart disease***

Factors	SE	SP	AUC
VEGF	1,0	0,9	0,97
ET-1	1,0	0,8	0,95

**Table 5.**

***Comparative dynamics of myocardial and endothelial function indices in patients with coronary artery disease on the background of the inclusion of L-arginine aspartate.***

Sign	(n=52)		
	Originally	3 months	Relative dynamics
VEGF, pg/ml	774,10±96,70	734,92±95,46	-8,98±1,27
ET-1, fmol/l	2,13±0,21	1,71±0,21 <sup>a</sup>	-45,59±6,89
PA 0, mm	4,17±0,10	5,03±0,11 <sup>a</sup>	21,51±1,70
PA 1, mm	4,25±0,10	5,13±0,11 <sup>a</sup>	21,52±1,66
EDVD, %	7,73±0,89	9,78±0,93 <sup>a</sup>	24,85±3,87

*Note: a - significance of the difference with the original data –  $p < 0.05$ .*

As shown in Table 5, the diagnostic performance of VEGF and ET-1 was on an excellent basis. (0.97 and 0.95, respectively) [18].

*Post-therapy results.* The results of the analysis of patients after treatment with L-arginine aspartate showed a significant decrease in the concentration of VEGF and ET-1 by 5% ( $p > 0.05$ ) and 20% ( $p < 0.05$ ), and the relative dynamics of these markers was -8.98 and -45.59 respectively (Table 5).

The PA rate increased both before and after (20% ( $p < 0.05$ ) and 21% ( $p < 0.05$ ), respectively) of cuff compression, and the degree of EDVD also increased during observation with a statistically significant difference ( $p < 0.05$ ).

**Discussion.** Our study, as mentioned earlier, showed a significant increase in the levels of VEGF and ET-1 markers, as well as a statistically significant decrease in the percentage of compensatory vasodilation after a 5-minute cuff test, indicating a decrease in the physiological adaptation of blood flow in the perfused tissue in patients. In addition, we found that the dysfunction of compensatory endothelial adaptation was aggravated depending on the increase in VEGF and ET-1 levels (especially due to the latter) (Tables 1 and 2). Since with an increase in the level of ET-1, vasoconstriction becomes more intense, since in chronic heart failure the RAAS system is more intensely activated and ET-1 expression is induced. Meanwhile, VEGF may play a compensatory role to enhance angiogenesis under hypoxic conditions. In addition, the negative correlation between VEGF, ET-1 and EVD is also one of the results that supports this idea (Table 3).

Our study also supports the idea that VEGF and ET-1 are very reliable factors for predicting coronary heart disease, since our diagnostic performance was excellent for both factors (Table 4). And our result after treatment with L-arginine aspartate showed that the level of ET-1 decreased significantly and EDV increased statistically significantly, while we did not find statistically significant changes in VEGF. Since L-arginine is an aspartate, meta-analytic work has shown that L-arginine supplementation may have a blood pressure (BP)-lowering effect in various populations. and an increase in EDV, which leads to normalization of endothelial function. Once blood flow is normalized, the compensatory increased VEGF may become less intense, as we have seen. This may be caused by the production of nitric oxide. Nitric oxide (NO) is a potent antihypertensive agent. NO is formed when L-arginine is converted to citrulline by NO synthases (NOS), and L-arginine aspartate is a source of L-arginine [16]. NO antagonizes the effects of angiotensin II on vascular tone, cell growth, and renal sodium excretion, and also inhibits the synthesis of angiotensin-converting enzyme (ACE) and angiotensin II type 1 receptors [17], which leads to decreased ET-1 production and increased vasodilation.

**Conclusion.** Through our study, we found that in people who had myocardial infarction, VEGF and ET-1 were significantly increased ( $p < 0.05$ ), while EDV was markedly decreased ( $p < 0.05$ ). In addition, the severity of EDVD dysfunction is also positively associated with the levels of VEGF and ET-1. Also, the diagnostic performance of VEGF and ET-1 was of excellent quality for coronary artery disease (AUC: 0.97 and 0.95, respectively). In addition, when re-examining patients after treatment with L-arginine aspartate and observation for 3 months, we found a statistically significant decrease in ET-1 factors ( $p < 0.05$ ) and an increase in endothelial adaptive function ( $p < 0.05$ ) (EDD), PA 0 ( $p < 0.05$ ) and PA 1 ( $p < 0.05$ ), but not by changes in VEGF ( $p > 0.05$ ).

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## PROPAGATION OF PAPER TREE (*BROUSSONETIA POPYRIFERA L.*) FROM SEED AT DIFFERENT PERIODS

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**Abstract.** *This article presents the results of the research on the evaluation of the parameters of reproduction of the paper tree from seeds, and describes the experimental work on planting paper tree seedlings in the generative method in different periods. The second decade of February, the third decade of February, the first and second decades of March were taken according to the growing periods. The temperature of the experiment area was monitored. Each experimental area was selected with a width of 1x1. During rooting of the paper tree on the basis of its seeds, the temperature index of the area is 18-24°, the air humidity is 40-50%, the sand humidity is 30-40 degrees depending on the temperature (according to the indicators of the soil moisture measuring device mainly) observed. It was observed that the indicators of paper tree plant germination depend on the time of planting seeds. Taking into account the relative humidity of the air and the evaporation of water into the air, 10-12 liters of water were poured into each experimental area in 7-8 days, and the results of the research on the terms of germination and irrigation are presented.*

**Keywords:** *paper tree (*Broussonetia papyrifera L.*), propagation from seeds, sand, air humidity, planting time from seeds, indicators of germination from seeds.*

**Introduction.** Today, it is important to expand the assortment of plants used in forestry and greening on a global scale. Special attention is being paid to culturalization of forest plants, wider use of their medicinal and decorative properties, and creation of landscape compositions by planting in forestry lands and around cities. Among the plants of the world of medicine, paper tree is a plant that grows well in Europe and South-East Asian countries due to its useful properties and practical use.

Development of agrotechnics for reproduction of forest plants and introduced plants, in particular paper tree, and establishment of plantations remains one of the urgent issues of today.

In the countries of the world, scientific and research work on improving the bioecological characteristics and breeding methods of landscaping and ornamental plants is widely developed. A number of scientists on the introduction and breeding of landscape plants, including N.I. Kolesnikova, F.N. Rusanov, L.V. Yaskina. etc. have excelled in their scientific work. Greening of ornamental plants introduced in the conditions of Central Asia and Uzbekistan has been studied by scientists for many years. Including, N. I. Denisov (2004), O. V. L. Holonec (2007), F. N. Rusanov, M.R.Q. – 2009, K.Saito Agroforestry systems – 2009, H.W.Ryu – 2010, I.Slavkina, I.V. Belolipov, N.I. Shtonda, A. P. Siorba 2015, A. V. Shutka (2015), K. O. Mkhitarian (2016), N. A. Trusheva (2019), Y. V. Dyachenko, etc., have carried out many scientific works on the development of the field.

In the process of studying the problem, it is shown that no studies have been conducted on the relationship of paper tree (*Broussonetia papyrifera L.*) plants to environmental factors in the conditions of Uzbekistan, the selection and statistical analysis of their promising forms in greening, the development of methods for creating promising varieties by carrying out selection work [ 7].



Accordingly, the development of agrotechnics for the reproduction and establishment of plantations of the paper tree in the conditions of Uzbekistan is an urgent issue. By breeding this tree species, promising results can be achieved by greening forest lands, highways, degraded lands, many landscape parks and residential areas.

The fruits of the paper tree (*Broussonetia papyrifera* L.), native to Japan and China, contain various substances and were analyzed for their chemical composition and antioxidant activity in ethanol and aqueous extracts. The fruit of this plant has been found to contain high protein.

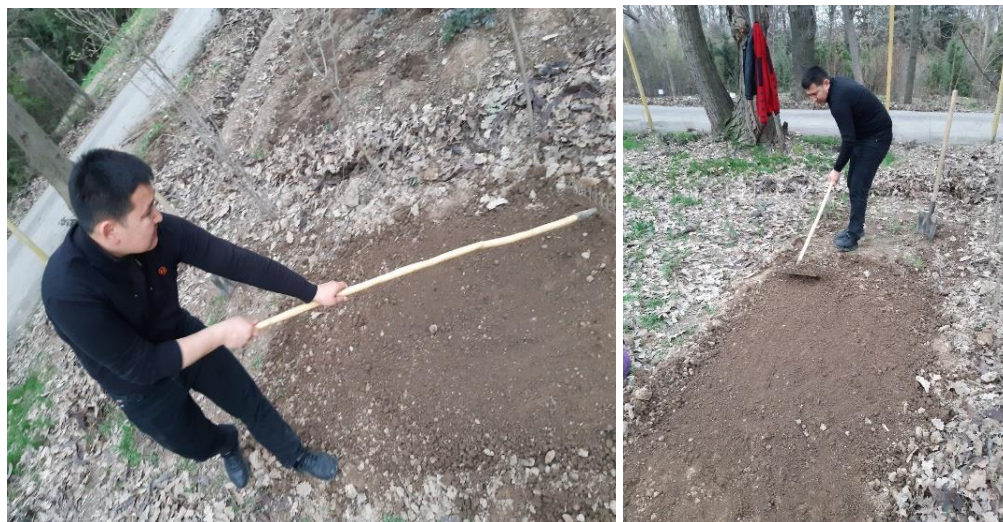
When breeding a plant, it is necessary to know its bioecological features specific to its type. It is necessary to evaluate whether the generative or vegetative method is effective in plant reproduction. Our experiments have shown that the propagation of the paper tree from vegetative organs is the most effective method. As a result of our experiments, studies on the duration of vegetative rooting and irrigation norms are ongoing.

**Materials and methods.** The bioecological parameters of the paper tree (*Broussonetia papyrifera* L.) selected for the experiment were studied. Taking into account the planting dates, paper tree seeds were placed in water for stratification in the experimental area. Based on the timing of sowing seeds, the first sowing process was planted in the second decade of February, the second sowing process was planted in the third decade of February, the third sowing was planted in the first decade of March, and the fourth sowing was planted in the second decade of March. During the experiments, the indicators of germination and the speed of rooting during the planting period and its durability were determined. The process of leaf formation in sprouted seedlings was evaluated. The temperature of the experimental area was monitored. During the germination of seeds, the temperature indicator is required to be 18-24°C.

Air humidity should be 40-50%. Soil and sand moisture should be 30-40 degrees depending on the temperature (based on the indicators of the soil moisture meter (WaterScout SM 100)).

**Result and Discussion.** In order to determine the parameters of propagation of paper tree seeds, observation results were recorded in 8-10 days. Taking into account the evaporation of water into the air, 10-12 liters of water was poured into each field where seeds were planted in 7-8 days. Thanks to these observations, the terms of germination and irrigation were determined.

Experiments were carried out in several periods due to the fact that the planting periods for paper tree propagation from seeds differ from each other.





*1 picture. Acad. The process of experimenting with paper tree seeds in the Tashkent Botanical Garden named after F.N. Rusanov.*

In the Tashkent Botanical Garden named after Academician F.N. Rusanov, paper tree seeds were planted in 4 periods and monitored based on irrigation standards. Based on the sowing dates, the first sowing process was planted in the second decade of February, the second sowing process was planted in the third decade of February, the third sowing process was planted in the first decade of March, and the fourth sowing process was planted in the second decade of March, and the germination and development indicators were studied.





**2 pictures. Appearance and germination process of paper tree seeds.**

According to the results of monitoring, the following was determined:

- In the second decade of February, it was observed that the air temperature was 18-20 0C, and the germination rate of the sown seeds was 40%.
- In the third decade of February, it was observed that the air temperature was 20-22 0C, and the germination rate of the sown seeds was 50%.
- In the first decade of March, it was observed that the air temperature was 26-28 0C, and the germination rate of the sown seeds was 80%.
- In the second decade of March, it was observed that the air temperature was 30-32 0C, and the germination rate of the sown seeds was 30%. *Table 1.*

**Results of propagation of paper tree from seed in different periods.**

Option number	Germination indicators		Percentage of sprouted seedlings
	Air temperature	Soil moisture level	
Second decade of February	18-20	35-40	40
The third decade of February	20-22	35-40	50
The first decade of March	26-28	30-35	80
Second decade of March	30-32	25-30	30

**Conclusion and Recommendations.** In the course of the research, it can be concluded that propagation of the paper tree from seeds gives good results if the planting dates are selected correctly depending on the air temperature. Based on the results of the experiments, air temperature indicators of 25-30°C, soil moisture level of 30-35% are necessary indicators for seed germination.

For reproduction in sand, soil and other similar compounds, it is recommended to use special containers (made of wood) or special plastic containers 15-20 cm high, 0.5x1.0, 1.x1, 1x2 meters in size. When propagating a paper tree from seeds, the air temperature, soil moisture level and planting period should be selected correctly. According to it, in the first decade of March, the air temperature should be 25-30oC, and the soil moisture level should be 30-35%. It was found that 80-90% of paper tree seeds sown in this period and temperature.

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## THE EFFECT OF MEDICINAL PLANTS (SMALL-FLOWERED GORSE, PEPPERMINT, CHAKANDA, DALACHOE, ROSEMARY, CAROB) ON HUMAN HEALTH

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**Abstract.** Decision PQ-4670 dated April 10, 2020 "On measures for the protection, cultivation, processing and rational use of available resources of medicinal plants growing in the wild". On the basis of the Decree No. PF-139 of May 20, 2022 "On measures to create value chains by supporting the effective use of raw material base of medicinal plants, processing" Medicinal plants such as rosemary and black sugar are mentioned to be important in maintaining health by using scientific research works of scientists to improve human health.

**Keywords:** essential oil, triterpene, coumarin, flavonoid, pertussin, menthone, methylacetate, mentafuran, ceneol, biogen E, K, provitamin A, alanine, phenylalanine, glutamine, cysteine, leucine, lysine, arginine, serine, valine, S, V1, V2, V6, iron, magnesium, manganese, copper, boron, sulfur, chlorine, aluminum, silicon, pinene, camphene, cineol, barneol, berberine, oxycontin, berbamin

Introduction. Currently, 112 types of medicinal plants are allowed to be used in official medicine in the Republic of Uzbekistan, and 80% of these medicinal plants are naturally growing plants. Natural resources of medicinal plants are also limited, and their protection, study of bioecological properties, proper use of resources and development of scientifically based methods of reproduction are urgent problems. In order to ensure the implementation of the Decision of the President of the Republic of Uzbekistan dated April 10, 2020 No. PQ-4670 "On measures for the protection of medicinal plants growing in the wild, cultivated cultivation, processing and rational use of available resources", the natural and cultivated medicinal plants in the Republic. It is important for foresters, farmers, and pharmaceutical industry workers to use this manual and protect human health.

1. Small-flowered mountain basil (*Origanum tyttanthum* Jontseh).

Perennial, erect stem, numerous, branching from the top, height 30-60 cm.

The leaf is ovate, the base is obtuse, and the edges are hairless. The flowers are collected in sessile spike-like, semi-umbrella-like inflorescences. Calyx 3 mm long with short hairs. Corolla pale bluish-pink 5 mm long. The nut is dark brown, 0.75 mm long. It blooms in July-August and its seeds ripen in July-September. It grows in rocky and gravelly places in the middle and lower regions of the mountains.

It is distributed in Tashkent, Andijan, Fergana, Samarkand and Surkhandarya regions. The composition of the surface of the earth contains essential oil, triterpene acids, coumarins, flavonoids and other substances. Liquid extract of the above-ground part of common mountain basil is used as an expectorant in respiratory diseases, when bowel movement is weakened, to stimulate appetite, to improve digestion, to expel urine and wind. The liquid extract is included in pertussin, which is used in respiratory diseases and whooping cough. Thymol is used to disinfect

the mucous membrane of the mouth and to relieve toothaches, and to treat fungal skin diseases, and sometimes to expel worms.

2. Peppermint - (*Myata perechnaya*) In Uzbekistan, peppermint is grown in the Shifobakhsh scientific production farm and in farms by local residents. wire spread. In Uzbekistan, peppermint is grown at the Shifobakhsh scientific production farm and by local residents in their homesteads.

Peppermint leaves, essential oils and menthol are used in medicine. For pharmacies, the leaves of the plant are harvested by means of special tools when 50-75% have entered the flower. Varieties that retain high essential oils are harvested in August-September. Drying of plant leaves is carried out in special dryers at temperatures not higher than 30-35°C. The amount of essential oils contained in peppermint leaves is 3% in the southern regions, 2-2.5% in the northern regions; and the amount of menthol in essential oil is 50-55%.

The essential oil of the plant contains menthol, menthone, methylacetate, mentafuran, cineol and other biogenic substances. Essential oils are used in perfumery, food industry, production of alcohol products. In addition to essential oils, the leaves of the plant are rich in carotene, organic acids and other compounds. Fragrant teas and tinctures are prepared from the leaves of the plant, which dilate and invigorate blood vessels. The main active substance of the plant is menthol, which is used as a pain reliever in neuralgia, myalgia, arthralgia, and with other drugs as a vasodilator and sedative. Menthol is part of validol, valocardin drugs.

3. Chakanda- (*Oblepixa krushinovidnaya*) is a plant that grows in the valleys and riverbanks of Uzbekistan and is found in Tashkent, Samarkand, Fergana, Bukhara, Kashkadarya and Surkhandarya regions. Widespread in Central Asia, Caucasus, Siberia, Western Europe, Mongolia, Tibet, Iran, Afghanistan.

Medicinal plants Cultivation of promising medicinal plant species in the flora of Uzbekistan, starting their cultivation in industrial plantations, creating a base of raw materials for the pharmaceutical industry. *Hippophae rhamnoides* L. x is considered one of such promising medicinal plants.

*Hippophae*, one of the representatives of the *Elaeagnaceae* family, is a small tree or shrub with a height of 4-6 m and a diameter of 15-20 cm. The category includes 3 species. All of them are considered medicinal plants, and oil is extracted from the peel and juice of the fruit. Chakanda oil, in turn, is rich in E and other vitamins and carotenoids, and it is considered an equal load medicine in the treatment of skin, gastro-intestinal, stomach mucosa, gastro-intestinal ulcer and gynecological diseases damaged by radioactive rays.

Under the influence of various external conditions and as a result of long adaptation, Chakanda vegetation forms its climatic types, which differ from each other in terms of morphological features. Today, great importance is attached to the healing properties of the chakanda, so the chemical composition of its fruits is being studied in depth. Chakanda is considered a low-calorie plant, 100 grams of its fruit provide 30 calories. The acidity of the fruits ranges from 1.3% to 2.7%.

At the same time, there are also vitamins E, K, provitamin A in the oil, and substances of the nature of stearin are found in the oil kernels - sitosterol, phospholipids, choline, carotene, and the fruit contains a large amount of vitamin E and amino acids, for example, alanine, phenylalanine, glutamine, cysteine, leucine, lysine, arginine, serine, valine and others. Fruit juice

contains vitamins A, C, V1, V2, V6, E, K, P. The amount of ascorbic acid is 37-268 mg/100 g of fruit.

In addition, essential oils, micro- and macroelements, about 15 trace elements were found in the fruits, which are iron, magnesium, manganese, copper, boron, sulfur, chlorine, aluminum, silicon and others. It is considered a good immunomodulator and immunoprotector [3].

Chakanda's leaves and bark are also medicinal, ascorbic acid and carotenoids, P-active substances are found in its composition. Serotonin alkaloid is found in the bark of its branches, this alkaloid is of great importance in the functioning of the nervous system. According to its chemical structure, serotonin belongs to biogenic amines belonging to the class of tryptamines. Serotonin is often called the "mood hormone" and the "happiness hormone."

4. Dalchoi, kizilpoycha, chayoti - (Zveroboy prodyryavlennyy) The stems are four-sided, the lower part is woody, gray in color, the upper part is hairy, green. It grows naturally in the mountainous regions of Mediterranean countries. In Uzbekistan, it is widely found on mountain slopes. Decoctions made from the above-mentioned diseases are also used in folk medicine for the treatment of the above-mentioned diseases.

Although dalchoi is considered a medicinal plant, caution should not be forgotten when using it. In particular, hypertensive patients cannot use it for a long time. In addition, dalchoy is prohibited during pregnancy. A strong infusion of dalchoi can cause acute gastritis symptoms even in healthy people, and pain and severe spasm in those with hyperacid gastritis or stomach ulcers.

Excessive use of this plant can cause headaches, nausea and vomiting. Dalchoy does not "go out" with beer, coffee, wine, chocolate, smoked or marinated products, yogurt. Also, it cannot be used together with anti-hay fever and nasal drops. Do not take over-the-counter medications when you have a fever. They can increase the sensitivity of the skin to ultraviolet rays, so it is necessary to avoid walking in the sun after taking the drug.

In folk medicine, patients with urinary incontinence are advised to drink the tincture of dalchoi. To do this, put 10 g of the ground part of the plant in a glass of boiling water and leave it for a while. Strain and drink one tablespoon 2-4 times a day.

Fenugreek decoction can also be used in the treatment of gastrointestinal diseases. Pour 1 cup of boiling water on 1 tablespoon of crushed plant and boil for 15 minutes on low heat. After straining, drink a quarter glass three times a day. Fenugreek oil is also useful. To prepare the oil, 1 part of dalchoi is added to 2 parts of olive (almond or peach) oil and left to stand for 3 weeks. It can be used as a compress to treat burns or wounds (for example, trophic ulcers). To treat alcoholism, put 2 tablespoons of dried field tea in 250 ml of boiled water and put it in a water bath for 20-30 minutes. Strain and drink 2 tablespoons before breakfast and lunch.

5. Medicinal rosemary-(Rosmarin aptechnyy) Distribution of the plant. It grows naturally in Africa (Algeria, Libya, Morocco, Tunisia), Turkey, Cyprus, the northern part of Europe, the countries of the former Yugoslavia, Greece, Italy, Portugal, Spain, France. In most cases, it is found in soils with a high content of lime, on dry rocks, on the southern slopes of mountains, in places where the sun shines well.

Rosemary is a bushy plant rich in essential oils that adapts to heat and cold in irrigated gray soil. The leaves are long, the lower part of the leaf with a blunt tip is covered with coarse hairs. The fruit is in the form of a nut. Essential oils are stored in all parts of the rosemary plant (especially in young stems and flowers, its amount is up to 1.2%). Since essential oil contains 50%

pinene, camphene, cineol, borneol and camphor, it is used in the perfumery industry, in the preparation of medicinal and insecticidal preparations.

In folk medicine, tinctures and alcohol solutions of the above-ground leaves and young stems of the plant are beneficial in the treatment of headaches, stomach-intestinal diseases, colds, and some diseases in women. At the same time, it refreshes the body and gives energy. Rosemary is also used as a spice in cooking meat products and keeping them for a long time due to the unique smell and taste of its leaves. It gives a unique taste and flavor when added to confectionery products.

Given that the plant does not shed its leaves even in the winter season and emits a unique smell, it is grown as an ornamental shrub in parks and avenues, courtyards and recreation areas.

6. Blackcurrant (*Smorodina chernaya*) It is found naturally in the forests of the European part of the CIS countries, in the plains and mountains of western, eastern, and southern Siberia. It is a forest plant. Black blackberry can be found along streams, lakes, rivers, ditches, in meadows, in broad-leaved, needle-leaved and mixed forest plains in moist, humus-rich soils.



ZIRK (*Berberis vulgaris* L.), black sugar - belongs to the group of shrubs belonging to the zirkdoza family (Zirkflower family). The leaves are thick, short-banded, arranged in a row. The flower is yellow, with a double peduncle, collected in a peduncle; the fruit is a berry. It is distributed in the Northern Hemisphere. There are 194 types, 45 types are acclimatized. On the mountain slopes of Uzbekistan, red sedge and black sedge are common. Zirk leaves contain berberine, oxycontin, berbamine and other alkaloids. Since their fruits are sour and tasty, they are added to various dishes, including pilaf, and make food delicious. Due to the wide consumption of black zirk, it is called "karaqand" due to its color. In medicine, it is used to treat liver diseases, reduce fever, stop diarrhea and strengthen the heart. Fruit is a dietary product with low nutritional value. It has 29 kcal in 100 g.

The fruit contains carotenoids (xanthophyll, lutein, chrysanthemaxanthin, zeaxanthin, auroxanthin, flavoxanthin capsanthin, etc.), carbohydrates, aromatic and pectin substances, organic acids, macro and microelements, vitamins E and C, and beta-carotene substances.



Useful properties of zinc. In addition to its beautiful appearance, zirk also has healing properties. In ancient Greece, it was used as a blood purifier. In Tibet, zinc is believed to be a natural substance that prolongs human youth. It has been widely consumed in our country, its root, trunk and bark are used to stop bleeding and treat various colds. Fruit juice has antipyretic, germ-killing, and bleeding-stopping properties. Its consumption is also recommended for the purposes of cleansing the body, removing toxins, and slowing down the aging process. In order to get rid of liver diseases, rheumatism, urinary tract and kidney colds, it is necessary to eat freshly ripe zirk fruit with food.

Zirk contains the alkaloid berberine, which has sedative properties. This substance also helps people who are trying to get rid of alcoholism and addiction. Pharmacies sell a drug called berberine, which is made from a substance extracted from zinc. This drug is used in the treatment of gallstones and cholecystitis.

Italian scientists, in cooperation with doctors, found that berberine is a practically unparalleled healing agent for people suffering from malaria and swollen kidneys. Indian doctors use berberine to treat severe infectious leishmaniasis.

In China, the bark of the plant is used to treat eye colds, and the root bark is used to open the airways, heal wounds, and treat cancer. Bulgarians use zirk bark to treat radiculitis and kidney diseases. In Poland, zinc is used to treat hypovitaminosis (vitamin deficiency). The Germans use zirk as a tincture for the treatment of gastrointestinal tract, oral cavity, and lung diseases. In France, zirk is recommended as a bactericidal, hypotensive and antimalarial agent.

Ripe fruits and leaves can be used to make tea, which is very pleasant and rich in useful vitamins. It is very easy to prepare, for this, take 1 teaspoon of its fruit and leaves, pour 1 cup of boiling water over them and let it steep for an hour. Drink this tea three times a day for two weeks until you get a positive result.

In case of eye colds, eczema, wounds, washing with this decoction or putting a gauze soaked in it on the affected part gives a positive result. In arthritis, rheumatism, radiculitis, leg muscle damage, osteochondrosis, this herbal decoction is drunk as a cold-relieving and pain-relieving agent. Zirk root and leaves decoction: take 1 tablespoon of crushed roots and leaves, pour 1 cup of water over it, boil for 1 minute, let it rest for 30 minutes, strain. Drink 1 tablespoon 1 hour before meals.

Zirk root decoction (applied): pour half a liter of water over 1-2 tablespoons of crushed root, boil for 1 minute, let it rest for 1 hour. In the above-mentioned diseases, a gauze soaked in a decoction is placed on the diseased member and compressed. It is not possible for women to eat zirk during the days of chilla after the climax and the opening of the eyes. Zirk increases the activity of muscles, therefore pregnant women should not consume it, it may cause premature miscarriage. It can not be consumed by nursing mothers. It is not recommended to be used in cases of gallstones, liver cirrhosis, jaundice, in some personal cases where it is not liked, as well as for children under 12 years of age. It should also be noted that unripe blueberries are poisonous and should not be eaten.

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## IMPORTANT ECONOMIC CHARACTERISTICS OF CHEESE SAMPLES FROM ICARDA INTERNATIONAL ORGANIZATION

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**Abstract.** This article describes the analysis of data on the growth, development, biometric and productivity indicators of 36 samples of pea varieties from the international organization ICARDA in the typical gray soil climate of Tashkent region.

**Keywords:** ICARDA, chickpea, *Cicer arietinum* L., experiment, variety, seed, protein, stalk, pod, quintal, hectare, yield.

Usage. Chickpea grain is used in human nutrition, cereals are prepared from grain, various dishes can be prepared, flour is added to pastries, in bread making, 10–20% wheat flour is added to bread making, and artificial coffee is prepared. Grains contain 19–33% of protein, 4–7% of fat, 48–61% of carbohydrates, 2–12% of fiber, 2–5% of ash and vitamins. Organic acids (malic and others) contain in the biomass and hay, therefore, animals are not eaten in pure form. Chickpea is a good preceding crop for field crops; during the growing season, 50–70 kg of biological nitrogen accumulates in the soil.

**Table 1. Chickpea sown area, yield and production (FAO data for 2021)**

Countries of the world	Sown area, 000 ha	Yield, q/ha	Grain production, 000 tons
In the world	13,500.0	9.7	13,100.0
Australia	2,630.0	10.6	281.2
India	9,547.0	10.4	9,937
Iran	456.0	4.3	200.0
Kazakhstan	67.5	6.6	44.9
Malawi	160.0	8.3	133.9
Mexico	95.8	21.1	202.8
Myanmar	379.0	13.1	499.0
Pakistan	943.0	4.7	446.0
Russia	78.1	10.0	78.5
USA	79.7	10.5	84.2
Turkey	517.7	12.1	630.0
Ethiopia	208.0	20.8	435.1
Uzbekistan	15.0	13.4	20.2

History. Homeland of chickpeas are South-Western Asia. Chickpeas are cultivated in India, Italy, Greece, Bulgaria, Egypt, Algeria, Morocco, Turkey, and Iran. In India, organic acids are

obtained from chickpeas. In Central Asia, chickpeas have long been cultivated. In the world, chickpeas are cultivated on an area of 13.5 million hectares, including in India – 9.6 million hectares. The average grain yield is 9.7 q/ha, and gross production is 13.1 million tons.

Systematics. Chickpea belongs to the legume family – *Fabaceae* to the genus *Cicer* L. The genus includes 27 species, of which 22 are perennial species. Widely distributed along the Mediterranean. Only one type of chickpea is cultivated – *Cicer arietinum* L. It is cultivated, annual, grassy, widely distributed. Varieties of cultural chickpeas: 1) Southern European – *proles loheneicum* G. Pop, 2) Middle European – *proles franscaucasicum* G. Pop. 3) Anatolian – *proles turcicum* G Pop. To determine the types of chickpeas: the shape of the grain, the color of the grain, branching is determined.

Among the crops grown in our country, one of the plants rich in protein, resistant to heat and drought, which has the property of increasing soil fertility, is the local pea - "*Cicer arietinum* L." is a plant. Native pea plants have nitrogen-fixing (120 - 150 kg/ha) *Rhizobium* bacteria in their roots, which absorb free nitrogen from the atmosphere and are readily absorbed by the plant. Therefore, in order to plant peas on a large scale and make a worthy contribution to increasing its productivity, field experiments were conducted to study the growth, development and productivity indicators of the samples of pea varieties brought from the international organization ICARDA in the conditions of typical gray soils of Tashkent region.

#### Experiment methodology.

The scientific research work was carried out in 2007-2008 at the agricultural scientific research and educational experimental farm of ToshDAU, located in Qibray district. In the experiment, the local "Uzbekistan-32" variety was controlled, and 35 new variety samples brought from Syria and Turkey were studied.

The main goal of scientific research work is to isolate high-yielding varieties that are resistant to winter, disease, heat and drought from the varieties planted in the autumn season.

800 m<sup>3</sup> was irrigated to collect moisture in the experimental field. Then, after 6 days, autumn plowing was carried out at a depth of 28-30 cm, chisel - harrowing. After mulching, the distance between the plows on the MTZ-80 tractor was 70 cm.

Since the seed sent from abroad is very small, the number of replicates in the experiment is 3, each replicate is 10 meters long (3 x 10 = 30 m) and the experimental area (30 x 25.2 (36 x 0.7 = 25.2m) is 756.0 m<sup>2</sup> In the fall, pea variety samples were planted on November 5.

#### Analysis of experimental results.

By the second ten days of February, it was observed that the lawns of pea varieties sprouted. However, the number of plant balls was low in some varieties. It can be estimated that these varieties have a lower level of winter resistance.

**Table 2**

***Important economic characteristics of pea variety samples***

No	Varieties name	Plant stem height, cm	The height of the first pod emergence, cm	The number of pods in 1 plant, pcs	1000 seed weight, grams	Grain yield, ts/ha
1	"Uzbekistan - 32" Control type	67,5	16,8	125	361,9	29,2
2	FLIP - 18-10 C	69,8	17,5	118	359,3	25,7
3	FLIP - 18 -11 C	54,3	20,5	97	291,7	20,7

4	FLIP - 18-13 C	46,7	22,1	88	396,5	16,1
5	FLIP - 18-14 C	64,2	16,4	116	376,8	23,6
6	FLIP - 18-15 C	67,5	18,5	108	355,9	22,6
7	FLIP - 18-16 C	60,1	20,8	97	410,2	20,3
8	FLIP - 18-17 C	41,3	27,4	53	433,4	7,8
9	FLIP - 18-18 C	49,8	23,8	77	342,3	13,6
10	FLIP - 18-19 C	52,6	20,1	96	398,5	20,1
11	FLIP - 18110 C	57,1	18,9	100	352,0	22,5
12	FLIP - 18-11 C	55,3	20,0	112	360,4	23,8
13	FLIP - 18-12 C	62,4	16,1	123	371,6	25,5
14	FLIP - 18 -13 C	57,9	14,8	105	356,7	23,7
15	FLIP - 18-14 C	65,2	20,2	117	346,6	25,3
16	FLIP - 18-15 C	61,2	18,6	108	355,6	23,2
17	FLIP - 18-16 C	48,5	26,4	93	385,4	16,6
18	FLIP - 18-17 C	45,4	22,3	89	368,2	14,6
19	FLIP - 18-18 C	51,8	18,4	97	356,2	15,4
20	FLIP - 01-32 C	77,8	11,9	135	393,1	34,6
21	FLIP - 18-20 C	63,0	17,5	117	331,9	28,9
22	FLIP - 04-18 C	71,3	14,0	116	367,1	30,0
23	FLIP - 03-63 C	74,6	12,6	132	374,4	33,3
24	FLIP - 04-24 C	69,7	19,4	117	399,2	25,5
25	FLIP - 18-25 C	65,2	17,8	113	376,1	24,3
26	FLIP - 18-26 C	57,3	21,3	97	366,7	19,7
27	FLIP - 18127 C	63,4	18,7	101	386,0	25,3
28	FLIP - 18-28 C	70,8	17,2	107	360,5	28,1
29	FLIP - 01-63 C	75,6	12,5	128	331,0	33,5
30	FLIP - 18-30 C	62,1	22,4	116	470,2	25,9
31	FLIP - 02-61 C	71,4	13,4	131	401,2	31,9
32	FLIP - 18-32 C	58,4	20,3	114	398,9	25,1
33	FLIP - 18-33 C	60,3	19,6	119	386,8	26,9
34	FLIP - 18-34 C	49,7	25,5	106	341,6	18,4
35	FLIP - 18-35 C	56,5	22,9	110	366,6	19,7
36	FLIP - 18-36 C	61,8	18,5	115	366,0	23,3

It should be emphasized that the low number of plant balls significantly affected the indicators of grain yield.

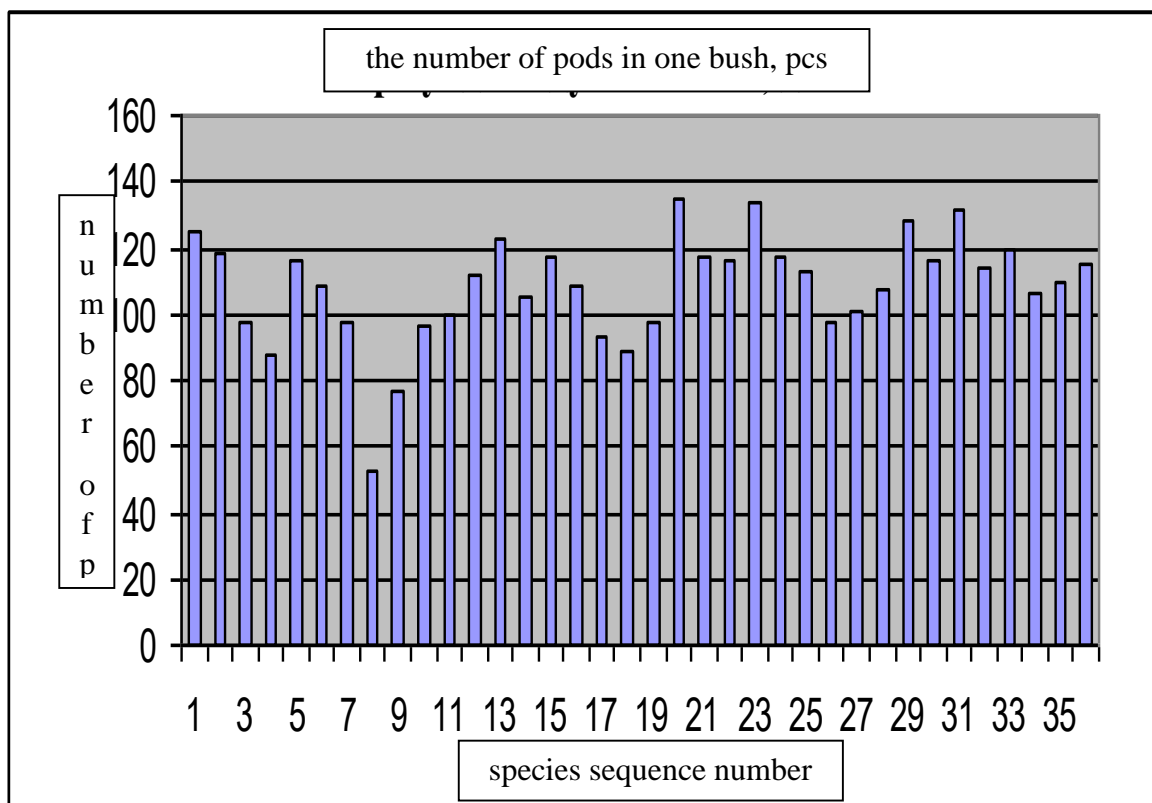
When the stem height of chickpea varieties was determined at the end of the growing season, it was observed that chickpea variety samples had different heights depending on their biological characteristics. Control in samples of the variety inferior to the variety "Uzbekistan - 32": FLIP - 18-17 S - 41.3 cm; FLIP - 18-17 S – 45.4 cm; FLIP - 18-13 S -43.7 cm; FLIP - 18-16 S – 48.5 cm; FLIP - 18-18 S – 49.8 cm; FLIP - 18-18 S - 51.8 cm, and the height of the stem in the following varieties that form an upright stem and form a higher stem compared to the control variety: FLIP - 04-24 S - 69.7 cm; FLIP - 18-28 S – 70.8 cm; FLIP - 04-18 C – 71.3 cm; FLIP -

02-61 C – 71.4 cm; FLIP - 03-63 C – 74.6 cm; FLIP - 01-63 C – 75.6 cm and FLIP - 01-32 C – 77.8 cm. It was found that the height of the stem in the rest of the varieties was average.

In the pea plant, the height of the first pod above the ground on the stem is of great practical importance. Because the location of the first pod is higher than the surface of the earth, it makes it possible to collect the grain crop with the help of combine harvesters, otherwise the harvester organs of the combine harvester may get stuck in the ground and break and not collect the crop. According to the analysis of the received data, the number of pods formed in one plant was the least in the FLIP - 18-17 S variety - 53 pieces, and the most in the FLIP - 01-32 C variety - 135 pieces. Compared to the control variety, FLIP - 18-17 S produced 72 fewer pods, and FLIP - 01-32 C produced 10 more pods.

Chart 1 below shows the important economic characteristics of these varieties:

*Diagram 1*



When the weight of 1000 seeds was determined by counting, it was found that the varieties had different weights based on their biological characteristics.

For example: the control "Uzbekistan-32" variety had a grain yield of 29.2 t/ha, while the FLIP-18-17 S variety yielded only 7.8 t/ha. In the experiment, compared to the control variety, in the following varieties: FLIP - 01-32 S - 34.6 ts/ha, FLIP - 01-63 S - 33.5 ts/ha, FLIP - 03-63 C - 33.3 ts/ha; FLIP - 02-61 C – 31.9 ts/ha; FLIP - 04-18 C – 30.0 ts/ha yield indicators were found to be high.

Summary. According to the obtained results, high yield FLIP - 01-32 S, FLIP - 01-63S, FLIP - 03-63 C; FLIP - 02-61 C; FLIP - 04-18 C varieties - first propagated in the conditions of typical gray soils of the Tashkent region, and then recommended to farmers and peasant farms for cultivation.

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## THE EFFECT OF FERTILIZER EFFECTIVENESS OF MINERAL FERTILIZER FEEDING OF WINTER WHEAT

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**Abstract.** *In the experiment to obtain an increase in grain yield of winter wheat at the expense of fertilizers -24.1 kg / ha, foliar nutrition by 6.7, 22.5 c / ha. When foliar nutrition uptake of winter wheat nitrogen fertilizer was 38.5%, 20.6% of phosphate fertilizers, potash 53.5%. When coupled with the use of mineral and foliar nutrition of nitrogen fertilizer rate was 48.3-74.6%, 26.4-39% phosphate fertilizer potash 68.4-100%*

**Keywords:** *winter wheat, mineral fertilizers, nitrogen fertilizers, phosphorus fertilizers, potassium fertilizers, foliar feeding, nutrients, additional crop, grain yield, fertilizer application.*

**Introduction.** Winter wheat is one of the intensive types of crops that require nutrients, and more than 50% of the grain yield is due to mineral fertilizers. Due to this, it is necessary to fully satisfy the plant's need for these substances in order to grow a high yield of wheat. K. A. Timiryazev writes in his scientific works that Liebig's "doctrine on the return of nutrients absorbed by plants is considered one of the great achievements in science, despite all the criticism." When applying mineral fertilizers, special attention should be paid to the rate of fertilizer, and first of all, the mineral substances absorbed by the plant should be determined. Academician I.S. Shatilov, professor M.K.Kayumovs say that winter wheat consumes on average 3.2 kg of nitrogen, 1.2 kg of phosphorus, 2.0 kg of potassium for the production of 1 centner of grain and, accordingly, for the formation of straw and root mass. However, in the conditions of our republic, the scientific basis of root and non-root feeding of winter wheat has not been developed, and there is insufficient information in this regard. However, in recent years, as the rate of mineral fertilizers in growing winter wheat increases, their effectiveness decreases. In turn, mineral substances not absorbed by the plant have a negative effect on the ecological environment. One of the important factors of increasing the effectiveness of mineral fertilizers is the method of feeding winter wheat outside the roots. The importance of root feeding of winter wheat has been studied in the scientific works of scientists such as Yu. V. Budenny, V. N. Remeslo, I. S. Avdonin. However, in the conditions of our republic, scientific work on the positive effect of foliar feeding on the yield of winter wheat and the effectiveness of mineral fertilizers has not been carried out. Therefore, we set ourselves the goal of studying the effect of foliar feeding on the yield of winter wheat and the effectiveness of mineral fertilizers.

### Experimental methodology

Experiments were carried out in ToshDAU training fields. The soil of the experimental field is a typical gray loam that has been irrigated since ancient times. The amount of humus in the soil layer is 1-1.5%, and in the sub-soil layer it is 0.7-0.9%. The total nitrogen content is 0.15-0.25%, the total phosphorus content is 0.13-0.22%, and the total potassium content is 2-2.4%.



In the experiment, the Kroschka variety of intensive type of winter wheat is studied in different variants. In the control variant, mineral fertilizers were not applied, in the mineral background, fertilizers were applied through the roots. In the studied variants, mineral fertilizers were applied through the roots and a certain part of them were used in extra-root feeding.

The experiment is conducted based on B. A. Dospheov's (1982) "Methodology of conducting field experiments".

In the experiment, the effect of 1st, 2nd and 3rd foliar feeding on the yield and quality of winter wheat is studied. According to experimental options, foliar feeding was carried out 1st, 2nd and 3rd time. Topical feeding is carried out in different concentrations of 5%, 7%, 10% and 12%.

In the experiment, calculations were carried out, that is, from the beginning of the development phase until 50% of the plants appeared, and phenological observations were carried out in the first days of March, April, May and June. All phenological observations were made on separate plants in the plots.

#### **Experience procedures**

The results of the experiment showed that feeding winter wheat outside the root increases crop yield and has a positive effect on the effectiveness of mineral fertilizers in a row.

Based on the above information, we can determine the additional grain yield and the effectiveness of mineral fertilizers in foliar feeding.

Data on the effect of foliar feeding on the coefficient of use of mineral fertilizers of winter wheat are presented in Table 1.

**Table-1**

***Plant absorption of mineral fertilizers***

№	Options	Grain crop ts/ha	The yield obtained at the expense of natural fertility, ts/ha	Yield due to mineral fertilizers, ts/ha	Spending on additional crops gan mineral fertilizer, kg/ha		
					N	P	K
1	Without fertilizer	25.1	25.1	-	-	-	-
2	N-200, P-140, K-90 kg/ha FON	49.2	25.1	24.1	77.1	28.9	48.2
3	FON+1suspension (N)	55.9	25.1	30.8	96.6	37.0	61.6
4	FON+2suspension (N)	62.8	25.1	37.7	120.6	45.2	75.4
5	FON+3suspension (N)	67.2	25.1	42.1	134.7	50.5	84.2
6	FON+3suspension (NPK)	71.7	25.1	46.6	149.1	55.9	93.2

In the experiment, 25.1 ts/ha of grain yield was grown in the control option according to the natural fertility of the soil. The grain yield of winter wheat on the mineral background was 49.2 t/ha, the additional grain yield obtained at the expense of mineral fertilizers was equal to 24.1

t/ha. The grain yield of winter wheat was 55.9-71.7 ts/ha, compared to the additional control variant, 30.8-46.6 ts/ha, and 6.7-22.5 ts/ha, compared to the mineral background.

The results of the conducted experiment showed that feeding winter wheat outside the roots has a positive effect on the process of metabolism in the plant, in particular on the assimilation of mineral substances.

The results of the experiment showed that mineral nutrition, including extra-root nutrition, has a positive effect on the acceleration of all physiological processes in the plant, on the biological yield of the plant, and on the effectiveness of mineral fertilizers. The effectiveness of mineral fertilizers was observed especially in conditions where winter wheat was fed three times during the season.

The results of the scientific research show that if the plant absorbs 81.3 kg/ha of nitrogenous fertilizers on a mineral background, it absorbs about 102.7-152.3 kg/ha in the variants of root feeding.

Root feeding also has a positive effect on the plant's absorption of phosphorus and potassium nutrients. For example, when wheat is fed through the soil, the plant absorbed 30.5 kg/ha of phosphorus fertilizers. In addition to the roots, in the variants of foliar feeding, the plant absorbed approximately 38.5-57.1 kg/ha of phosphorus fertilizers with additional yield. The highest rate of phosphorus uptake by plants of 57.1 kg/ha was observed in the variant where a solution of phosphorus and potassium fertilizers was used along with carbamide.

When winter wheat is fed through the leaves in addition to the roots, the absorption of potash fertilizers by the plant is significantly improved. In the mineral background, the plant absorbed 50.8 kg/ha of potash fertilizers with additional crops, and 64.2-95.2 kg/ha in the case of foliar feeding.

As the assimilation of mineral nutrients with additional crops increases in the conditions of foliar feeding, the efficiency of mineral fertilizers, that is, the coefficient of use of mineral fertilizers, also increases. (Table 2)

**Table 2**

***Fertilizers for foliar feeding of winter wheat effect on efficiency***

№	Options	Efficiency of mineral fertilizers,%		
		N	P	K
1	Without fertilizer	-	-	-
2	N-200, P-140, K-90, FON	38.5	20.6	53.5
3	FON+1 suspension(N)	48.3	26.4	68.4
4	FON+2 suspension(N)	60.3	32.3	83.8
5	FON +3 suspension(N)	67.4	36.1	93.5
6	FON+3 suspension (NPK)	74.6	39.9	100

In all options studied in the experiment, the rate of plant use of mineral fertilizers was higher than the control option.

As can be seen from the above table, winter wheat absorbs 38.5% of nitrogen fertilizers, 20.6% of phosphorus fertilizers, and 53.5% of potassium fertilizers when fed from the root.

When winter wheat was fed with root orca and partly with leaf orca, the nutrient utilization coefficient of the plant was 48.3-74.6% in nitrogen fertilizers, 26.4-39.9% in phosphorus fertilizers, and 68.4-100% in potassium fertilizers.

Therefore, for effective use of mineral fertilizers, winter wheat should be fertilized 3 times during the season.

### **Conclusions**

- In the experiment, 25.1 ts/ha grain yield was grown according to the natural fertility of the soil in the control option;
- The grain yield of winter wheat on the mineral background was 49.2 t/ha, the additional grain yield obtained at the expense of mineral fertilizers was equal to 24.1 t/ha;
- Winter wheat grain yield was 55.9-71.7 ts/ha, compared to the additional control variant, 30.8-46.6 ts/ha, and 6.7-22.5 ts/ha, compared to the mineral background;
- Winter wheat absorbs 38.5% of nitrogenous fertilizers, 20.6% of phosphorus fertilizers, 53.5% of potassium fertilizers when fed from roots;
- When winter wheat was fed with root orca and part of it with leaf orca, the plant's nutrient utilization coefficient was 48.3-74.6% in nitrogen fertilizers, 26.4-39.9% in phosphorus fertilizers, and 68.4-100% in potassium fertilizers.

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## RESISTANCE AND PRODUCTIVITY INDICATORS OF CEREAL CROPS TO EXTERNAL FACTORS IN MEDIUM SALINITY SOIL - CLIMATE CONDITIONS

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**Abstract.** *This article is based on the data obtained in the field experiments conducted in order to determine the resistance to abiotic and biotic factors and productivity elements of barley and triticale varieties planted in the demonstration field of Syrdarya region. In the experiment carried out in field conditions, when the plants were harvested and the biological yield was determined, the triticale "Boyovut" variety - 88.3 t/ha, the "Tuyatish" variety - 83.1 t/ha, the barley "Mashuldar" variety - 67.6 ts/ha, in "Sayhun" variety - 69.0 ts/ha and in "Syrdarya" variety - 65.8 ts/ha. It was observed that the indicators of resistance to external factors were higher in barley varieties, and based on the biological capabilities of the plant, productivity elements were higher in triticale varieties compared to barley varieties.*

**Keywords:** *triticale, barley, variety, seed, protein, vitamin, variety test, planting time, development phases, stem, ear, grain, yield.*

Usage. Triticale is a valuable cereal, contains a lot of protein and essential amino acids (lysine, tryptophan). On average, there is 1.0-1.5% more protein than wheat, and 3–4% more than rye. Gluten is the same as wheat, but the quality is lower. Grain is used in bread baking, the confectionery industry, and for animal feed. Straw is used for animal feed and for bedding for livestock. Feed triticale varieties are sown for green fodder, silage, and grass meal. Feed from triticale is well eaten by animals.

Triticale is cultivated where wheat and rye are sown. It is widespread in Russia, in the Caucasus. There is interest in such hybrids in several European countries. The grain yield is 5–7 t / ha, and the biomass is 40–55 t / ha.

In Uzbekistan, this crop is studied in a number of research institutes. It is cultivated in intermediate crops of forage crops.

Systematics. Triticale is a hybrid of bread wheat and winter rye. The best properties of the two crops combined in one plant. The name Triticale comes from the first part Triticum (wheat) of the second part Secale (rye). Triticale has spring and winter forms.

Barley is a valuable cereal used in the food industry and as a valuable feed for animals. Barley grains are obtained from barley grain – barley, and barley differing in nutritional value and good digestibility.

The value of a crop is estimated by its valuable biological qualities, like early maturity, which makes it possible to cultivate it in northern areas. The crop is tolerant to drought and salt, which makes it possible to use the crop in harsh environmental conditions.

Content of "crude protein" in grain fluctuates from 7 to 25%. The embryo contains 26–36% of protein, 8–14% – in the endosperm, and 7–10% – in the shells, and in the biomass in the phase of earing – 1.8 - 3.5%. The protein fraction is heterogeneous: albumin – 7.5 - 28.8%, globulins – 7 - 21.9%, hordeins – 15.6 - 46.4%, glutelin – 18 - 47.5%, non-protein nitrogenous substances – 7.5 - 16.9%. The average content of amino acids in the total protein of barley grain is: lysine – 3.35%, histidine – 2.09, arginine – 4.37, aspartic acid – 27.35, proline – 12.32, cystine – 1.17, glycine – 3.81, alanine – 4.10, valine – 4.97, methionine – 2.57, isoleucine – 3.61, leucine – 6.53, tyrosine – 2.52, phenylalanine – 5.24 [32]. The biological value of barley protein is low – 51.2%, compared with oat – 83.4% and wheat – 59.9% [38]. The carbohydrate content is 44 - 56%, the main part is starch. This contributes to the quality of the beer. In addition to starch, there are hemicellulose, cellulose, dextrans and pectin substances. The content of oil (lipids) is 2.70 - 3.30%. The grain also contains enzymes, vitamins – thiamine, riboflavin, nicotinic acid, carotene, tocopherol [39].

The quality of the grain depends on the degree of flaking of the grain. Since barley has a filmy grain, it first separates the flower florets and partially the outer shells and germ, which leads to a decrease in the quality of the grain.

In order to ensure the stability of grain independence of our country - to carry out ecological testing of new varieties of grain crops in the soil-climate, water and air conditions of the Syrdarya region, to study their morphological economic characteristics, as well as to produce acceptable fertilizing and watering regimes, to distinguish their promising ones, to start initial seed production laying works is one of the urgent tasks.

Experimental methodology. In 2013, field and laboratory experiments on grain cultivation were carried out in the medium salinity area of the "Selection and seed breeding" experimental branch farm in the United region of Saykhunabad district, Syrdarya region. During the experiment, phenological observations, calculations and analyzes were carried out according to the method of the Institute of Plant Science of Uzbekistan (1984), and biometric analyzes were carried out according to the method issued by the State Commission for Variety Testing of Agricultural Crops (1985; 1989).

Statistical analysis of the data obtained in the experiment B.A. It was conducted based on the method developed by Dospikhov (1985).

The disease resistance of the cultivars and lines studied in the experiment was evaluated in percentage (%) according to the scale developed at the international ICARDA (International Center for Agricultural Research in Dry Areas) Center (1996).

Based on the results of the analysis of weather conditions in 2013, it was observed that the autumn (October) month for grain was warm compared to the average for many years, and January and February were also quite warm, so it was observed that the grain entered the village in the fall with full piles.

**Table 1**

**General and mobile in soil composition amount of nutrients**

Soil layer, cm	Gross, %			Active, mg/kg	
	Rotted	N	P	N-NO <sub>3</sub>	P <sub>2</sub> O <sub>5</sub>
At the beginning of the validity period, 23.04.2013					
0-30	0.761	0.070	0.117	2.69	10.3
30-50	0.686	0.061	0.098	1.77	7.4

Analysis of experimental results

In the demonstration field, the grain varieties cultivated in our Republic were tested in all respects by planting them in the medium salinity soil of the region.

*Table 2*

***Indicators of resistance to abiotic and biotic factors and productivity elements of barley and triticale varieties planted in the demonstration field.***

№	Varieties and lines	Resistance to lodging down, score	Heat resistance, %	Salt resistance, %	Stem height, cm	The number of grains in one ear, piece	1000 pcs grain weight, Gr	Received harvest, ts/ha
1	name	7	70	76	140	48	40.0	88.3
2	Boyovut	9	68	73	120	48	40.7	83.1
3	Appetite	9	88	88	110	40	41.8	67.6
4	Productive	7	84	81	102	42	42.4	69.0
5	Saihun	9	88	82	102	39	42.2	65.8

The analysis of the data obtained on the resistance to biotic and abiotic factors and yield of barley and triticale varieties planted in the moderately saline areas of the Syrdarya region shows that the main stem height indicators of the triticale "Boyovut" variety are 140 cm, the "Tuyatish" variety is 120 cm, and the barley "Mashuldor" variety is 110 cm, it was found that it was 102 cm in "Sayhun" and "Syrdarya" varieties.

It can be seen that in the average saline soil-climate conditions of Syrdarya region, triticale varieties had 20-40 cm higher stem height indicators than barley varieties.

In the formation of the crop elements of spiked grain crops, it is important that the stem is lying upright or under the influence of adverse factors. When the resistance to lodging was determined in barley and triticale varieties planted in the field of variety testing, it was equal to 7-9 points.

Determining the degree of drought and heat resistance of the varieties of grain crops studied in the experimental field N. Kojushka and A.M. According to the Volkova method, compared to triticale varieties (68-70%), it was observed that heat resistance of barley varieties was higher (84-88%).

It was noted that this pattern was also found in the indicators of salt resistance, and salt resistance in triticale varieties was 73-76%, and in barley varieties - 81-88%.

Triticale "Boyovut" and "Tuyatish" varieties studied in the field of variety testing have an average of 48 grains per ear and barley varieties "Mahsuldor", "Saykhun", "Sirdaryo" 40; 42; It was found that 39 grains were formed when the ear was analyzed in laboratory conditions.

It is noted in scientific sources that the formation of a large or small number of grains per ear is directly related to the indicators of the weight of 1000 grains. The same law was observed in our scientific research work and the average weight of 1000 grains of triticale "Boyovut" and "Tuyatish" is 40 - 40.7 grams and barley "Mahsuldor", "Saykhun", "Sirdaryo" is 41.8; 42.4; It was 42.2 grams.

In the experiment, when the plants on the calculated area were collected and the biological productivity was determined, triticale "Boyovut" variety - 88.3 t/ha, "Tuyatish" variety - 83.1 t/ha,

barley "Mashuldar" variety - 67.6 t/ha, " It was 69.0 t/ha in Sayhun variety and 65.8 t/ha in "Syrdarya" variety.

Summary. In conclusion, according to the results of scientific research carried out in field conditions, it was observed that the indicators of resistance to abiotic and biotic factors were high in barley varieties, and based on the biological capabilities of the plant, the productivity elements of triticale varieties were higher than barley varieties.

When determining the grain yield of the researched varieties of triticale and barley, the "Boyovut" variety of triticale has 88.3 centners per hectare, the "Tuyatish" variety - 83.1 t/ha, the "Mashuldar" variety of barley - 67.6 t/ha, the "Sayhun" variety - 69.0 t/ha and "Syrdarya" variety - 65.8 t/ha grain yield was obtained and it is recommended to plant these varieties.

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# FROM THE HISTORY OF THE ESTABLISHMENT OF THE NATIONAL VETERINARY SERVICE IN THE LIVESTOCK INDUSTRY OF UZBEKISTAN

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**Abstract.** *In the scientific article, the Central Asian regions have favorable natural conditions, domestication of current domestic animals from the earliest times, the emergence of animal husbandry and the gradual development of folk veterinary medicine are studied on the basis of spiritual and material historical sources.*

**Keywords:** *herdsman, domestication, Machay Cave, paintings on the rocks of Sarmishsay, natural self-healing instinct in animals, Konimex, 9 cm tube, Kovuz Tepa, heart valve, surgical surgery.*

## INTRODUCTION

People's veterinary medicine in the cattle breeding of Uzbekistan was created in the earliest period of the history of our country with the emergence of farming and animal husbandry. At a certain stage of human historical development, animal husbandry is separated from farming and becomes the main and important branch of economic activity of people, a source of livelihood, creation of material wealth, property acquisition, and the main field of necessary, vital activity. In this process, the types of domesticated animals will gradually increase. Different ways of increasing their productivity, looking, keeping and caring for them, different forms of relations appear. Ways to increase livestock productivity and its effective use are sought.

In the regions of Central Asia with favorable natural conditions, domesticated animals were first trained and domesticated from the earliest times, cattle breeding, horse breeding, and camel breeding developed and became the main factor in the development of society to certain levels, expressed in Chinese annals and other written sources. The first companion of humans was the dog breed.

In the ancient written source, the holy "Avesta", the prophet Spitama addresses the chief god Ahura-Mazda and says, "You created cattle, which are the source of our livelihood." And in the book Yasht (Hymns) of "Avesta", the main deity is the guide to all necessary activities, and when he mentions his 20 sacred names, he gives the following information: "Then Khurmuzd" opened a word in Ahuramaz: "My name is Rakhtya. He describes Sadiq Zaraushtura as a herdsman, a herdsman, a herdsman. This information is based on the fact that the ancient tribes engaged in cattle breeding, the main god Ahura-Mazda created marshy pastures, took the cattle under his protection, even the name "cattle" became the name of the main god, as well as the fact that cattle breeding was one of the foundations of the economic activity of our ancestors even before the appearance of the holy book "Avesta" indicates.

It is no coincidence that in the book "Videvdat" of "Avesta" "where they breed small and large animals, there will be prosperity". Our clan and tribal ancestors who lived in the ancient world were at first engaged in large-scale cattle breeding, goat breeding and small livestock - sheep



and goat breeding. Archaeologist U. Islamov believes that among the ancient monuments in Central Asia, in the territory of Uzbekistan, the archaeological finds in the Machai cave indicate that important economic changes took place among the primitive communities in our country.

### **RESEARCH MATERIALS AND METHODOLOGY**

Archaeologist M. J. Zhorakulov emphasizes the conclusion that the elements of animal husbandry appeared and developed, i.e., animal husbandry, in the archaeological monuments of the Machai cave, characteristic of the late Mesolithic period, in the actions of ancient hunter-herdsmen. Archaeologist J. Kabirov gives an example of a valuable idea in his work. Our ancestors, who lived in the ancient Zarafshan oasis, may have trained cheetahs and used them to hunt various animals as early as the III-II millennia BC. Because a trained cheetah is better than pure dogs in every way." , - he writes. Of course, if this reasoning is based on the ancient paintings of Sarmishsay on the rocks, then it is not possible to show different periods of historical sources (as if 3-2-1 millennium BC) about the peoples of our ancient land engaged in animal husbandry and turned it into an economic activity includes a long period in its historical development. The pictures of cattle breeding in Sarmishsay testify that they belong to the 3rd-1st millennium BC, and the images of large horned animals belong to the 3rd-2nd millennium BC.

Images of domestic animals on the rocks of Sarmishsay are also found on the rocks of the Karatog, Bukantog, and Morguzor mountains in Central Asia and Azerbaijan. There are more than a hundred ancient monuments that exist in the Suratly stream of the Sokh oasis, in the Zaroutkamar cave of Kohitangtog, in Saymalitoshi of Kyrgyzstan, in the stone gorges of Koybokar, Turgan, Ulugtog, Tomgali in Kazakhstan, in Qobistan of Azerbaijan, and in several other mountainous regions of our republic found in places with pictures on rocks.

The above historical, archeological and written sources testify that our ancient ancestors protected livestock from natural or infectious diseases based on the domestication of several hunting animals. The use of treatment methods, the identification of medicinal-healing plants (these plants or various bodies were used by animals under the influence of natural instinct, which people learned by observing them), and the use of them in the folk medicine method became more and more widespread. With the passage of years, centuries, and eras, such actions have been improved, and the service of veterinary medicine has appeared in animal husbandry. A. Kadirov gives unique examples from a number of sources in his work. "Historical facts show that" external medicine first appeared among animals. It is informed by the fact that there are many examples of self-healing of animals from various diseases in the available literature.

For example, one infected wild rabbit collects spider mites, rubs them on its injured area and recovers. Later, when that spider mite was examined, it was found that it has blood-stopping, calming and healing properties. People of Siberia were looking for and eating the roots of Siberian deer Levzen (reindeer root). Because this plant is medicinal, an extract is prepared from it in medicine. Humans have learned this from horses as well, - it is said in this book. Or one Gibbon (a small, man-like ape) had a sore in his mouth and suffered from a serious illness, he found some medicinal plant in the forest, crushed it, made it into a paste, and applied it to the bleeding place and the sore in his mouth.

### **RESEARCH RESULTS**

So, the monkey-gibbon not only knows the medicinal plant, but also knows the method of making medicine-paste from this plant. It should not be concluded that animals know more about the treatment of veterinary medicine than humans. Because for animals, this state is considered a

natural instinct, a passive action, and it cannot reach the level of human conscious action and scientific knowledge. The self-healing instinct in animals has been observed by humans since ancient times, continuing in livestock species that were hunted by humans and later domesticated. In the process of treatment, they identified and studied the types of medicinal plants used by animals, mastered them and used them in the service of daily medicine. It should also be noted that according to the scientists of the field of physiology and pathology, animals find and eat these medicinal plants due to the need to eat them as a result of feeling the hunger that occurs in their body for medicinal and healing plants. If there is a lack of salt, calcium and potassium in the body of domestic animals, they lie on the saltier ground, and many animals drink more water than they need from reservoirs, lakes and ponds containing sulfur, iron and other microelements indicate that it continues until now in the form of instinct. Because these changes in the animal organism are the result of the effect of the self-healing instinct.

In determining the history of primitive people, clans, tribes, ancient peoples, daily life, spirituality, culture, art, medicine, folk medicine, veterinary service, who lived in the territories of modern Uzbekistan, it is important to use unique, historical sources that have been preserved in the motherland for centuries to this day. The paintings found in more than one place are diverse in their content, features, stylistic directions, era, and structure, and are directly famous in Angara, Lena, Enisei, Baikal, Orti, Amur, Ural, Karelia, Kabistan, Africa's Sahara-Kabir, Spain and Depending on the rock paintings in France, it is characterized by similar aspects and proportions.

The ancient Greek historian Herodotus narrates and writes down a characteristic story about the "use of veterinary medicine" by the Scythian tribes (peoples of Central Asia) in animal husbandry. While narrating the method used by the Scythian tribes in order to obtain milk from tajang (stubborn) cows that did not give milk, "the tribesmen took the small marrow bone of a small animal (sheep or goat) and grinded it well, processed it on both ends, and it is also called munshtuk (fist) They made a smoking instrument, a medical and veterinary instrument - a hollow, thin, unique tube. One end of this tube was wrapped around the cow's udder in a "talisman" and inserted into the channel where milk did not come (the doctor did this quickly, secretly and masterfully), and immediately from the other end of the tube, the "magician" blew hard, opened the milk duct and sent air, and in practice milk began to flow. There is no magic involved in this method, but it is a real practical medicine, and the people of our country still partially use this method.

It can be said that the case presented in this example is the first practical method of veterinary medicine widely used by the people in the animal husbandry of our people since ancient times - cattle and goat breeding were used in parallel, and livestock were used as treatment for each other. A number of European scientists, including Yu.M. Kabishchchanov, B.V. Mirmanov, A.D. Drizdo and others, have described this method of treatment of dairy cows in livestock - "this folk method of animal husbandry arose first of all in Africa and the Middle East, after them spread among other peoples" - they put forward the opinion.

In the village of Kalkanota, on the right bank of the Zarafshan River, Navoi Region, up to the Konimekh canal route, a small mole, 9 centimeters long and 1 centimeter in diameter, found among human bones in one of the fortresses of the Achaemenid period (VI-V centuries BC) - a tube made of sheep's bone - proves the unfoundedness of the above-mentioned scientists' opinion. proved According to experts, this method was used 2500 years ago and even earlier by the herders

who lived in the Zarafshan oasis to practice the practical treatment of "magic" in veterinary medicine.

In determining the history of primitive people, clans, tribes, ancient peoples, daily life, spirituality, culture, art, medicine, folk medicine, veterinary service, who lived in the territories of modern Uzbekistan, it is important to use unique, historical sources that have been preserved in the motherland for centuries to this day. The paintings found in more than one place are diverse in their content, features, stylistic directions, era, and structure, and are directly famous in Angara, Lena, Enisei, Baikal, Orti, Amur, Ural, Karelia, Kabistan, Africa's Sahara-Kabir, Spain and Depending on the rock paintings in France, it is characterized by similar aspects and proportions.

The ancient Greek historian Herodotus narrates and writes down a characteristic story about the "use of veterinary medicine" by the Scythian tribes (peoples of Central Asia) in animal husbandry. While narrating the method used by the Scythian tribes in order to obtain milk from tajang (stubborn) cows that did not give milk, "the tribesmen took the small marrow bone of a small animal (sheep or goat) and grinded it well, processed it on both ends, and it is also called munshtuk (fist) They made a smoking instrument, a medical and veterinary instrument - a hollow, thin, unique tube. One end of this tube was wrapped around the cow's udder in a "talisman" and inserted into the channel where milk did not come (the doctor did this quickly, secretly and masterfully), and immediately from the other end of the tube, the "magician" blew hard, opened the milk duct and sent air, and in practice milk began to flow. There is no magic involved in this method, but it is a real practical medicine, and the people of our country still partially use this method.

Those who knew and were able to practically treat these diseases by giving vaccinations and medicines. This method of treatment is simple, the doctor, knowing for sure that the animal is sick, cuts a certain place and drains the blood, and carefully removes the urine from the ureter in a surgical manner, and treats the sick animal by extracting the accumulated toxic substances. In this way, "magician" totemists, folk healers, treated diseases such as jaundice (also in humans), rabies. Or if there is itching, shedding of hair (wool), sores on the sides of horses (especially horses that pull carts and other loads), or if they swell or fester, those who have been able to diagnose and treat such diseases immediately. This method has been known in our people since ancient times. Such sick people were treated quickly, they fed barley to the horses for 40 days, they cured the sick by taking blood from the edge and vein, rubbing and washing.

In our ancient peoples, the extraction of blood, urine, and the extraction of toxic substances were the first manifestations of surgery in the veterinary service of folk medicine in animal husbandry. Ancient veterinarians knew how to diagnose diseases based on the color of blood, i.e. they considered animals with yellow-red blood to be healthy, if an infected animal, for example, had a cold, its blood was dark red. When the method of bloodletting is necessary for the treatment of diseases of cattle, several parts of the cattle's body, even veins, are cut at the same time. In particular, to treat diseases of large horned cattle, the vein from the ear or the space between the heels of the legs, from the leg vein of sheep-goats, or from the blood vein on the upper lip, the ear of pigs or they operated on a blood vessel in the tail and let out blood. When bitten by some poisonous creatures, they performed the treatment in this way and applied medicine to the operation sites. These operations are performed perfectly using sterilized flat, smooth plastic instruments made of surgical iron, copper, bronze. Doctors have been able to provide obstetric services to animals since ancient times. Those who have achieved surgical removal of the damaged

embryo or fetus. The method of performing such surgical operations on animals by special surgeons is widespread only in Central Asia in general. The center was widely used between the two rivers. Of course, castration in mares was carried out by special persons (only a few people), people who knew medical surgery. They performed surgical operations only in spring and autumn.

### **CONCLUSION**

People's veterinary-medical service, "magical" medicine combined with practical veterinary medicine has been improved and experience has been increasing in people over the centuries. In the process of studying the history of ancient veterinary medicine, all peoples have followed such an objective path of development, and the history of the practice of veterinary medicine, which is characteristic of the peoples of Central Asia, was created before all other peoples. Initially spontaneous - deification, combined medically with the "magical" method. Gradually, with the passage of time, the "magic" method of treatment acquires a religious tone, and the state of natural veterinary treatment acquires a secular practical activity. Such a development will take place in East-Central Asia and Transcaucasia. This process takes a long time, and the creation of centralized states affects the strengthening of the country's strength, material and moral well-being, and defense capabilities. Animal husbandry became the source of livelihood, economic activity and material wealth in the life of ancient peoples and tribes of our country in the ancient world. This is the ancient land of Turan Zamin, the land of veterinary doctors who contributed to the development of animal husbandry by treating not only themselves, but also livestock from various diseases.

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# EFFICACY OF CHEMICALS AGAINST SWEET BELL PEPPER PESTS IN HYDROPONICS

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**Abstract.** *In the article, research was conducted to determine the effectiveness of chemical preparations against pollinator pests, which harm the export sweet bell pepper grown in modern hydroponic greenhouses. Researches were conducted in the 2.0-hectare area of the greenhouse farm belonging to Daromad Omad Fayz LLC in Okdarya district of Samarkand region. Based on the conducted research, practical conclusions and recommendations are given.*

**Keywords:** *hydroponics, export, sweet bell pepper, aphids, thrips, aphids, new preparations, option, efficiency*

**Introduction.** Greenhouses based on hydroponics technology account for 80% in Scandinavian countries and more than 50% in the Netherlands. Most of the crops grown in greenhouses around the world are vegetable crops. More than 620,000 hectares of greenhouses have been built around the world, of which 430,000 hectares are used to grow tomatoes, cucumbers, sweet bell peppers, eggplants and salad plants. Today, modern hydroponic greenhouses are rapidly growing in size around the world due to several conveniences. At the same time, many insects hibernate, spread, transport and spread a number of infectious diseases.

In order to continuously provide the population with these products throughout the year, it is important to find ways and means of effective protection of their crops from diseases and pests. Various diseases and pests occur in large quantities in these types of crops and cause great damage. In the world today, greenhouse mite (*Trialeurodes vaporariorum* West.), greenhouse thrips (*Heliethrips hatmorrhoidalis* Bouche.), plant aphids (Aphididae), spider mite (*Tetranychus urticae* Koch.), tomato rust mite (*Aculops Lycopersici* Masee.), tobacco thrips (*Thrips tabaci* Lind.) and rodent pests; autumn moth (*Agrotis segetum* Den. Et Schiff.), cotton moth (*Helicoverpa armigera* Hbn.), caradrina (*Spodoptera exigua* Hb.), pore-forming flies (Agromyzidae), and other systematic families 40-50% of the plant yield is lost, and in some greenhouses even up to 60-70% as a result of severe damage by pests.

Taking into account the above, we aim to determine the effectiveness of chemical agents against sucking pests of sweet bell pepper in hydroponic conditions and give practical conclusions and suggestions for production based on the obtained results.

Place of research and research method: Experiments 2.0 researches were conducted in the greenhouse farm belonging to "Daromad Omad Fayz" LLC in Okdarya district of Samarkand region. In order to determine the effectiveness of new chemical agents against sucking pests of sweet bell pepper, Samo Farm Servis LLC received the preparation Vapcomore 20% n.kuk presented by the farm of Uzbekistan for testing. Research is conducted on the basis of generally accepted entomological observations (Fasulati, 1961; Uspensky, 1973; Khojaye, 1994, 2018; etc.). The methods of E.V. Kozhanchikov (1961), V.I. Tansky (1975, 1988) and Sh.T. Khojaye (2018) are used to study the development of insects. Toxicological studies by K.A. Gar (1963,

1967), Sh.T. Khojayev (2004) and W. Abbot (1925), biological, economic and economic efficiency by A.F. Chenkin (1979) and Sh.T. Khojayev (2004) ) based on recommendations.

**Research results.** During the growing season of vegetables and potatoes in the greenhouse farms of our republic, there are a number of sucking pests, and 30-40% of the crop dies due to the damage caused by these pests.

Several types of these pests cause damage to aphids in the greenhouse. Among them, alfalfa or acacia sap, cotton or polys sap are harmful. At the same time, tobacco thrips and aphids settle on the young leaves and growth points of sweet bell pepper and bite and damage them. The underside of the affected leaves has a distinctive silvery sheen, and the damaged buds have wrinkled, uneven leaves. When the growing point dies, the development of the plant is disrupted, sometimes the young plant dies.

In 2023, Vapcomore 20% n.kuk preparation 0.15-0.2 l/ha was used against aphids, thrips, spider mites on sweet bell pepper plants grown in hydroponic conditions in greenhouses to determine the effectiveness of new chemical agents against these pests. 'rf-standard tested. As an example, Mospilan 20% n.c. the drug was selected.

According to the results of the experimental test, the Vapcomore 20% n.kuk preparation against aphids at a rate of 0.15-0.2 l/ha was used at a rate of 78.9%-80.0% compared to the control in 3 days of calculation. if the efficiency was achieved, it was the highest by the 7th day, that is, it was 88.2%-86.8%. By the 14th day of our observations, this indicator was 82.1%-84.3%, and by the 21st day, it was observed that it decreased slightly, that is, it was 77.50%-79.0% .

As a sample option, Mospilan 20% n.k. 78.4% efficiency compared to the control was achieved on the 3rd day of calculation in the case where the drug was used at a consumption rate of 0.2 l/ha, and by the 7th day of the calculation, this indicator showed 85.4%. By the 14-21 days of our observation, the efficiency is 80.3%-75.1% (Table 1).

In the control variant, it was observed that the number of aphids did not decrease during 21 days.

According to the results of the conducted research, Vapcomore 20% n.kuk preparation against thrips in the variant used at a consumption rate of 0.15-0.2 l/ha was 81.5%-83% compared to the control in 3 counting days. When 1% efficiency was achieved, it was the highest by day 7, which was 88.3%-86.8%. By the 14th day of our observations, this indicator was 80.2%-81.7%, and by the 21st day, it was slightly decreased, that is, it was 76.3%-78.1%.

As a sample option, Mospilan 20% n.k. 80.2% efficiency compared to the control was achieved in the case of the drug being used at a consumption rate of 0.2 l/ha on the 3rd day, and 86.4% on the 7th day. By the 14-21 days of our observations, the efficiency is 79.4%-75.0% (Table 2).

In the control variant, it was observed that the number of thrips did not decrease during 21 days.

According to the results of the conducted research, the anti-mite Vapcomore 20% n.kuk preparation at the rate of 0.15-0.2 l/ha was used in the standard consumption mode on the 3rd day compared to the control by 89.2%-90, When 1% efficiency was achieved, it was the highest by day 7, which was 87.5%-88.2%. By the 14th day of our observation, this indicator was 84.9%-85.6%, and by the 21st day, it was slightly decreased, that is, it was 82.3%-83.1%.

As a sample option, Mospilan 20% n.k. 88.2% efficiency compared to the control was achieved in the case of the drug being used at a consumption rate of 0.15 l/ha on the 3rd day, and

86.5% on the 7th day. By the 14-21 days of our observations, the efficiency is 84.4%-82.0% (table).

In the control variant, it was observed that the number of cockroaches did not decrease during 21 days.

**Table 1.**

**Biological efficiency of the preparation Vapcomore 20% n.kuk against aphids in the greenhouse (Greenhouse farm belonging to "Daromad Omad Fayz" LLC in Okdarya district, Samarkand region, 10.09.2023)**

№	Versions	Consumption amount 1/ha, kg/ha	The number of aphids on one leaf, pcs				
			Before processing	After processing, the following days			
				3 day	7 day	14 day	21 day
1.	Vapcomore 20% n.kuk	0,2	25,1	4,8	3,1	4,3	6,1
2.	Vapcomore 20% n.kuk	0,15	24,6	5,2	3,4	4,8	6,4
3.	Mospilan 20% n.c. (template)	0,15	25,5	5,5	3,7	5,0	6,5
4.	Control (unprocessed)	-	26,2	26,3	27,5	28,6	30,3
<b>Biological efficiency (%)</b>							
1.	Vapcomore 20% n.kuk	0,2	26,3	80,9	88,2	84,3	79,0
2.	Vapcomore 20% n.kuk	0,15	25,7	78,9	86,8	82,1	77,5
3.	Mospilan 20% n.c. (template)	0,15	25,5	78,4	85,4	80,3	75,1
4.	Control (unprocessed)	-	26,2	-	-	-	-

**Table 2.**

**Biological efficiency of Vapcomore 20% n.kuk preparation against thrips in the greenhouse (Greenhouse farm belonging to "Daromad Omad Fayz" LLC in Okdarya district, Samarkand region, 10.09.2023)**

№	Versions	Consumption amount 1/ha, kg/ha	The number of aphids on one leaf, pcs				
			Before processing	After processing, the following days			
				3 day	7 day	14 day	21 day
1.	Vapcomore 20% n.kuk	0,15	15,7	3,0	2,8	3,2	3,5
2.	Vapcomore 20% n.kuk	0,2	15,8	2,8	2,5	3,2	3,5



3.	Mospilan 20% n.c. (template)	0,15	16,6	3,0	2,8	2,9	3,6
4.	Control (unprocessed)	-	16,5	17,2	18,1	19,4	20,1
Biological efficiency (%)							
1.	Vapcomore 20% n.kuk	0,15	15,7	81,5	85,6	80,2	76,3
2.	Vapcomore 20% n.kuk	0,2	15,8	83,1	88,3	81,7	78,1
3.	Mospilan 20% n.c. (template)	0,15	16,6	80,2	86,6	79,4	75,0
4.	Mospilan 20% n.c. (template)	-	16,7	-	-	-	-

**Table 3.**

***Biological efficiency of Vapcomore 20% n.kuk drug against spider mite in greenhouse  
(Faradis threshing farm, located in Yukorichirchik district, Tashkent region, 10.09.2023)***

№	Variants (name of drugs)	Consumption rate, l/ha	The average number of mites on one leaf, pcs				Biological efficiency by days, %				
			Before processing	days after processing			3	7	14	21	
				3	7	14					21
1.	Control ( <i>ishlov berilmagan</i> )	-	16,5	17,2	18,1	19,4	20,1	-	-	-	-
2.	Mospilan 20% n.c. (template)	0,15	16,4	2,3	2,6	2,8	3,0	88,5	86,5	84,4	82,3
3.	Vapcomore 20% n.kuk	0,2	15,9	1,9	2,2	2,5	2,8	90,1	88,2	85,6	83,1
4.	Vapcomore 20% n.kuk	0,15	15,7	2,1	2,3	2,6	2,9	89,2	87,5	84,9	82,3

## 6. Conclusions

1. Vapcomore 20% n.kuk drug used at the rate of 0.15-0.2 l/ha against aphids, thrips, spider mite in hydroponic conditions showed high effectiveness. Biological efficiency was 86.8%-88.2% against aphids, 85.6%-88.3% against thrips, 89.2%-90.1% against spider mites.

2. In hydroponic conditions, it is recommended to carry out coordinated control measures against aphids, thrips, spider mite in a timely manner, and if the economic damage of pests exceeds the dangerous limit, it is recommended to use chemical means.

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## COMPARATIVE EFFECTIVENESS OF TREATMENT OF SOMATOFORM DISEASES IN PSYCHOTHERAPEUTIC PRACTICE

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**Abstract.** *In accordance with the International Classification of diseases of the tenth revision (ICD-10), the main criterion for somatoform disorders is the presence of permanent subjective signs of somatic dysfunction if there is no objectively identified organic pathology, or if the severity and tolerability of the patient's complaints do not correspond to the nature of the established somatic disease.*

**Keywords:** *somatoform disorders, treatment, psychotherapy, psychopharmacotherapy.*

**Introduction.** The constant requirements of various medical examinations for patients with somatoform diseases are common, despite their negative results and doctors' opinions that there is no physical basis for the symptoms. The development of somatoform disorders is explained by the complex interaction of biological, psychological and social factors [1-4]. The fifth edition of the "Diagnostic and Statistical Manual of Mental Disorders" (DSM-5), prepared by the American Psychiatric Association and published in 2013, does not contain the diagnostic category of "somatoform disorders" (unlike the previous version – DSM-IV-TR). DSM-5 introduces the concept of "somatic symptom-manifested disorder" (somaticsymptomdisorder) [5-8]. The criteria for this diagnostic category are the presence of one or more somatic symptoms in the patient (at least one of them should be permanent – at least 6 months.), combined with constant confidence in the severity of the pathology and excessive concern for health, this does not correspond to the depth of somatic disorders in general, but nevertheless leads to behavioral changes and social dysfunction [9-13]. It should be noted that the new diagnostic category of DSM-5 is being criticized due to insufficient specificity of the criteria and the possibility of expanding diagnostics of this mental pathology in patients with somatic diseases [14-16].

In foreign literature, the terms "medically incomprehensible symptoms" (medicallyunexplainedsymptom) and "functional somatic symptoms" (functionalsomaticsymptom) are common. In fact, these concepts cannot fully explain the complaints present in the patient with physical pathology, while leaving open the question of the approximate etiology of the problem [17-20]. In some cases, the terms functional somatic symptoms and medically incomprehensible symptoms are used as synonyms for somatoform disorders. At the same time, the point of view associated with patients seems more rational functional somatic symptoms being a heterogeneous group in which somatoform, depressive,

anxious, hypochondriacal diseases can be identified, and in some cases the pathology does not meet the criteria of any mental illness at all [21-25]. In this review, functional somatic symptoms are considered in relation to the extensive presentation of conditions associated with somatoform disorders in this group (in particular, a large proportion of patients may be diagnosed as "undifferentiated somatoform disorders" according to the ICD-10 criteria of functional somatic symptoms) [26-28].

The appearance and maintenance of symptoms in somatoform disorders is closely related to unpleasant life events, difficulties or conflicts, the patient usually resists attempts to discuss his psychological state. There are often some hysterical behaviors aimed at attracting attention, especially in people who are dissatisfied with the inability to convince doctors of the mainly physical nature of the disease and the need to continue further examinations and examinations. Somatoform disorders include the following subgroups (under ICD – 10): somatized disorder-f 45.0; undifferentiated somatoform disorder-F 45.1; hypochondria disorder-F 45.2; somatoform vegetative dysfunction-F 45.3; chronic somatoform pain disorder – F 45.4; other somatoform disorders-f 45.8; unspecified somatoform disorder – f 45.9 [29-33]. The correct and timely diagnosis of Somatoform disorder is a big challenge. Such patients undergo complex diagnostic procedures, often doctors are prone to surgical treatment, cases of dependence on pain relievers are more common. It is not uncommon for temporary relief to occur from unconventional therapy methods or from invasive interventions (surgical treatment). The specificity of reactions to diagnostic interventions and symptomatic therapy also testifies in favor of somatoform disorders: paradoxical relief from diagnostic manipulation; tendency to change the leading somatic syndrome (from exacerbation to exacerbation and sometimes at one stage); instability of the therapeutic effect obtained; predisposition to specific reactions [34-38].

Thus, taking into account the high frequency, variability, diagnostic difficulties, predisposition to chronic conditions and a recurrent course of psychosomatic diseases, as well as their subjective negative affective coloring for the patient and the physical suffering they cause, the issue of the correct and most effective methods of treatment of somatoform diseases in the shortest possible time remains especially important and relevant. A tried and effective method of treating Somatoform diseases is the use of elements of Gestalt therapy, which is aimed at understanding the patient's own illness, his awareness, at releasing emotional experiences blocked during psychotherapeutic training, both positive and negative., a journey into the depths of her "talking" ways, feelings, bodily sensations, inner images with her illness [39-41].

The purpose of the study. In recent years, interest in the study of psychopathological phenomena occurring in the form of various somatic functional disorders has increased significantly.

**Research materials and methods.** On the basis of the psychotherapeutic Department of the institution, a statistical study of the effectiveness of methods for treating somatoform diseases was carried out, the purpose of which was a comparative analysis of the effectiveness of the treatment of patients with somatoform diseases in two ways: psychopharmacotherapy and psychopharmacotherapy, combined with individual psychotherapy with elements of Gestalt therapy, and determining the optimal combination of To carry out the goals and objectives of the Study, 2 groups of patients with somatoform diseases (38 women, 22 men) were selected, each of which consists of 30 people aged 23-54 years. The main criteria for selection were: dominance in the clinical picture of somatoform disorders during suffering; absence of signs of somatic

pathology (including organic damage to the central nervous system); lack of clear affective pathology and signs of progredience indicating the conjugation of somatoform disorders with endogenous mental disorders. Patients in the first group received only medication, and patients in the second group received individual psychotherapy with elements of Gestalt therapy along with medication.

Drugs from the group of tricyclic antidepressants and SSRIS (amitriptyline, clomipramine, imipramine, fluoxetine, paroxetine, fluvoxamine, sertraline), antipsychotics (tiaridazine, alimemazine, chlorprotixene), tranquilizers (diazepam, mespam, nozepam, phenazepam), beta blockers (propranolol, atenolol) have been used as drug treatment., nootropov (piracetam, vinpocetin, phenibut, picamilone, gopantenic acid), carbamazepine in small doses. The main method of research is clinical. Examination of Somatoform pathology was carried out using physical studies, as well as necessary laboratory and instrumental studies (OAK, OAM, biochemical blood test, ECG, EEG, M-echo, radiography, etc. In these groups of subjects, the following psychodiagnostic methods were used: the violence questionnaire of the SCL-90 psychopathological symptomatology, Alexandrovich's symptomatic questionnaire, the Hamilton Scale for assessing anxiety, the "type of attitude to disease" methodology (Tobol).

**Research results and their discussion.** The effectiveness of pharmacotherapy of somatoform diseases with drugs in the group of antidepressants, antipsychotics, tranquilizers is manifested mainly in a symptomatic effect. In the treatment of patients with Somatoform diseases, a complex approach with the involvement of individual psychotherapy with elements of Gestalt therapy is more effective than isolated pharmacotherapy, since it not only allows symptomatic improvement to be achieved in a short time, but also contributes to changes in the cognitive character in the field of personal attitudes and beliefs. first of all, self-acceptance and the development of a more realistic attitude reflect positive changes in oneself, thereby in personal activity.

The inclusion of pharmacotherapy and individual psychotherapy with elements of Gestalt therapy in the program for the treatment of patients with Somatoform diseases corresponds to the principles of evidence-based medicine. Based on a review of research devoted to psychotherapeutic methods in the treatment of functional somatic symptoms, it is possible to draw conclusions about the effectiveness of non-pharmacological methods of treating this pathology. In particular, cognitive behavioral therapy (CBT) has shown to be effective for fibromyalgia, irritable colon syndrome, chronic fatigue syndrome, Functional chest pain, tension headaches. The effectiveness of cognitive behavioral therapy in somatoform disorders has been confirmed in a number of studies and systematic reviews. Positive effects of cognitive behavioral therapy in the treatment of the entire spectrum of somatoform disorders.

The effectiveness of individual and group cognitive behavioral therapy has been found in Somatoform disorders. Various clinical effects of cognitive behavioral therapy have been noted: a decrease in " physical "symptoms, a decrease in the manifestation of anxiety and depression, a decrease in patients' ability to access disability. Among psychotherapeutic methods, the cognitive behavioral approach most confirmed efficacy in the treatment of somatoform disorders. Due to a number of methodological limitations, it currently seems difficult to compare the effectiveness of pharmacological and psychotherapeutic approaches to the treatment of somatoform diseases. Nevertheless, the possibility of considering the cognitive-behavioral approach based on the analysis of available data as the first line of therapy for patients with somatoform diseases is being

suggested. The effect of hypnosis therapy in the treatment of functional disorders of the gastrointestinal tract has been identified. This method of psychotherapy seems promising for the treatment of irritable colon syndrome, but the current research does not allow us to draw a final conclusion about the effectiveness of this technique. A number of studies have received information on the positive results of the use of a psychodynamic approach to the treatment of somatoform diseases and functional somatic symptoms. Further research into psychodynamic therapy in Somatoform disorders is desirable.

There are a number of shortcomings in the study of the effectiveness of psychotherapeutic methods: the impossibility of conducting double-blind studies (nevertheless, in most cases, various "masking" methods are used), mainly short-term interventions, a small number of studies in primary medical practice, where a large part of patients with somatoform diseases receive help. It should be noted that the use of psychotherapy, despite its high effectiveness, faces a number of organizational problems. Patients with Somatoform diseases mainly resort to general medical institutions, where the use of psychotherapeutic approaches is not available to them. In addition, most patients believe in the "physical" nature of suffering, which makes it difficult to apply psychotherapy.

**Conclusions.** The results of the studies carried out can be used both in the practical work of psychotherapists, psychiatrists, clinical psychologists in the form of theoretical justification for the pathogenetic foundations of the development of somatoform disorders, depending on the social and personal characteristics of the patient, as well as for the use of the most effective and short-term methods of their treatment. In general, there is not enough number of studies dedicated to the treatment of somatoform diseases, the peculiarities of this classification, insufficient interest of researchers in this problem, low level of funding, as well as the fact that patients with somatoform diseases mainly refer to medical institutions. At the same time, general medical practitioners traditionally prioritize the somatic understanding of the nature of diseases in which patients with somatoform diseases refer to them, as a result of which the latter are observed for a long time and unsuccessfully by Internist doctors and sent to less mental health professionals than patients with other mental disorders.

Currently, the effects of antidepressants and cognitive behavioral therapy in the treatment of somatoform disorders are most reliably demonstrated. There is evidence of the positive effects of antipsychotics in the treatment of Somatoform diseases, but the effectiveness and safety of this class of drugs should be further improved. In the anticonvulsant group, the efficacy of pregabalin and gabapentin in the treatment of somatoform pain syndromes has been shown (but not in other clinical variants of somatoform disorders). A number of psychotherapeutic approaches (psychodynamic therapy, hypnosis therapy) seem promising in the treatment of somatoform diseases, but the effectiveness of these methods requires clarification.

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## EVALUATION OF THE EFFICIENCY OF PREOPERATIVE PREPARATION OF SCOLIOTIC DISEASE IN ADOLESCENTS

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**Abstract.** *Indications for the use of an optimized preoperative diagnostic and treatment complex for the preparation of paravertebral tissues and the contents of the spinal column for radical correction in children with stage IV scoliosis were determined. The proposed method expands the possibilities of a practical orthopedic-vertebrologist in rendering assistance to sick children with this disease.*

**Keywords:** *adolescents, scoliosis, preoperative preparation.*

Relevance. The treatment of scoliotic spinal disease is one of the most challenging problems in modern vertebralogy. Significant progress has been made in the surgical treatment of this pathology; however, the outcomes of the performed surgical interventions do not always satisfy both vertebralogists and patients [2].

The problems encountered in the surgery of scoliotic deformities, such as the use of imperfect means, functional diagnostics, and preoperative preparation, indicate the need for the search and development of new, more effective comprehensive methodologies. These methodologies should not only incorporate precise standardized methods and functional diagnostics but also include effective and safe preoperative preparation methods and the prediction of surgical treatment outcomes [4].

The most widely used method of surgical instrumental correction of scoliotic deformities in Europe, known as CDI [3], is not always effective and safe. The degree of correction achieved after the use of this technology in patients with a moderate angle of scoliotic curvature is only 54.5% out of 550 deformity corrections. Furthermore, in the long term, only 41.9% of the correction is maintained [1]. The number of complications remains high at 26% [2], including acute neurological disorders that can reach 17%.

The preoperative therapeutic and diagnostic complex, which has been elevated to a mandatory level, includes simultaneous physiotherapeutic interventions. These include physical therapy exercises and discrete traction effects on a gravity frame. This not only helps achieve the necessary mobility along the curve, but also prepares the paravertebral tissues and the spinal tissues with their contents for the extreme conditions of radical correction. Additionally, it enables more precise preoperative planning, determines surgical tactics, and predicts the occurrence of neurological disorders.

Aim of the research: Assessment of the Effectiveness of Preoperative Preparation in Adolescent Scoliotic Disease.

Materials and Methods: The study is based on data from the examination of 54 patients with scoliotic disease of various origins. The examined children were divided into two groups based on the performance of preoperative preparation. The main group consisted of 34 children who received modified preoperative preparation, while the comparison group comprised 20 children who received standard preoperative preparation. In most cases (52.9%), patients between

the ages of 15-18 predominated in both groups. The average age was  $14.3 \pm 0.79$  years. The distribution of patients by gender favored girls (1.7 times more). The study included patients with IV degree scoliosis. The average deformity angle in our observations was  $75.3 \pm 3.32^\circ$ , with a slight predominance of patients with scoliosis angles ranging from  $43$  to  $98^\circ$ .

The objective of the developed preoperative preparation complex is to enhance the effectiveness of preoperative planning and prognosis of treatment outcomes, increase surgical correction of scoliosis, and prevent loss of correction, respiratory disorders, neurological, and surgical complications. This objective is achieved by applying systematically repeated suspensions of patients by the head with gradual increase in duration and load. The suspensions are performed in a deep head holder, cyclically and variably, increasing the traction load in terms of magnitude, frequency, and duration. The achievement of maximum functional mobility and flexibility of spinal deformity and the thoracic cage in standard physical values are determined through systematic chronological, anthropometric, and spirometric monitoring. The maximum traction indicators are recorded through X-ray spondylography, anthropometry, and somatosensory evoked potentials.

The technical result obtained by implementing the method is the rapid development of maximum functional mobility of scoliotic deformity of the spine, thoracic cage, and surrounding tissues. This reduces the loss of surgical correction of scoliosis, enhances compensatory reserves and adaptive mechanisms of the respiratory, cardiovascular, nervous systems, and paravertebral tissues. The determination of maximum flexibility and mobility of deformations is standardized, and the patient's anthropometric and physiological condition is evaluated through objective methods of hardware and other clinical diagnostics, recording standard physical values under standard conditions simulating maximum functional correction of scoliosis. The preventive effect of preventing the development of surgical complications, loss of correction of scoliosis, respiratory, and neurological disorders is directly related to the accelerated development of mobility and increased extensibility of soft tissues, which fix vertebral segments and surround the spine and thoracic cage to the maximum possible extent. This increases the functional reserves of patients and reduces tissue resistance and tension during surgical correction. The system of objective and hardware control includes non-invasive methods for monitoring traction on a daily basis, such as timing, anthropometry, and spirometry.

Results of the study: The following level of spinal deformity mobility was achieved: the average hanging time on the gravitational frame without support for the main group was  $423 \pm 1.27$  seconds; the distance increased by  $5.8 \pm 0.23$  cm; the scoliotic curve angle decreased on average by  $48.3 \pm 0.63\%$ ; the kyphotic curve decreased by  $78.1 \pm 1.21$ . During the preoperative preparation process, regression of muscular paresis was achieved in one patient (Table 1).

It is also worth noting that when using the modified complex of preoperative preparation for children with scoliotic disease, the children's height increased on average by  $6.2 \pm 0.2$  cm more compared to children who underwent preoperative preparation using standard methods.

According to the obtained results, out of 54 examined patients with scoliotic ( $n=16$ ) and kyphoscoliotic ( $n=38$ ) spinal deformities with idiopathic scoliosis, there were 28 cases, dysplastic - 17 cases, neurofibromatosis Recklinghausen - 2 cases, kyphoscoliosis due to congenital anomalies - 4 cases, neurogenic (syringomyelia) - 2 cases, and Ehlers-Danlos syndrome - 1 case. The magnitude of the scoliotic component ranged from  $43^\circ$  to  $98^\circ$ , with an average of  $78.7 \pm 12.43^\circ$ .

During the physical examination, the presence of pronounced spinal deformity was noted in all patients. Additionally, most patients had minor developmental anomalies such as "flat" (5.9%) or "funnel-shaped" (2.9%) chest, flat feet (23.5%), and joint hypermobility (5.9%). These findings undoubtedly indicate the presence of congenital connective tissue dysplasia.

**Table 1.**

***Comparative characteristics of spinal mobility after preoperative preparation***

Mobility indicators	Main group	Group comparison (n=2(>1
Average hover time on gravity frame (sec)	423±1,27	-
Increase in distance (cm)	5,8±0,23	-
Reducing the angle of the scoliotic curve (%)	48,3±0,63	34,1±0,52*
Reducing the angle of kyphotic shower	78,1±1,21	45,6±1,3*
Height gain (cm)	6,2±0,2	2,4±0,1*

Note: \* - statistically significant difference in indicators between groups ( $P \leq 0.01$ )

Clinical examination of the children revealed varying shoulder heights, asymmetry of scapular positioning, deviation of spinous processes from the midline, presence of rib and muscle humps. The progression of scoliosis in children is determined by the nature of risk factors for its development and their combination. According to the obtained results, significant risk factors include a combination of cervical instability, joint hypermobility, congenital vertebral anomalies, gastrointestinal and thyroid disorders, and the child's age at the onset of spinal deformity.

Radiographic studies showed that in most cases of children with grade IV scoliosis, the deformity angle ranged from 41° to 90°. Based on MRI diagnostics, it was determined that 29.4% of children had an S-shaped type of scoliosis. Initial manifestations of osteochondrosis were registered in 44.1% of adolescents. Disc protrusions were found in 5.9% of cases. Two cases of syringomyelia were detected.

**Conclusion:** In terms of preoperative examination, it is necessary to supplement standard radiography with magnetic resonance imaging for comprehensive assessment of skeletal deformity and detection of subclinical forms of organic nervous system damage.

Upon analysis of traditional preoperative preparation methods, it was found that the use of these methods did not achieve the necessary mobilization of the rigid curves of scoliotic distortion and preparation of paravertebral tissue and spinal tissue with its contents for extreme conditions of radical correction. Consequently, preoperative planning, determination of surgical tactics, and prediction of the occurrence of neurological disorders were insufficiently effective.

The obtained results have proven that the modified method of preoperative preparation allows for individual assessment of the adaptive and reserve capacities of each patient based on the gradual re-adaptation of the spinal cord and its vascular system to the future new conditions of the corrected spine, thus reducing the risk of neurological complications and decreasing their severity.

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## ASSESSMENT OF EXTERNAL RESPIRATORY FUNCTIONS ACCORDING TO THYROID FUNCTION IN PATIENTS WITH BRONCHIAL ASTHMA AND TOXIC BULK

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**Abstract.** *In this article, the effect of thyroid gland diseases on the course of bronchial asthma was studied based on clinical and laboratory methods of examination, thyroid status and asthma attacks. Conclusions are given based on the results of changes in free fraction indicators of thyrotropin hormone, triiodothyronine, tetraiodothyronine among patients receiving replacement therapy.*

**Keywords:** *bronchial asthma, thyroiditis, toxic goiter, thyroid gland, thyrotoxicosis.*

The urgency of the problem. Bronchial asthma (BA) is one of the most common non-communicable diseases, and for many, this disease has a significant impact on their quality of life. Bronchial asthma is the 16th leading cause of disability in the world. About 300 million people worldwide are affected by asthma, and this may be observed in another 100 million people by 2025 [14]. Despite the progress in the treatment of bronchial asthma, the treatment in recent decades has not yet been completely successful. The incidence and prevalence of bronchial asthma differ between children and adults. It is known that asthma often begins in childhood, but can appear at any time during life, and some develop asthma for the first time in adulthood. Interestingly, the incidence and prevalence of asthma differ by gender. Asthma is more common in prepubescent boys [11]. Despite the advances in pharmacotherapy, the increase in morbidity, the increase in severe uncontrolled forms resistant to treatment, and the high mortality rate explain why bronchial asthma remains a serious social and medical problem [4,5,8,10].

As patients move from one age group to another, symptoms of other chronic diseases are added to the clinical presentation of bronchial asthma. The combination of several diseases, on the one hand, changes and aggravates the BA clinic, and on the other hand, makes the diagnosis and treatment of BA and comorbid pathology difficult. In particular, this applies to the pathology of the thyroid gland. Previously, this was associated with a rare occurrence of bronchial asthma and thyroid pathology in the same patient [9]. According to the authors, cases of thyrotoxicosis were recorded in 300 of the patients listed with BA. However, the combination of these pathologies is more common in clinical practice. In addition, at present, endocrinologists note an increase in the prevalence of autoimmune diseases of the thyroid gland [2,3].

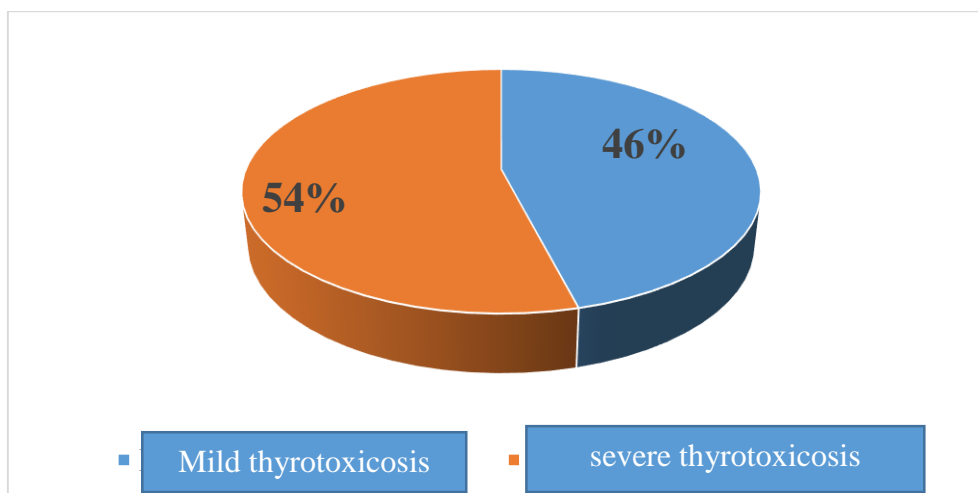
Diffuse toxic goiter is a disease characterized by diffuse enlargement of the thyroid gland and overproduction of thyroid hormones. This is a common autoimmune disease. The prevalence of diffuse toxic goiter is 0.5% or 23:10000 in the population. Women are affected 8 times more often than men, the incidence of the disease is high in the age group of 20-40 years. Diffuse toxic tuberculosis develops after various chronic infectious diseases and stress, and is observed in individuals with a genetic predisposition to TB (HLA-S\*07, B8, DR3 antigens) and re-formation of the immune system in the body [6,12].

According to scientists, thyroid pathology (both hypothyroidism and thyrotoxicosis) worsens the course of bronchial asthma: increases the frequency of asthma attacks and shortens the duration of BA remission. The combination of bronchial asthma and thyrotoxicosis is characterized by a high concentration of immunoglobulin E, which has a statistically significant effect on expiratory volume indicators [7,9]. A possible mechanism of worsening of BA disease with thyrotoxicosis is a sharp increase in the activity of T-lymphocytes in inflammation. Toxic goiter is a common thyroid disease. It is one of the diseases that have not lost their relevance due to the serious complications they cause to the cardiovascular system and nervous system. In the development of toxic goiter, the immune system produces autoantibodies against TTG receptors in the thyroid gland tissue, which leads to the production of large amounts of thyroid hormones (thyroxine and triiodothyronine), and causes swelling in the retrobulbar tissue of the eyeball. If the increase in thyroid hormones is called hyperthyroidism, the development of specific symptoms as a result of it is called thyrotoxicosis [2,8,3].

The purpose of the study. Evaluation of external respiratory functions according to thyroid gland enlargement and thyroid function in patients with bronchial asthma and toxic goiter

Research materials and methods. 37 patients with toxic goiter were included in the study, and among these patients, complications such as thyrotoxic heart, severe cachexia, exophthalmos of the 2nd degree were observed, and pathological processes were excluded from the study due to the influence on the number and severity of bronchial asthma attacks. In addition, patients with an excessively large goiter of the Nikolaev level 4-5 of the thyroid gland, patients with an atypically located thyroid gland behind the breast were not included in the observation. In patients with toxic goiter, according to the structure of the thyroid gland, 14 patients had 1 degree enlargement of the thyroid gland, 23 patients had 2 degree enlargement. Among these patients, 7 patients had mixed goiter, all of whom had grade 2 thyroid enlargement and nodules ranging in size from 10 to 17 mm. These nodules were biopsied and the results showed no atypia.

Research results. Patients were divided into 2 groups according to the degree of thyrotoxicosis:



**Figure 1. Distribution of patients to levels of thyrotoxicosis.**

The average age of patients with mild thyrotoxicosis is  $46.3 \pm 2.01$  years, 10 women, 7 men, and  $49.2 \pm 2.01$  years in patients with moderate thyrotoxicosis, 9 women and 11 men.

In patients with mild thyrotoxicosis, external respiratory functions were evaluated according to thyroid levels (Table 1).

*1-table*

***Assessment of external respiratory functions according to thyroid level in patients with mild thyrotoxicosis***

Indicators	1-level n=10	2-level n=7
Age	53,8±1,03	51,9±1,03
Gender, A/E	6/4	4/3
OFV1	1,85±0,2	1,63±0,2
HTS	2,64±0,3	2,33±0,2
Tiffno indexi	0,7±0,02	0,7±0,02

According to this table, external respiratory functions were studied, in which a decrease in OTS and OFV1 indicators was observed in patients with 2nd degree of enlargement of the prostate gland, but the index of Tiffno was equal to the standard indicator of 0.7. The degree of thyroid enlargement did not show a significant difference between the groups.

When studying patients with moderately severe thyrotoxicosis, indicators of external respiratory functions were evaluated according to the enlargement of the thyroid gland (Table 2).

*Table 2*

***Evaluation of external respiratory functions according to thyroid level in patients with moderate thyrotoxicosis***

Indicators	1-level n=4	2-level n=16
Age	48,5±1,03	50,2±1,03
Gender, A/Э	A 4	9/7
OFV1	1,12±0,2	0,96±0,2
HTS	1,87±0,3	1,61±0,2
Tiffno index	0,6±0,02	0,6±0,02

According to Table 2, it is possible to see a sharp decrease in external respiratory function indicators in patients with moderately severe thyrotoxicosis. In this group of patients, the indicators of respiratory functions according to the enlargement of the thyroid gland did not give a reliable difference between the groups.

When the patients in the study were studied according to the degree of bronchial asthma, they were divided into the following groups and external respiratory functions were evaluated (Table 4.11). There were 17 patients with 1st degree bronchial asthma, 12 women and 5 men, their average age was 48.1±1.03; There were 13 patients with 2nd degree bronchial asthma, 8 of them women and 5 men (average age 47.4±1.03); There were 4 grade 3 patients, 4 of whom were women (average age 52.7±1.03) and 3 grade 4 patients, 2 women and 1 male (average age 53.3±1.03) organized.

According to Table 3, there was no difference in external respiratory function indicators according to thyrotoxicosis levels among patients with bronchial asthma. The results in these patients were equal to the normative indicators.

**Table 3**

**Indicators of external respiratory function according to the degree of thyrotoxicosis in patients of the 1st degree of BA**

Indicators	Mild thyrotoxicosis	Moderately severe thyrotoxicosis
Age	49,8±1,03	47,4±1,03
Gender, A/Э	5/3	7/2
OFV1	2,48±0,01	2,39±0,01
UTS	3,4±0,2	3,37±0,2
Tiffno index	0,73±0,02	0,71±0,02

After that, the group of patients with 2nd degree of bronchial asthma was studied according to the levels of thyrotoxicosis (Table 4).

**Table 4**

**Indicators of external respiratory function according to the degree of thyrotoxicosis in patients of the 2nd degree of BA**

Indicators	Mild thyrotoxicosis	Moderately severe thyrotoxicosis
Age	45,3±1,03	50,1±1,03
Gender, A/Э	4/4	4/1
OFV1	2,17±0,01	2,04±0,01
UTS	3,11±0,2	3,0±0,2
Tiffno index	0,70±0,02	0,68±0,02

According to Table 4, the vital capacity of the lungs from the indicators of external respiratory functions was equal to the standard indicators. Only the index of Tiffno was observed to decrease from the norm in patients with moderately severe thyrotoxicosis. The indicators between the groups did not equate to a reliable result.

When external respiratory functions were evaluated in patients with 3rd degree of bronchial asthma, the results were reflected as follows (Table 5):

**5-table**

**Indicators of external respiratory function according to the degree of thyrotoxicosis in patients of the 3rd degree of BA**

Indicators	Mild thyrotoxicosis	Moderately severe thyrotoxicosis
Age	50,4±1,03	54,2±1,03
Gender, A	1	3
OFV1	1,42±0,01	1,25±0,01*
UTS	2,45±0,2	2,28±0,2
Tiffno index	0,58±0,02	0,55±0,02



Note: \*- the difference compared to the indicators of the mild thyrotoxicosis group is reliable (\*-P<0.05)

According to Table 5, all patients with bronchial asthma of the 3rd degree were women. The parameters of the external respiratory function were observed to decrease sharply from the standard parameters to this level. When the groups were compared according to the degree of thyrotoxicosis, the results for the OFV1 index were equal to the reliability value. The remaining measures did not show reliability, although there was a difference between the groups.

Respiratory functions were evaluated according to the 4th degree of bronchial asthma (Table 6).

**6-table**

**Indicators of external respiratory function according to the degree of thyrotoxicosis in patients of the 4th degree of BA**

Indicators	Mild thyrotoxicosis	Moderately severe thyrotoxicosis
Age	51,8±1,03	54,9±1,03
Gender, A	2	1
OFV1	0,79±0,01	0,63±0,01*
UTS	1,52±0,2	1,33±0,2*
Tiffno index	0,52±0,02	0,48±0,02

Note: \*- the difference compared to the indicators of the mild thyrotoxicosis group is reliable (\*-P<0.05)

According to Table 6, it is possible to observe a sharp decrease in external respiratory functions. According to the levels of thyrotoxicosis, it is possible to observe a sharp and reliable decrease of OFV1 and OTS indicators in the group of patients with moderately severe thyrotoxicosis. Although the Tiffno index score was also significantly different from the norm, the results between the groups were not equal to the reliable value.

Summary. Based on the above data, it can be concluded that the disorders of external respiratory functions in patients with bronchial asthma and thyrotoxicosis did not significantly deviate from the standard indicators in patients with bronchial asthma of the 1st and 2nd degree. Patients with mild thyrotoxicosis showed a better outcome compared to those with moderate severity. It can be estimated that this is caused by increased sensitivity to catecholamines caused by thyrotoxicosis to bronchospasm, which is the main pathogenetic link of bronchial asthma, which in turn causes bronchodilation.

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## ESTABLISHING A HEALTHY LIFESTYLE - PATH TO STRENGTHENING HEALTH

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**Abstract.** *A healthy lifestyle (HL) is a combination of forms and ways of daily cultural activities based on cultural norms, values, and the meanings of one's actions, which enhance the body's adaptive capacities. HL ensures harmonious development, preservation, and strengthening of health, high performance, and allows individuals to manifest their most valuable qualities required in the conditions of our society's dynamic development.*

**Keywords:** *establishment, healthy, lifestyle, life, path, strengthening.*

Relevance. Preserving the health of the younger generation is one of the most important social tasks of society. To prepare highly qualified specialists, it is necessary to promote and cultivate a healthy lifestyle, which contributes to the productivity of young people. Today, this population category experiences negative influences from the environment, as physical and mental development coincides with the period of adaptation to new and changed living and educational conditions, as well as high mental burdens. The adolescent age can have a decisive impact on future health and diseases because there is evidence that acquired habits during this period can persist into adult life. For example, alcohol habits in adolescence increase the likelihood of heavy consumption in adulthood, and dietary habits in adolescence are indicative of consumption patterns in adulthood. As a result, some chronic diseases may have their origin and progression during adolescence. To improve the health of adolescents, it is important to promote healthy behavior from an early age, especially during adolescence. Healthy behavior is a determining factor in health, and positive changes can impact overall health outcomes. The key types of behavior related to adolescent health are physical activity, reduced screen time, healthy eating, abstaining from alcohol and tobacco consumption, as well as caffeine/stimulant intake, sleep deprivation, drug use, unprotected sex, and unhealthy relationships [5]. Research conducted in different countries indicates that money, education and profession, business career, and pleasures are significant factors for modern college students. For the majority of modern youth, the pursuit of prosperity, based on enrichment and life success achieved at any cost, sometimes at the expense of their own and others' health, is paramount [2]. However, the forms, methods, and means of education implemented today do not fully ensure the implementation of a person-centered approach to shaping the healthy lifestyle of young people and do not meet the requirements for preparing modern specialists. One reason for this situation is insufficient promotion of a healthy lifestyle. Research on healthy habits among adolescents has focused on the relationship between individual behavior and its consequences for health. The average values of healthy behavior have significantly decreased in all countries from the age of 11 to 15. Adilson Marques emphasizes the fact that much work still needs to be done to promote a healthy lifestyle and increase adolescents' awareness of the potential benefits for their health [3]. The problem of shaping a healthy lifestyle for young people is multifaceted. The younger generation, studying in colleges, institutes, and universities, tends to adopt a certain lifestyle where cigarettes, alcohol, and drugs are considered ideals. The results of research conducted by author D.V. Kobenko show that factors influencing

the formation of a healthy lifestyle among young people can be either health-promoting or health-deteriorating. Health-promoting factors include the absence of harmful habits, balanced nutrition, physical culture and sports, morning exercises, study and rest schedules, body hardening, positive emotions, absence of harmful factors in educational activities, outdoor walks, favorable climate conditions, high level of preventive measures, timely and comprehensive medical assistance, etc. Health-deteriorating factors include poorly organized daily routines, harmful habits, stressful situations, intensified learning process, mental overload, unbalanced diet, sedentary lifestyle, unsatisfactory sanitary and hygienic conditions in classrooms, weak material base, lack of continuous medical supervision, etc. [4].

To promote a healthy lifestyle, it is necessary to determine the causes of an unhealthy lifestyle and identify factors that contribute to a healthy lifestyle. In many places, preventive work is carried out to promote a healthy lifestyle and assess the physical, social, and psychological health of young people. Diagnostic analysis of their physical, social, and mental health confirms that students have different lifestyles, health conditions, and goals. To establish a healthy lifestyle, it is important to follow the following daily routine:

- Ideally, wake up at the same time every day.
- Strive to engage in regular morning exercises.
- Eat meals at regular times.
- Alternate between mental and physical work.
- Adhere to personal hygiene rules.
- Work and sleep in well-ventilated areas, and go to bed at the same time every night.

Promoting a healthy lifestyle in the educational process is a crucial task for society. Therefore, it is necessary to encourage young people to preserve and strengthen their health, promote and support a culture of a healthy lifestyle. Knowledge aimed at promoting a healthy lifestyle should be integrated into the educational process, starting from an early age, and personal self-improvement should be pursued.

In conclusion, organized promotion of medical and hygiene knowledge contributes to reducing the incidence of diseases and helps raise a strong generation. Educational programs focused on preserving and strengthening the health of young people and fostering active motivation to care for their own health and the health of others should play a central role in shaping a healthy lifestyle. It is the responsibility of each individual to protect their own health and not shift this responsibility onto others. Taking care of one's health from an early age is crucial because "a disease does not catch up with someone who is quick and agile" [5].

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# COMPARATIVE ESTIMATES OF THE MORPHOLOGICAL STRUCTURE OF THE SURFACE OF REMOVABLE DENTURES MADE OF DIFFERENT MATERIALS FOR THE REPLACEMENT OF DENTITION DEFECTS

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**Abstract.** *The study concluded that during 2020-2023, 47 people with acquired immune deficiency syndrome (AIDS) – the main group (M/G) and 20 healthy people - were prescribed treatment between the ages of 18 and 44. 23 of the M/G patients, of which 11 patients (M/G-1) are partially removable prosthesis from the drug "Ftorax" to be used (PRP), 12 vaccines from the drug " Ethacryl " for PRP and one vaccine for a complete removable prosthesis (CRP), as well as 5 vaccines from the control groups (C/G), 24 vaccines against a/g as an experimental group (E/G), and 10 C/G of thermoplastics were isolated from raw materials for PRP and CRP to groups of enthusiasts. Age groups: 18-25 - 34,7%; 26-34 - 54,3%; 35-44 - 11,0%; She was divided into groups and by gender. The diagnosis of the study participants with AIDS, the state of MMOC, the level of periodontal disease and the state of pressure tolerance, the morpho functional state of the general public, as well as the morphological state of the surface of manufactured dentures. With an integrated treatment approach, the advantage of a thermoplastic material was noted in local treatment.*

**Keywords:** *dentistry, acquired immunodeficiency syndrome (AIDS), HIV infection, periodontal disease, gnathodynamometry, oral fluid, oral microflora, partially and completely removable dentures, valplast, vertex Thermo Sense.*

Relevance. To optimize the work of a dentist and the effective organization of therapeutic and preventive outpatient care for patients, the quality of dental materials used plays a very important role, including for replacing defects in dentition with removable and non-removable denture structure (RD and NRD) depends on the correct preparation of an orthopedic treatment plan, on the choice of an adequate denture (D) structure and materials, depending on their hygienic condition [3, 16].

From year to year, there is an increase in the number of patients visiting the dentist for examination, rehabilitation, treatment of acute respiratory infections, and orthopedic care. In this regard, a dentist should know the clinical signs in the oral cavity (OC), which will allow him to correctly diagnose and provide adequate dental care, which will improve his quality of life [18]. In recent years, polymer materials have confidently entered the daily practice of orthopedic dentistry, and at a certain stage of its development have become the main, if not the only, type of materials used for the manufacture of many types of orthopedic products. polymethylmethacrylates turned out to be the most acceptable, and therefore popular, materials for dental prosthetics. They are successfully used in the practice of orthopedic dentistry as a

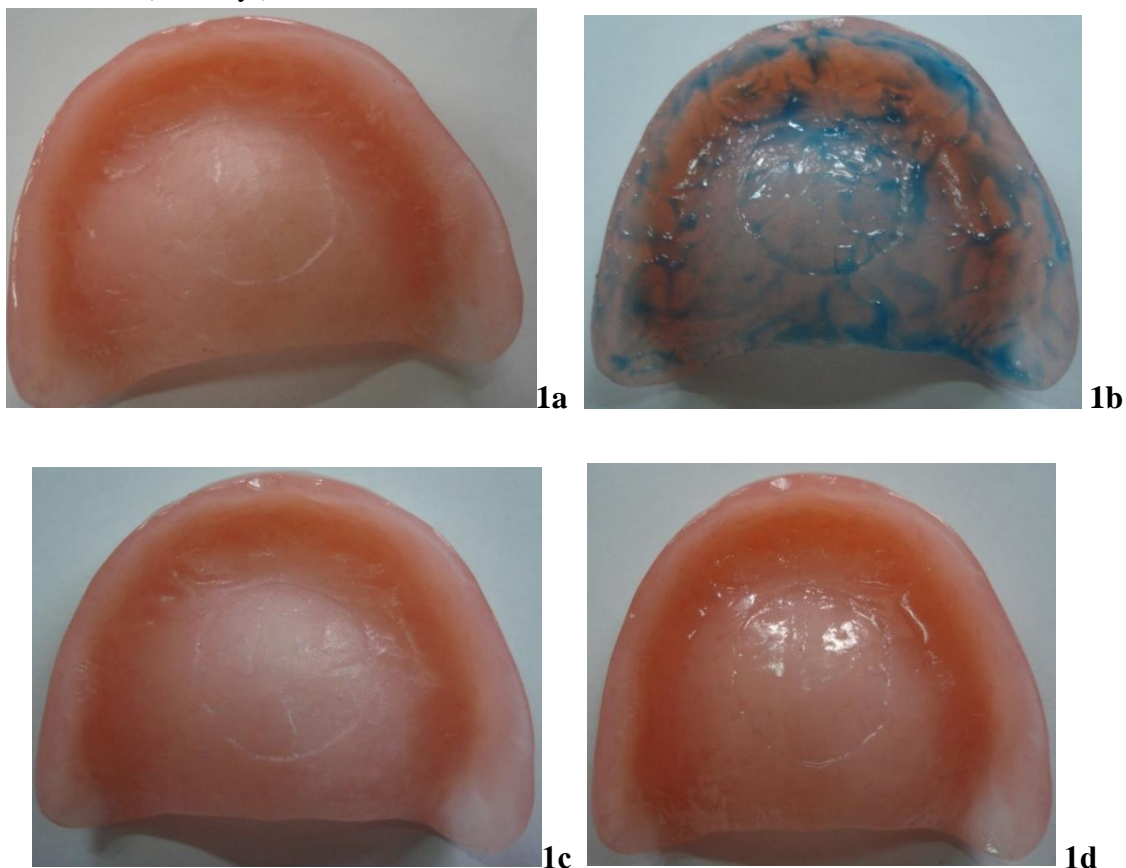
material for RD and NRD [5, 6, 7]. We can talk about the existence of a number of specific requirements for dental materials for this purpose. These include: - chemical inertia; - high strength, high shock resistance; - low density and high thermal conductivity; - sufficient hardness and low abrasion; - elasticity; - completeness and adequate polymerization time, minimizing the amount of residual monomer, or its complete absence; - low hydrophilicity, or complete hydrophobicity; - low abrasion and high wear resistance; - structural, chemical and physico-chemical stability; - low shrinkage, or its complete absence; - color fastness and resistance to solar radiation, air, and other environmental factors; - stability in a biological environment; - biomedical safety, including the absence of locally pathogenic effects (irritant, toxicity, allergenicity, etc.); - aesthetic adequacy (maximum approximation in appearance and color to the tissues of the oral cavity); - manufacturability (sufficient simplicity of performing the laboratory manufacturing phase); - the possibility of correction, remodeling and repair; - the ability to be sanded and polished; - constancy of shape and volume; - cost availability of products. [2, 8, 14, 17].

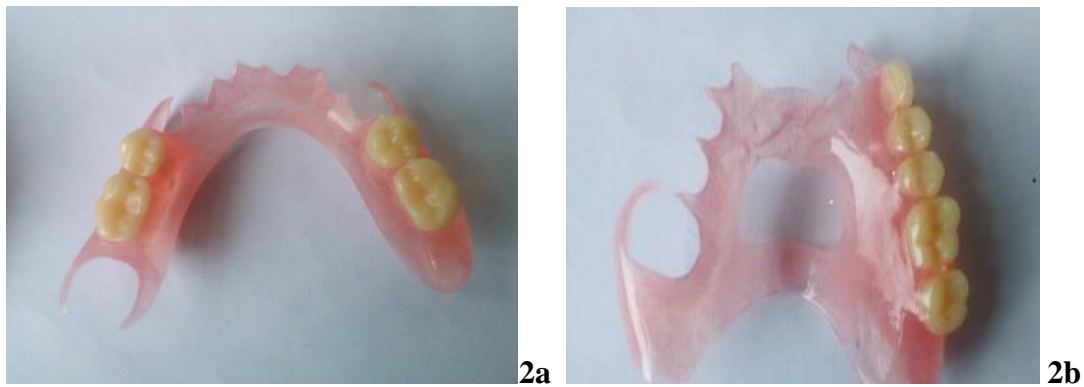
The materials of the acrylate group are distinguished by remarkable strength characteristics, in the process of manufacturing denture they allow to achieve high precession values, are available and convenient for work in dental laboratories. The speed and completeness of their polymerization can be easily regulated through the use of chemical catalysts or physical factors. In addition, they do not have pronounced toxic effects and in most patients do not cause clinically pronounced immunological and allergic reactions. In general, these materials seem to meet the above requirements [1, 3, 4, 9, 10]. However, as it turned out, prostheses with a polymethylmethacrylate base cause pathological changes in the tissues of the prosthetic bed. Acrylic prostheses are unstable to variable chewing (mechanical) loads. Fractures of the bases of prostheses on average account for 80% of the number of manufactured prostheses. [11, 12, 13]. All these reasons have led to the search for new technologies. Attempts to use pads made of elastic polymer materials under the base of polymethylmethacrylates have not completely solved this problem. In this regard, in the second half of the twentieth century, the direction of developing prosthetic materials from elastic thermoplastic polymer materials: propylene and nylon derivatives received active support. It should be emphasized that nylon materials are completely devoid of monomer impurities, have extremely high elasticity and strength, as well as excellent aesthetic characteristics - color and texture approaching those natural for MMOC. An important advantage of nylon materials in the manufacture of partial dentures is the possibility of their use without metal fixing devices. It turned out that hooks and clamps made of nylon with the highest strength are low-traumatic and highly aesthetic due to the fact that they are practically indistinguishable from the gum [12, 17]. However, laboratory and materials science studies have not been conducted in Uzbekistan to study the clinical efficacy and safety of nylon prostheses. In this regard, domestic clinicians have to judge the qualitative characteristics of these materials mainly from information from foreign sources, and, alarmingly, from the releases of manufacturing companies and suppliers, which, as is known, are far from objectivity. Taking into account the above, filling the information gap in relation to nylons, namely, the study of the clinical effectiveness of the use of dentures made of this material, at the present stage of development of domestic orthopedic dentistry should be recognized as relevant.

The purpose of the study. To determine the specific characteristics of acrylic and thermoplastic materials manufactured to replace defects in dentition using clinical and morphological methods.

Materials and methods. For the purpose of the study, 67 prostheses were made; of them, 23 prostheses are the main group (M/G), including 11 (M/G-1) - PRP made of "Ftorax"; 12 (M/G-2) PRP and PSP using "Ethacryl" and also, as an experimental group (OP/G) 20 is a prosthesis made on the basis of a high-tech non-dimensional thermoplastic material "Vertex thermos sense". In order to assess the surface of finished prostheses, it was studied using scanning electron microscopes (SEM); samples of prostheses; including acrylic plastics, after appropriate fixation, were dehydrated in alcohol-acetone, then dried by the critical point method in the NSR-2 apparatus and sprayed with gold in the IB-2 apparatus. They were examined in a Hitachi S 405A electron microscope. The photography was carried out using a microscope monitor screen using a Canon digital SLR camera. Micrographs and other obtained materials were processed using Microsoft Excel and Statistica-6 computer programs. The comparison of indicators between the groups was carried out using the Student's t-test. The differences between the groups were considered statistically significant at  $p < 0.05$ .

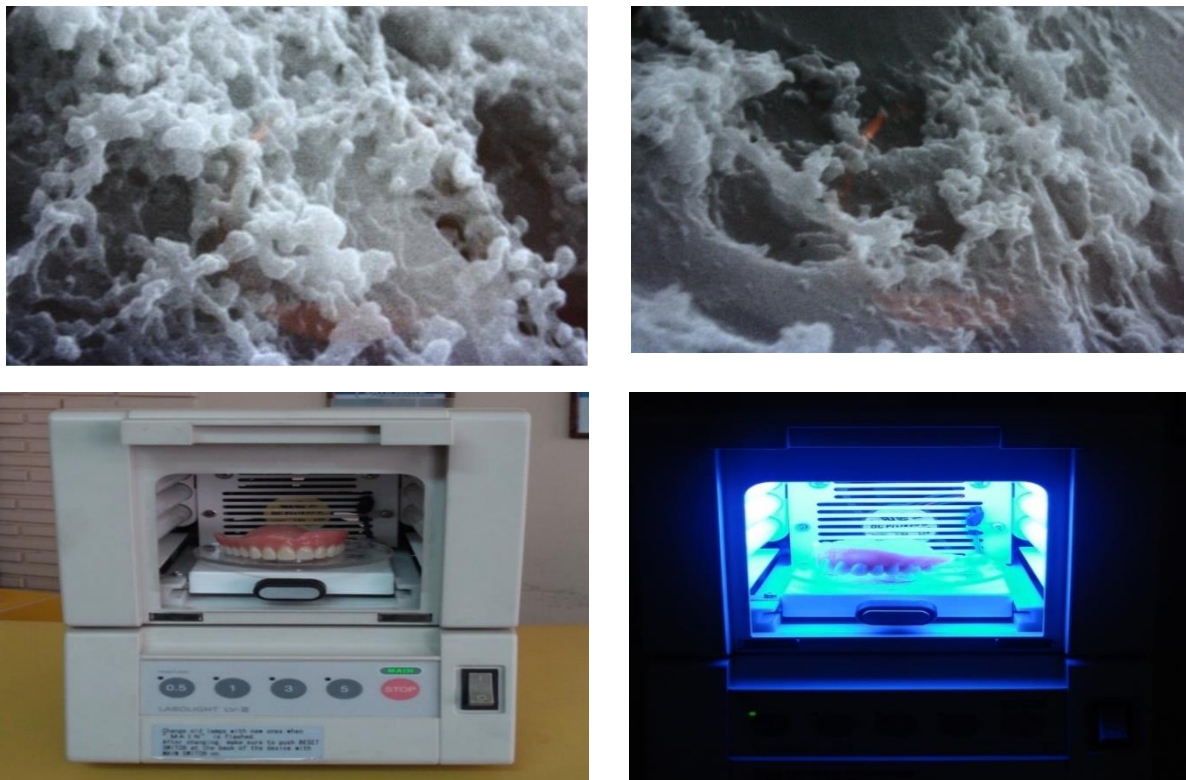
The results and their discussion. In order to compare the clinical and morphostructural state of the prostheses, we manufactured prostheses from the mass of "Ftorax", "Ethacryl" (Fig. No. 1 a, b, c, d) and thermoplastic materials "Valplast" from "Vertex thermo sense" (Fig. No. 2 a, b) to replace the defect of the dentition in patients, the surfaces made of prostheses from the mass of "Ftorax" and "Ethacryl" were treated, then etched, applied adhesion and polymerized and a) the surface of the prosthesis before etching (Ftorax); b) the surface of the prosthesis before etching (Ethacryl); c) etching with orthophosphoric acid (Ftorax); d) after applying the adhesive and polymerization (Ethacryl).





It is known that one of the important factors of the action of the prosthesis is its biological effect on the MMOC. Due to the fact that an isolated space is formed under the prosthesis, favorable for accelerated reproduction of a diverse, including virulent microflora, the possibility of penetration of microorganisms, their waste products and other protein substances deep into the underlying tissues also increases. Studies conducted with the help of SEM have shown that the contact surface of the prosthesis made of plastic plastic "Ftorax" "Ethacryl" is raised and the rhythmicity of the microrelief is traced. It looks more chaotic with the presence of sharp furrows and uneven depressions (Figs. 3a and 3b). When prosthetics of HIV-infected patients using the basic material "Ftorax" and "Ethacryl" to prevent microbial and fungal adhesion, as well as to prevent the state of intolerance to composite materials, we conducted a study on the technique of shielding the contact surface of dentures with the adhesive system "Gluma comford bond" light curing using the device "GC" gradia apparatus (Fig. No. 4a, 4b).

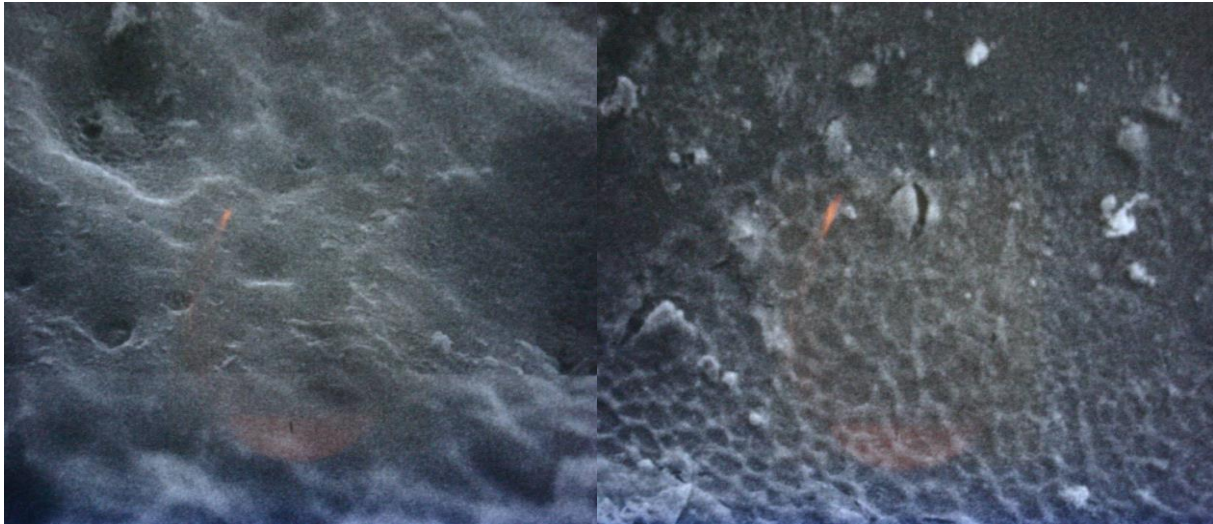
*Fig. 3a. the surface of the prosthesis made of "Ftorax"; Fig. 3b made of "Ethacryl" material.*



*Fig.4a, 4b. Apparatus for shielding the contact surface of dentures with the adhesive system "Gluma comford bond" light curing using the device "GC" gradia apparatus.*

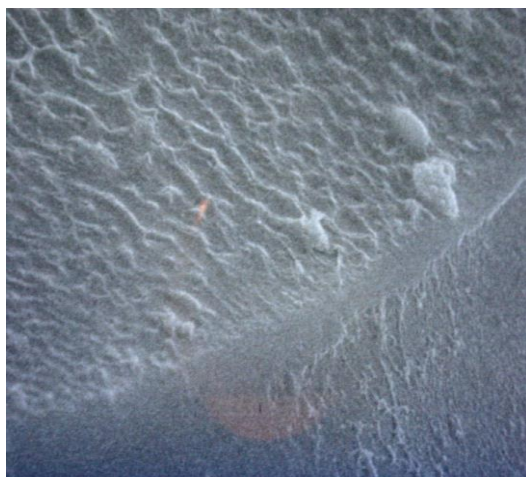


However, coating the surface of the prosthesis made of plastic "Ftorax" with the adhesive system "Gluma comfort bond" leads to a more pronounced smoothness of them (Fig.4. a, b.), which prevents the penetration of microorganisms into the base of the prosthesis, as well as the release of plastic ingredients from inside the prosthesis into the joint. This circumstance has a beneficial effect on the MMOC of the prosthetic bed and helps to reduce possible complications from lamellar denture.

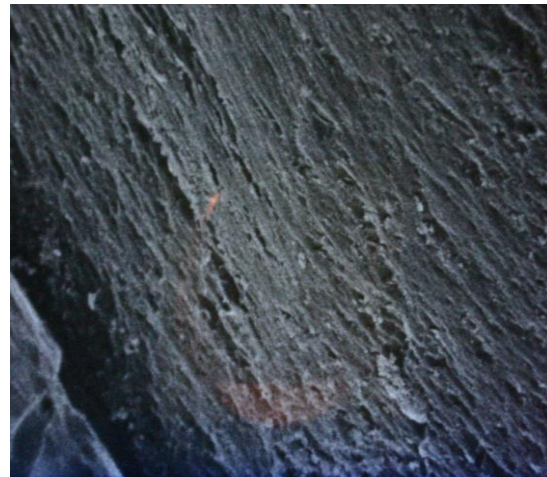


*Fig. 5a After shielding the contact surface of the denture from "Ftorax" with the adhesive system "Gluma comfort bond" of light curing using the device "GC" gradia apparatus SEM x 400*

*Figure No. 5b. After shielding the contact surface of the denture from "Ethacryl" with the adhesive system "Gluma comfort bond" light curing using the device "GC" gradia apparatus SAM x 400*



5a.



6b

### ***Prosthetics "Valplast" from "Vertex thermo sense".SAM X 400***

After prosthetics of patients in need of CRP and PRP, effective clinical and morphological signs were especially noted in OP/G prostheses from "Valplast" from "Vertex thermo sense" accompanied by normalization of the outer surface compared to acrylic plastics "Ftorax" and "Ethacryl" ranged from 37.7 to – 42%. According to a number of literature data, the average effectiveness of improving the clinical condition of PR in prosthetics using the material "Vertex

thermo sense" compared with orthopedic treatment performed with prostheses based on acrylic plastic "Ftorax" and "Ethacryl" is 30-40%.

Conclusions: According to the results of clinical, functional and laboratory studies, the high effectiveness of prosthetics using the basic material "Vertex thermo sense" for the treatment of secondary adentia in HIV-infected patients has been proven.

The obtained clinical and laboratory data on the histological condition of the surface of the prosthesis allow us to recommend dentures made of thermoplastic material "Vertex thermo sense" for the replacement of defects in dentition in individuals, as a method of choice, their use significantly increases the effectiveness of orthopedic measures.

When using acrylic plastic "Ftorax" as a base material, to prevent microbial and fungal adhesion, as well as to prevent the state of intolerance to composite materials in patients, we recommend shielding the contact surface of the prosthesis with an adhesive light curing system.

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# THE MAIN CHARACTERISTICS OF GRAINED GRAINS AND THE PRINCIPLES OF USING THEM IN BAKERY CONFECTIONERY

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**Abstract.** *The growing global population presents challenges in food supply. Scientists are focusing on studying nutrients that boost immunity, enhancing the nutritional quality of foods, and enriching them with naturally obtained biologically active substances.*

**Keywords:** *germinated barley, malt, vitamins, minerals, antioxidants, prevention of premature aging, metabolism, natural biologically active substances.*

**Introduction:** Cereals and cereal products occupy a leading place in the human diet. There is no doubt that in the future they will remain the main food products on any table. The imbalance in the diet of almost all groups of the population and the significant deterioration of the diet lead to a lack of vitamins necessary for a person's normal life. 90% of the world's population is deficient in vitamin C and approximately 50% is deficient in group B vitamins, this problem can be overcome by increasing the production and consumer demand and attractiveness of vitamin-enriched products [1]. From the information about the chemical composition of grain and the distribution between its components, it follows that the amount of minerals and vitamins in flour products ground in different sizes depends on which parts of the grain are included in the flour [2].

**Theoretical basements of research:** experts suggest adding a small amount of special biologically active additives to traditional products that perform a therapeutic and preventive function in bread and confectionery products [3]. For example, the use of rye malt, which contains enzyme preparations such as alpha-amylase, increases the amount of dextrans in the dough and slows down the aging of products. Malt gives the products a pleasant smell and taste, so its use in the production of cakes improves their emotional appeal and consumption properties [4].

A significant change in the physico-chemical and biochemical properties of grains occurs during grain germination, and at the same time, the flour properties of grains also change. In the sprouted grain, the size of the pod increases, a small root appears. During extraction, grain size increases, dispersion and viscosity decrease. During the germination of wheat grain, the weight of the grain decreases due to a significant increase in the intensity of its respiration. The appearance of the grain also changes. It was found that spring and autumn barley grains lose their luster within 12 hours after germination. Spring barley germinates 15 hours after germination and takes 21 hours to germinate and take root, the grains are lighter in color and the grass is darker in color. Winter barley grains germinate more slowly, germination occurs after 18 hours, and roots appear within 24 hours of germination [5].

According to the degree of germination of barley grain, it is divided into the main grain or a mixture of grains. At different stages of germination, the amount of water-soluble low-molecular substances increases, the amount of recoverable sugars and non-protein nitrogenous substances increases sharply, and protein nitrogen gradually decreases [6]. At the same time, due to increased respiration, the amount of sucrose decreases in the first hours of germination, and after 24 hours, it increases as a result of starch synthesis. According to scientists, all components of the respiratory system and metabolism, energy supply of germinated grains and new to All compounds necessary for tissue formation are formed during grain germination. The stage of forming small sprouts should be done as soon as possible, because high humidity during the germination stage creates a favorable environment for microorganisms. Germinated grain is an excellent nutrient substrate for various grain microorganisms[7].

First of all, improper drying and storage of grain with high moisture content is considered the reason for the decrease in the quality of the product when making flour from milled barley grain. But in the technology of obtaining sprouted grains, the germination process is controlled to enrich the grain with vitamins and enzymes. In the process of germination, the complex reserve substances of barley grain are easily lost, and the amount of antioxidants (vitamins, bioactive substances) and trace elements significantly increases. The production of functional products in confectionery from the dried flour of milled barley and its inclusion in the diet prevents premature aging of the human organism [8].

Studies show that regular consumption of sprouted grains increases metabolism and blood, increases immunity, eliminates vitamin and mineral deficiencies, normalizes acid-alkaline balance, cleanses the body of toxins, improves digestion, increases energy. it is considered a reasonable object in increasing and slowing down the early aging process [9,10].

**Practical basements of research:** Sprouted flour is: flour made from whole grains that have been sprouted to release all the nutrients stored in the grain. From barley and gluten-free grains to gluten-free brown rice, any grain can be milled and turned into a functional flour, and this flour can be used in all flour-based recipes.

Ever since humans have been eating the seeds of cereal grasses, we've known that whole grains straight from the field are difficult to digest. From stone grist mills to wind and water mills, millennia of human ingenuity have made it possible to grind dry, hard-shelled grains. But humans have cultivated grains, at least historically. But not only softening the whole grain by harvesting, but also facilitates their consumption (less work than grinding and less energy than cooking) [11,12,13].

**Research results and their discussion:** The use of yeast in the production of bread products from flours obtained on the basis of milled grains is 80% more efficient than that of flours obtained from unmilled grains. In addition, it was observed that the size and number of loaves in bread production increased by 30% when prepared from harvested barley flour.

In a 2023 study at the Faculty of Food Technology, researchers found that bread made from sprouted barley flour needed less water to form a dough with a better consistency, and it took less time to rise. In addition to a significant increase in bread height, it was observed that bread made from sprouted barley flour was softer than bread made from unsprouted flour, and retained its softness even after 7 days of storage. Also, these improvements are seen not only in bread made from sprouted barley flour, but also in bread made from a mixture of ordinary barley flour and sprouted barley flour [14,15]. Recent research shows that adding less than 2% germinated barley

flour to bread made from ungerminated barley flour has been observed to improve bread volume and increase dough strength. It was observed that the consumption of sugar in the flour confectionery products based on the flour obtained from the milled barley grain is 20% less than that of unmilled barley flour. In optimizing the process of harvesting grains, harvesting time, thermal environment, humidity environment, parameters of light indicators were determined based on experiments and the most optimal indicators were selected.

Temperature and humidity are important factors for germination and growth of seedlings. In this study, the efficiency of germination of barley seeds under various abiotic stresses was studied. The research was conducted at the Tashkent Institute of Chemical Technology. Six different temperature levels were used: 5, 10, 15, 20, 25 and 30 ° C. Temperature and duration of germination and seedling development were significantly affected. In the optimal range of 15 ° C to below 25 ° C, 20 ° C was found to be acceptable. Germination occurred at 75% of potable water and its optimum range was found to be acceptable for germination. Determining the water requirement for barley grain germination is an objective basis. In this study, the optimum water consumption range for barley grain germination is 55-75 percent, as shown in Table 1.

**1-Table.**

**Determination of water requirement for germination of barley grain**

Amount of water to collect in ml		The amount of water stored in grain is per 100 grams	
Example number	Recommended Water Amount %	Water amount ml	Barley grain germination rate %
1	20	1.282	15
2	30	1.924	25
3	35	2.565	30
4	30-40	3.207	35
5	30-50	3.834	45
6	30-60	4.489	55
7	30-65	5.131	60
8	30-70	5.772	65
9	30-75	6.414	70
10	30-80	0,641	75

Significant differences were found between the percentages of germination of 15, 20 and 25 barley seeds in dense and sparse conditions in a glass container. As it turned out, it was observed that the denser the seeds are, the whiter the roots are. Figure 1.

**1-Figure**

**Determining the condition of harvesting barley grain based on its placement density.**



25-pcs barley

20-pcs barley

15-pcs barley

Data show that seed number is a critical factor in seedling growth bioassays. An increase in water volume or denser barley shoots increases the amount of phytotoxins present in each seed, thus increasing the index of dark color penetration. Optimum grain density has a negative effect on the development of sprouts in glass containers and opening the lid of the container. They suffer from water loss, which has a bad effect on the development of seedlings. The results showed no significant differences between different seeds and seedling densities of 15, 20 and 25 per pot for the characters measured. Because high seedling density had the opposite effect on glass jar opening and there were no significant differences between the densities used, 15 seeds per glass jar were used for the barley germination experiments under wet conditions compared to high density. more suitable. It is very important to determine the optimal number of seeds to be used in the glass jar experiment. This is important in the optimization of resources, especially for obtaining functional flour confectionery raw materials.

**Conclusion:** A temperature of 20°C was determined to be the optimum temperature for germination of barley grain. Barley flour has a sweet taste at a temperature of 20°C to 30°C and is considered an optimal indicator for obtaining flour pastry flours.

The size of the seed plays an important role in the amount of water required for germination, giving a more accurate impression of the amount of water used. Different percentages of germination can occur in a wide range of water contents starting from 0.65 ml, which is 75% of drinking water.

No significant differences were observed between grain densities, so a higher density is recommended for laboratory experiments.

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## CLINICAL COURSE OF THE CARDIOVASCULAR SYSTEM WITH BRONCHIAL OBSTRUCTION IN PRESCHOOL CHILDREN

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**Abstract.** *To achieve this goal, a comprehensive examination of 50 patients aged 3 to 7 years with acute obstructive bronchitis was carried out. Electrophysiological changes in the cardiovascular system revealed in children with acute obstructive bronchitis, manifested in the form of disturbances in repolarization processes in the myocardium, rhythm and conduction disturbances, suggest a cause-and-effect relationship with hypoxia in bronchial obstruction.*

**Keywords:** *Acute broncho-obstructive syndrome, children, preschool age, cardiovascular system, ECG.*

**Relevance:** Acute broncho-obstructive syndrome of viral or viral-bacterial etiology has the highest frequency in childhood. According to Tatochenko V.K. (2000), in every fourth child with acute respiratory disease, the bronchi with prolonged broncho-obstructive syndrome are involved in the inflammatory process. Respiratory disorders in acute obstructive syndrome of infectious origin have varying degrees of severity and are accompanied by hypotension and metabolic acidosis[9]. In the works of both domestic and foreign researchers, it was shown that it is the combination of viral infection, autonomic disorders and acute hypoxia that occurs with bronchial obstruction in young children that underlies multiple organ lesions, including the cardiovascular system[ 9]. A number of studies have proven the cardiotropic nature of influenza viruses and enteroviruses[4], which contribute to the development of acute infectious myocardial damage in children. Recently, chlamydial and mycoplasma infections have been assigned a significant role in the development of acute infectious lesions of the cardiovascular system[6]. At the same time, the nature and severity of changes in the cardiovascular system and their prognostic significance in acute respiratory diseases accompanied by bronchial obstruction in young children have not been sufficiently studied. The use of modern highly informative instrumental and biochemical research methods has made it possible to identify markers of inflammatory cardiomyopathy in children [1,6]. The results of a biopsy of the heart muscle of patients with myocarditis confirm the presence of dystrophic and fibrotic changes in the myocardium. At the same time, there is no clear data in the literature on the frequency and nature of infectious myocardial damage in children. Against the backdrop of a continuous increase in the number of children with cardiovascular pathology[7], the significance of infectious lesions in young children in the development of such common diseases as heart rhythm and conduction disorders has not been studied. At the same time, it has been shown that late diagnosis of diseases of the cardiovascular system and inadequate assessment of their prognosis in children underlie the formation of both chronic forms of pathology and high morbidity and mortality in older age groups [7,8].

Thus, the state of the cardiovascular system in preschool children with bronchial obstruction has been practically not studied, risk factors for the formation of pathological changes and their prognostic significance have not been determined, methods for the prevention of chronic

forms of cardiovascular pathology have not been developed, which determined the purpose of this study.

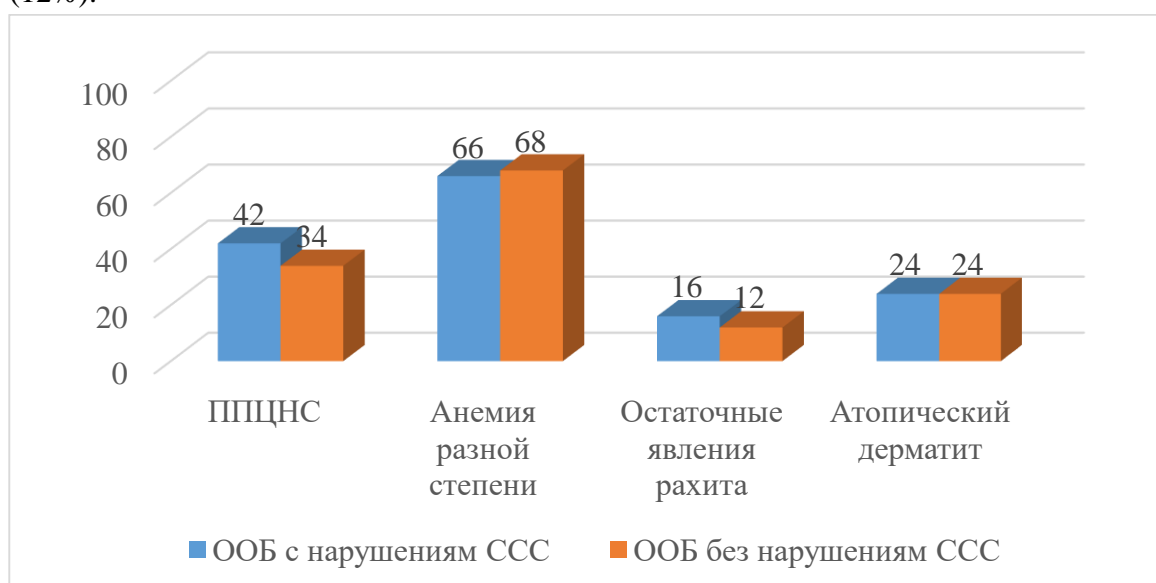
**Purpose of the study:** to study the features of the state of the cardiovascular system with bronchial obstruction in preschool children.

**Materials and methods of research.** To achieve this goal, a comprehensive examination of 50 patients aged 3 to 7 years with acute obstructive bronchitis who were treated in the pulmonology department of the Republican Specialized Scientific and Practical Medical Center for Pediatrics of the Ministry of Health of the Republic of Uzbekistan was carried out. All patients upon admission to the department underwent a comprehensive examination, which included a clinical analysis of blood and urine, biochemical and x-ray examinations of the chest organs. Analysis of the child's development in subsequent years included: identification of the frequency of colds (according to the age period with calculation of the infectious index), the presence of concomitant diseases and chronic foci of infection, visits to preschool educational institutions and other questions.

Statistical processing of the obtained results was carried out using application programs for statistical data processing Statistica® version 6.0. The significance of differences between the compared groups was assessed using Student's tests. Differences in the compared values were considered statistically significant at  $p < 0.05$ .

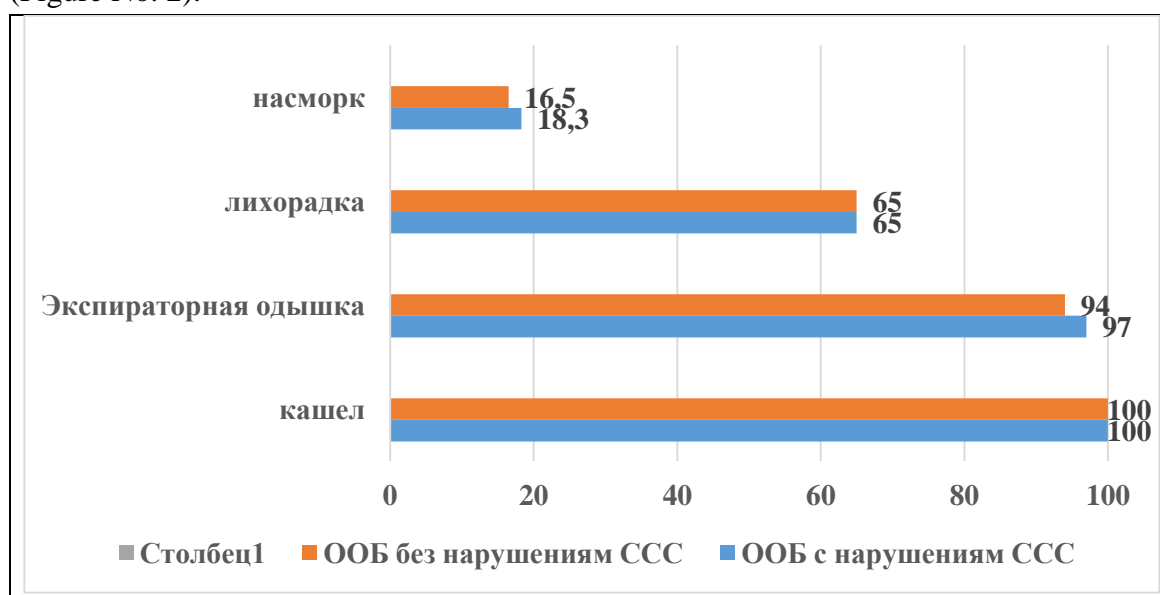
**Results and discussions.** The group of patients with acute obstructive bronchitis (AOB) was divided into two subgroups: 1 subgroup (main) - children in whom AOB occurred with disturbances in the adaptation of the cardiovascular system (CVS); Group 2 (comparison) - children who did not have any disturbances in the functioning of the cardiovascular system.

We carried out a detailed analysis of the frequency of concomitant pathologies in children with AOB (Fig. 1), which showed that among concomitant diseases in preschool children, AOB in 1 subgroup were significantly more often detected: anemia of varying degrees (66%), perinatal damage to the central nervous system (42%), atopic dermatitis (24%) and residual effects of rickets (16%), in subgroup 2 - anemia of varying degrees (68%), perinatal damage to the central nervous system - in 34% of children, atopic dermatitis (24%) and residual effects of rickets - (12%).



**Fig.1. Concomitant pathology in children with AOB**

The frequency of complications during pregnancy occurred 2 times more often in mothers whose children had AOB, occurring with a functional impairment of the cardiovascular system ( $p < 0.005$ ). In 76% of mothers, pregnancy proceeded with anemia. The problem of anemia in pregnant women is relevant due to the significant impact of this pathology on the course of pregnancy and the health of the newborn. Anemia in a pregnant woman is a predisposing factor to the development of impaired functioning of the immune system in the child. We found that at the time of pregnancy and childbirth, 47% of mothers had chronic diseases ( $p < 0.05$ ) (chronic tonsillitis, chronic pyelonephritis), which can aggravate both the antenatal and postnatal periods of the child's development. The studies showed that frequent complaints in children of both groups were: cough (100%), expiratory shortness of breath in 1 subgroup 97% and in 2 subgroup 94%, fever in children of both groups 65%; runny nose in 1 subgroup 18.3% , in subgroup 2 16.5% (Figure No. 2).



**Fig.2. The most common complaints in children with acute obstructive bronchitis.**

To assess the severity of bronchial obstruction, W. Tal (1996) scoring tables were used, which assessed the degree of respiratory failure. According to the W.Tal scoring tables, mild obstruction corresponds to 2-4 points, moderate severity - 5-8 points, severe - 9-12 points. Our studies revealed that in children in subgroup 1, in 32% of cases, obstruction was of moderate severity, mild in 68%, and in subgroup 2, obstruction of moderate severity was 19%, mild in 81%. Observation of moderate severity of obstruction in children of group 1 also caused functional changes in the cardiac vascular system. Thus, according to biochemical studies in children, the recalcification time was increased, on average it was 25%, and the inflammatory mediator CPK in both groups corresponded to the reference values (indicators), i.e. standards This indicates that children with AOB experience only functional changes in the cardiovascular system.

Analysis of ECG data indicates disturbances in heart rhythm and conduction in the form of sinus tachycardia (29.0%) and bradycardia (8.3%), sinus arrhythmia (17.6%), incomplete blockade of the right bundle branch (25.3%) , as well as metabolic changes in the myocardium in the form of early ventricular repolarization syndrome (67.3%). When analyzing the heart rate, two degrees of its increase were identified: moderate tachycardia - an increase in the rhythm by 20-30% and severe tachycardia - by 50% compared to standard values. According to a chest x-ray, 12.5% of children have a cardiothoracic index greater than 0.5 (CTI > 0.5), which indicates a disorder of the cardiovascular system.

**Conclusions.** Thus, the electrophysiological changes identified in children with AOB, which manifested themselves in the form of disturbances in repolarization processes in the myocardium, rhythm and conduction disturbances, were found in children with AOB and this suggests a cause-and-effect relationship with hypoxia in bronchial obstruction, as well as in the early stages to identify children at risk for the development of adaptation disorders of the cardiovascular system in AOB.

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## FEATURES OF THE CURRENT COURSE OF ACUTE BRONCHIOLITIS IN CHILDREN UNDER 3 YEARS OLD

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**Abstract.** *To study the features of the modern course of acute bronchiolitis in children under 3 years of age; boys in the first year of life are more often affected than girls. Acute bronchiolitis in children often occurred against the background of concomitant pathology, and 42% of children had lymphocytosis against the background of a normal number of leukocytes.*

**Keywords:** *Children, bronchiolitis, respiratory failure, retraction, lower respiratory tract.*

**Relevance.** Respiratory diseases in children occupy first place in the structure of morbidity and third place in the structure of infant mortality [3]. They belong to the so-called “managed”, i.e. preventable causes of child mortality [2]. Reducing mortality from respiratory diseases is the most realistic reserve for reducing child mortality in general [4]. In this sense, acute diseases of the lower respiratory tract are of great interest, as they have a more severe, complicated course in the structure of acute respiratory pathology [4]. Acute bronchiolitis is a common disease of the lower respiratory tract and a common cause of hospitalization in young children [1, 2, 5]. Every year, 150 million cases of bronchiolitis are registered worldwide (11 cases per 100 infants), 7-13% of which require hospital treatment and 1-3% require hospitalization in an intensive care unit [3]. According to the literature, the cause of acute bronchiolitis is most often a viral infection, and respiratory syncytial virus is the most common pathogen (70-80% of cases) [1, 2, 5].

Other viruses (rhinoviruses, enteroviruses, influenza A and parainfluenza viruses, adenoviruses, coronaviruses) are detected less frequently [3, 4]. Almost all children suffer from RS virus infection in the first two years of life (90%), but only in approximately 20% of cases do they develop bronchiolitis, which may be due to the presence of predisposing factors [1, 2, 3].

**Purpose of the study.** to study the features of the modern course of acute bronchiolitis in children under 3 years of age.

**Materials and methods of research.** We examined 45 patients, including 27 boys and 18 girls, who at the time of the study were in the department of young children at the TashPMI clinic, diagnosed with Acute Bronchiolitis at the age of 3 months to 3 years of life. The average age is 6-12 months. Boys get sick more often [1, 3]. The seasonal peak incidence of bronchiolitis is observed from October to May [4]. The following research methods were used: clinical and anamnestic, functional and instrumental - ECG, echocardiography. Consultations of narrow specialists; ENT, neurologist, ophthalmologist. Survey – survey of parents.

Statistical processing of the obtained results was carried out using application programs for statistical data processing Statistica® version 6.0. The significance of differences between the compared groups was assessed using Student's tests. Differences in the compared values were considered statistically significant at  $p < 0.05$ .

**Results and discussions.** Indications for hospitalization of children with bronchiolitis were: apnea (89.3%), signs of respiratory failure of the 2nd-3rd degree (89.2%), wet cough -63%. Among patients with acute bronchiolitis, 63.5% were children from 6-12 months, 36.5% were from one year to 3 years. The allergy history was studied: 56.8% of children had allergic diseases

in relatives, 43.2% of children had no heredity. Acute bronchiolitis in children often occurred against the background of concomitant pathology. Atopic dermatitis was diagnosed in 47% of patients, malnutrition, protein-energy deficiency 2-3 SD - 12.%, overweight in 6.9% of children, aggravated premorbid background - rickets 35.3%, anemia 45.6%, irritable bowel syndrome 18.5%. The majority of children - 62.5% were breastfed, 11.9% of children were mixed-fed and 25.6% were bottle-fed. The main symptoms of intoxication were noted on the 2-5th day against the background of an acute upper respiratory tract infection. Complaints from the mother: lethargy, apathy, decreased appetite in children, increased body temperature up to 37.5°C were noted in 30% of cases, in 36% of children – 38.5°C, in 26% of cases – 38-39°C, in 8 % of children – above 39°C.

A non-productive rare cough was observed in 7% of children, a non-productive, frequent, paroxysmal cough - in 47%, an unproductive cough - in 46% of children. Visually, slight swelling of the chest was detected. Percussion detected a box-shaped sound in 75% of patients, and a clear pulmonary sound in 25%. Increasing dyspnea was accompanied by increased breathing in 78%. All children with acute bronchiolitis had increased exhalation, participation of auxiliary muscles in the act of breathing, retraction of the intercostal spaces during inspiration, flaring of the wings of the nose, 35 patients (78%) were diagnosed with respiratory failure of 2-3 degrees, and 10 (22.6% ) children with respiratory failure of 1-2 degrees.

On auscultation, 42% of patients with acute bronchiolitis heard weakened breathing with moist, fine-bubble rales, and in 52%, harsh breathing, moist, fine-bubble rales, and crepitus. An X-ray of the chest organs in all children revealed increased transparency of the lungs with drooping domes of the diaphragm. In peripheral blood, anemia was observed in 51% of children. Leukopenia was detected in 17% of patients with a slight increase in ESR. 42% of children had lymphocytosis against the background of a normal number of leukocytes, 27% had monocytosis and a slight increase in ESR.

In 37.2% of children, leukocytosis was observed in the peripheral blood, in 29.6% - neutrophilia, a neutrophil shift to the left was detected in 22.4% of children, and in 25.6% - an increase in ESR. In the treatment of acute bronchiolitis, bronchodilators were used through a nebulizer 3-4 times a day: salbutamol at a dose of 0.15 ml/kg body weight, maximum 2.5 ml; fenoterol per dose 2 drops/kg body weight, maximum 10 drops (0.5 ml), oral hydration and inhalation with soda solution. Children with severe inflammatory changes in the blood were treated with antibiotics.

**Conclusions.** Thus, boys in their first year of life are more likely to suffer from acute bronchiolitis than girls. Acute bronchiolitis in children often occurred against the background of concomitant pathology. 42% of children had lymphocytosis against the background of a normal number of leukocytes.

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