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В XXI ВЕКЕ**

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**Название публикации:** «MODERN APPROACHES TO DIET THERAPY FOR FOOD ALLERGIES IN CHILDREN»

**Relevance of the topic.** Allergic pathology currently ranks first among the most common chronic diseases in childhood [3]. The prevalence of food allergy (FA) in the population is 1-2.5%, the highest frequency of this pathology is observed among children of the first 2 years - 6-8%, in older age groups its prevalence decreases and in adults it is about 2% [2]. According to WHO, about 30% of the world's population has some kind of allergic reaction or disease. Hereditary predisposition plays an important role in the development of allergic pathology, but it should be noted that genetic factors are unlikely to explain the increase in the frequency of immune disorders such as atonic reactions to environmental allergens. External factors leading to an increase in the incidence of PA include changes in diet in economically developed countries over the past decade, as well as environmental changes. It is assumed that the influence of the environment, including the microbial environment, especially during critical periods of life, can directly change the type of host immune response. Therefore, PA is considered today as a multifactorial pathology, in the occurrence and development of which a number of pathogenetic mechanisms, both genetic and environmental, play a role. All this leads to a variety of clinical forms of food allergies, determines the specific course of the disease in each specific case and leads to the need for a strictly individual approach to treatment, including diet therapy. In most cases, PA is the starting sensitization, against the background of which the formation of hypersensitivity to other types of allergens and the development of various chronic allergic and gastroenterological pathologies occur. At the same time, the range of intolerant products also changes with age - if initial sensitization is most often caused by cow's milk proteins (CMP), then later, in older children, allergies to products such as fish, honey, nuts, citrus fruits, etc. are more common.

The oral route of entry of the allergen leads to the fact that the majority of patients with PA exhibit certain disorders of the digestive organs, and their nature varies depending on the age of the child and the severity of sensitization. The role of non-IgE-mediated mechanisms in the formation of gastrointestinal manifestations of PA is currently not sufficiently disclosed and requires study. In recent years, the influence of intestinal microflora on the development of the immune system has been actively studied. Various disturbances in the composition of the intestinal microflora are often detected in children suffering from food allergies [5,6]. It has been shown that the intestinal microflora of healthy children and patients with atopy is different - children with atopy have a reduced number of lactobacilli and an increased number of colibacteria and *Staphylococcus aureus* [5,8]. In the presence of profound changes in the composition of the intestinal biocenosis, expressed in the suppression of protective microflora, active vegetation of opportunistic flora, these changes affect the course of the allergic process, contributing to its severity [8]. However, the pathogenetic significance of disturbances in the composition of the intestinal microbiota in children with PA has not been fully studied. Also, to date, no algorithms have been developed for correcting the intestinal biocenosis in children with PA, taking into account modern possibilities of diet therapy. Diet therapy is an important component of the complex treatment of PA, being, in fact, an etiotropic method of treatment [6,10]. When compiling a therapeutic diet, the main attention is paid to the elimination of causally significant products. At the same time, regardless of the period of illness, the diet must provide the physiological needs of children for basic nutrients, vitamins, and minerals. Therapeutic nutrition for PA has its own nuances at different age periods. In children of the first year of life who are on artificial or mixed feeding, the success of diet therapy largely depends on the correct choice of a breast milk substitute product. To optimally solve this problem, it is necessary to develop a modern, differentiated, scientifically based approach. A separate problem is the correction of the nutrient composition of the diet in older children and adolescents who have been suffering from PA for a long time and have diets limited in composition with the exclusion of nutritionally important foods. It should be noted that the timing of the elimination diet is currently not clearly

defined. In this regard, it is necessary to clarify the clinical and immunological criteria that determine the duration of elimination of various products and the timing of their inclusion in the child's diet when expanding nutrition, as well as the development of approaches to correcting diets in patients receiving an elimination diet for a long time, using modern nutraceuticals. Thus, it is currently relevant to optimize nutritional approaches to the treatment of PA in children at different age periods, depending on the clinical and pathogenetic features of the disease, age, nutritional status, morpho-functional state of the digestive organs, indicators of intestinal biocenosis, as well as the development of new specialized baby food products and assessment of their effectiveness.

**Purpose of the work:** optimization of diet therapy for food allergies in children at different age periods based on the study of clinical and immunological features of the course of the disease and the state of the intestinal barrier.

**Research objectives:**

1. To study the clinical features of the course of food allergies in children of different ages.
2. Assess the relationship between the state of the intestinal barrier and the clinical manifestations of food allergies in different age periods.
3. To study the characteristics of the nutritional status and provision of individual micronutrients (including selenium, calcium, iron, vitamin C) of children with food allergies.

**Materials and methods of research:** Methods for assessing the morpho-functional state of the digestive organs and nutritional status with statistical processing of the data obtained.

**Research results:**Based on a comprehensive study of wedge and co-immunological features of the course of food allergy in childhood, its main clinical forms in children at different age periods are described. It has been established that isolated manifestations of food allergy are rare and mainly in the first year of life (19.2% - isolated skin and 4.2% - isolated gastrointestinal form); in most cases, manifestations of food allergy are of a combined multiorgan nature with the

involvement of two and more body systems. In early childhood, the cutaneous-gastrointestinal form of food allergy predominates (74.2% in children of the first year and 88.5% in children 1-3 years old). It was found that the frequency of gastrointestinal manifestations of food allergies is 84.4% according to clinical data and 92.9% during a comprehensive examination (ultrasound of the abdominal cavity, excretion of carbohydrates in feces, endoscopy) and does not have significant differences depending on the age of patients, however Children of older groups (3-10 and 10-17 years old) more often show signs of structural changes in the digestive organs and the proportion of combined lesions of various parts of the gastrointestinal tract increases. The etiological structure of food allergies in children depending on age has been studied. It has been shown that with a comprehensive assessment of the reaction to food allergens (IgE, IgG, IgG4) in children of the first year of life with atopic dermatitis, the presence of hypersensitivity to CMP is detected in 85% of cases. For the first time, laboratory markers of the severity of skin lesions and damage to the gastrointestinal system in children with food allergies in the first year of life have been established - an increased level of IgE to BSA and r-LH and a high level of specific IgG (class 4 reaction) to BCM and its fractions, respectively. For the first time, the level of IgG4 to food allergens in children with food allergies was analyzed in an age-specific manner and statistically significant differences were revealed for 14 of the 24 allergens studied. It has been established that, despite the decrease in the frequency of clinical reactions to dairy products with age, the frequency of detection of specific antibodies to BCM in children remains quite high, amounting to 36% in patients of the older age group (10-17 years).

The frequency and nature of intestinal biocenosis disorders in children with food allergies were studied and their characteristic features were identified at different age periods, with the most pronounced deviations found in the group of children in the first year of life. Differences in the composition of the intestinal microflora in children depending on the clinical forms of food allergy have been established. It has been shown that against the background of complex treatment (elimination diet and pharmacotherapy), positive dynamics of the state of intestinal microflora is observed



in 96% of children with food allergies, while it has been established that against the background of normalization of the aerobic component of microbiocenosis, bifid flora deficiency persists in 69.2% of children with partial and in 50% of children - with complete clinical remission. For the first time, the characteristics of the permeability of the intestinal barrier to macromolecules in children with food allergies, starting from the neonatal period and throughout the first year of life, have been studied from an age perspective. It has been shown that in children with allergies in 60% of cases during the neonatal period, a paradoxical increase in the permeability of the alar barrier to macromolecules (a-lactalbumin in human milk) is detected, which indicates a delay in the formation of the intestinal barrier. It has been established that during the first year of life in children with a cutaneous-gastrointestinal form of food allergy, there is a further increase in the permeability of the intestinal barrier. For the first time, a correlation has been revealed between the absorption of a-lactalbumin in human milk and the proteolytic activity of feces. A correlation was found between the absorption of a-lactalbumin in human milk and the level of total IgE, as well as the level of IgG4 antibodies to cow's milk proteins, soybeans, and chicken egg ovalbumin. Indicators of the nutritional status of children with food allergies at different age periods were studied, with the most significant deficits in the consumption of basic nutrients (proteins, fats and carbohydrates) and calcium, as well as deviations in physical development indicators found in the older group (10-17 years). The selenium supply of children with food allergies has been studied for the first time. It has been established that a deficiency of this microelement of varying degrees is observed in 61.2% of children with this pathology, an increased level of selenium in the blood - in 17.9% of cases, while the selenium supply of children with food allergies in general did not differ from the group of children without atopy. same age. It has been shown that against the background of strict adherence to a hypoallergenic diet, there is a tendency to decrease the supply of selenium. For the first time, to assess individual hypersensitivity to breast milk substitute products, a new laboratory method, "ELISA-Lacttest", was used, which makes it possible to detect antibodies of 3 classes - IgE, IgG, IgG4 - to total protein-peptide allergens in infant formula for therapeutic and prophylactic purposes. Based

on this method, an algorithm has been developed for selecting specialized products for children in the first year of life with an allergy to CMP.

**Conclusions:** 1. The first manifestations of food allergies in children in 83.5% of cases occur in infancy, in almost half of the cases (48.1%) - in the first half of life, and are mainly of an isolated nature in the form of allergic rashes on the skin (56, 1%). In 37.2% of cases, the first-time symptoms of food allergy are combined (mainly skin-gastrointestinal) in nature.

2. The main clinical form of food allergy in young children is skin-gastrointestinal (74.2% in children under one year old and 88.5% in children 1-3 years old); in older age groups the proportion of combined manifestations of allergies involving the respiratory system increases. The overall frequency of gastrointestinal manifestations of food allergies is 84.4% according to clinical data and 92.9% during a comprehensive examination and does not have significant differences depending on the age of the patients.

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