



CAUSES OF RENAL PATHOLOGY IN NEWBORN

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Received:	October 6 th 2022	The growth of diseases of the urinary system in newborns in recent years is associated with the influence of environmental factors. In addition, it is unsafe for the unborn child to prescribe antibiotics and a number of other drugs and polypharmacy in the treatment of pregnant women, exposure to various chemical agents that enter the body with air or food. It has been established that the incidence of nephropathy in children from families with kidney pathology is 20 times higher than in the general population. Hence, an ecological and family approach to the early detection of kidney disease in infants is important.
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INTRODUCTION. In recent years, interest in the problems of nephropathies has increased, since many kidney diseases in older children and adults have their origins in the unwell-being of the ante- and perinatal periods. In connection with the deterioration of the ecological situation and changes in the human environment, the problem of environmental pathology has arisen as a consequence of the impact of physical, biological and chemical factors. [1,2,7]. The most important health hazard is the contamination of the biosphere with chemical compounds that have toxic, mutagenic and carcinogenic properties. Environmental risk, i.e. the danger of a destructive impact on humans and the environment, contributes to a negative impact on the health of the child population in the first place. Chemical agents entering the child's body with air, water, food affect various body systems. In ecologically unfavorable territories, the frequency of chronic pathology of the urinary system, respiration and digestion organs is statistically significantly increased [5,6,8].

Lesions of the urinary system in children are not only common, but also tend to increase, and often at an early age (Chugunova O.L., 2008). Epidemiological analysis shows that the deterioration of the environmental background, the toxic-allergic effects of drugs lead to damage primarily to the kidneys, which are the elimination organ. In the future, the pathology of the developing excretory system of the embryo is a prolonged pathology of the fetus and newborn [3,8]. The increase in nephropathies in newborns is also associated with an increase in the frequency of congenital and hereditary forms, an increase in the incidence of mothers and perinatal pathology, the expansion of resuscitation care for newborns and a directed study of this problem. Recent epidemiological studies indicate that the incidence of acute nephritic

syndrome (ANS) among the child population ranges from 5.4 to 34.2%, and it varies significantly among different groups of children and is maximum, up to 74%, in children with hereditary nephropathies. At the same time, it is noted that the peculiarity of kidney diseases in newborns and infants is a peculiar background - morphological immaturity of the renal tissue and non-differentiation of nephrons in functional terms, as well as the presence of immunogenesis dysfunction, dysbacteriosis and the peculiarity of the course of the perinatal period [1,4,7].

In newborns, latent forms of nephropathies have become more common, late diagnosed and early leading to the development of chronic kidney diseases and even to the formation of chronic renal failure (CRF) already in infancy. The consequences of kidney damage in early childhood are so significant that their timely detection is a problem not only of a medical but also of a social nature. Taking into account the possibility of an evolutionary reserve for the maturation of morphological structures, with timely prediction of the formation of pathology, it is possible to create conditions for the maturation of nephrogenic tissue, which means preventing the development of serious diseases. Organizational and financial problems associated with renal replacement therapy have begun to exceed the capacity of even highly developed countries. This actualizes the problem of developing measures to prevent the development and the earliest possible diagnosis of the pathology of the urinary system in children, starting from the neonatal period [3,5,7,8]. Many authors have noted that the most important pathogenetic mechanisms that damage the kidneys in newborns are hypoxia and infectious and inflammatory diseases.



THE RISK FACTORS FOR THE FORMATION OF KIDNEY PATHOLOGY IN NEWBORNS

Most often in the neonatal period, infectious and inflammatory diseases of the ANS occur, somewhat less often - hypoxic nephropathy, acute renal failure (ARF), toxic-allergic conditions and interstitial nephritis, and they may also develop congenital and hereditary kidney diseases (hydronephrosis, vesicoureteral reflux, polycystic kidney disease, multicystosis, microcystic kidney disease, etc.), kidney infarction, dysmetabolic nephropathies and urolithiasis. At the same time, one of the leading concepts in the genesis of pathological processes in the kidneys is the destruction of cell membranes due to endo- and exogenous (microbial) factors, and the destruction of nephroepithelial cells. According to a number of foreign authors, in severe and prolonged hypoxia, the destruction of the tubular epithelium occurs as a result of necrosis and apoptosis. The severity of membrane-destabilizing processes, their prolongation and the state of repair determine the clinical picture of the disease, its severity and the zone of radioactive contamination, exclude the possibility of related marriages and the presence of outcomes [4,7,9].

When collecting an anamnesis, one should take into account the age of the parents, the place of birth, and, mainly, the profession and nature of the work performed, whether the professional activity is associated with industrial hazards, whether the mother has bad habits, whether her relatives had hereditary and chronic diseases of the kidneys and urinary tract. At the same time, information about the course of pregnancy, the state of health of the mother at this time and her use of medicines, the presence and outcome of previous pregnancies (spontaneous miscarriages, stillbirths, the presence of children with congenital malformations of the urinary system are specified).

Particular attention deserves the identification of situations threatened by hypoxic-ischemic damage to the kidneys of the fetus and newborn. In conditions of ecological troubles or excessive psycho-emotional impact in the female body, a complex of neurodynamic, hormonal, metabolic disorders develops that delay the development of the fetus. Depending on the period of pregnancy, this can lead to deformities or immaturity of organs and systems [3,6,8].

A particularly important role in ensuring the maturation of the body belongs to the catecholaminergic mechanism, which is phylogenetically young, and therefore the most vulnerable. Clinically, this manifests itself in the widespread occurrence of hydrocephalus and hydrocephalic syndromes with a lag in mental and physical development, with dysplastic features of the musculoskeletal system, metabolic nephropathies, and

oxaluria. Hypotension of the renal pelvis system (widely detected by ultrasound) creates the prerequisites for diseases of the kidneys and urinary system. "Hypotensive-hydrocephalic-renal syndrome is a consequence of a violation of phasotone biorhythmogenesis even at the embryonic stage of ontogenesis with the development of neurodynamic disintegration. This creates conditions for systemic membrane damage, including hemato-histocytic barriers and, in particular, the blood-brain and urinary-blood barriers, which is a prerequisite for the development of a wide variety of pathological conditions in which damage to the nervous and visceral systems can occur, and subsequently form syndrome of pathologically accelerated aging. [7,9,11].

Endo-ecological (at the level of cellular space) poisoning of higher organisms with toxins, heavy metals, radionuclides leads, as a consequence, to response mutations of genomes. As for a multicellular organism, water, air, soil, biota as a whole represent the environment, so for the cell there is an environment inside the organism. Many authors note that poisoning and toxicosis are currently developing at the beginning of the extracellular, and then the cellular environment. The term endo-environmental disease (EED) has been proposed for this condition. The process of concentration in intercellular tissues of technochemical pollutants that cause mutation of genomes takes on the character of an epidemic.) [5, 8,11].

Due to the deterioration of environmental conditions, as well as the improvement of resuscitation in the neonatal period, leading to the nursing of children with very low and extremely low body weight, there is an increase in dysmetabolic nephropathies, often leading to the development of urolithiasis even in young children. The risk factors for the development of pathology of the urinary system in newborns include, in addition to congenital and hereditary diseases, conditions in which chronic fetoplacental disease occurs. At the same time, the main pathogenetic factor causing damage to the kidneys of the fetus is chronic intrauterine hypoxia. Of all the organs, it is the histogenesis of the kidneys that suffers most during hypoxia (Natochin Yu.V. 2011).

The possibility of diagnosing econephropathy exists. It is based on the detection of the presence in the regions of a high level of ecotoxicants in the environment and, accordingly, a high level of pathology of the urinary system, in comparison with the general population data; an increase in the incidence of kidney disease in children living in close proximity to a place of production that pollutes the environment, compared with areas without industrial facilities; an increase in the frequency of pathology with age; the presence of similar clinical and laboratory characteristics of kidney damage



in the majority of the examined, as well as the identification of multiple stigmas of dysembryogenesis, anatomical anomalies of the urinary system; the presence of a membranopathological process in most patients. In addition, the presence of increased urinary excretion of heavy metals and hypersensitivity to them, the detection of morphological changes in the renal tissue during histological examination of nephrobiopsy specimens in the form of tubulointerstitial nephritis, and signs of renal dysembryogenesis are of diagnostic value. [4, 5, 6, 8].

Diagnosis of environmentally determined nephropathies is difficult due to the problem of direct detection of heavy metals in the renal tissue as a true etiological factor. Existing methods for examining children are aimed at an already sick child who has changes in the kidneys, a pathological urinary syndrome.

At the same time, children of the risk group (with a hereditary burden for the pathology of the urinary system, the presence of occupational hazards associated with contact with heavy metals at the workplace of their parents, with more than five years of experience living in a region with a high environmental load of heavy metals) are not observed from the standpoint of early diagnosis. ecopathology, leading to disruption in various organs and systems, including the organs of the urinary system. [9, 10, 12].

There are certain difficulties in monitoring this group of children due to the lack of a single prognostic algorithm. Violation of histogenesis can be manifested by malformations of the kidney (in 1/5 of newborns) and other reliable criteria for the morpho-functional immaturity of the kidneys - organ dysplasia. This is an indicator of the urgent need for the development of measures to create a favorable environmental situation in cities and constant monitoring of the habitat.

CONCLUSION: Pollution of the biosphere significantly increases the incidence of kidney disease in newborns. In the occurrence of congenital nephropathy, the burden of diseases of the urinary system in the mother of a newborn child and the complicated course of pregnancy are important. The high incidence of lesions of the urinary system in a newborn requires the introduction into clinical practice of modern non-invasive and highly informative methods for assessing the functional state of the kidneys in the neonatal period.

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