NEW TREATMENT TECHNOLOGIES IN THE ORIGIN OF ALLERGIC DISEASES IN CHILDREN

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Abstract. Allergic diseases are among the most common diseases in children. According to epidemiological studies, they currently affect up to 30% of the child population. In recent years, there has been a tendency towards a further increase in the prevalence of allergic pathology in children, which is associated with environmental pollution by chemical compounds, an increase in the frequency of food allergies, uncontrolled use of drugs, and changes in the lifestyle of the population.

Key words: allergic diseases, bronchial asthma, allergic rhinitis, aeroallergen.

The interaction of genetic and environmental factors plays a leading role in the development of allergic diseases in children, while atopy, defined as a congenital tendency to overproduction of general and specific IgE, is given the most important role in the pathogenesis of allergic pathology in childhood.

Fetal sensitization can occur already in the antenatal period due to pronounced exposure to exogenous allergens with excessive use of highly allergenic foods by the mother during pregnancy, long-term drug therapy for acute and chronic inflammatory diseases and complications of pregnancy, as well as constant contact of the mother with chemical compounds at the place of professional activity, smoking it during pregnancy. The transferred viral infection is considered as a high risk factor for the subsequent occurrence of allergic reactions and diseases in children born. Infections transferred during pregnancy can activate IgE synthesis by altering the balance of Th2 and Th1 lymphocytes with a predominance of Th2 cytokine profile, manifested by overproduction of IL-4, which induces IgE synthesis. Respiratory syncytial viral infection transferred at an early age promotes the activation of IgE production [1].

The formation of an atopic phenotype occurs already in the prenatal period. The manifestation of atopy in the form of increased IgE production can occur already in the antenatal period with an increase in the formation of atopic diseases in early childhood and subsequent periods of childhood. Atopic diseases (bronchial asthma, atopic dermatitis, allergic rhinitis) are most common in children. Their pathogenetic basis is IgE-mediated allergic inflammation, induced by preformed and synthesized de novo mediators, pro-inflammatory cytokines and chemokines in the shock organ [2].

In young children, the most common manifestation of allergy is atopic dermatitis; bronchial asthma and allergic rhinitis are less commonly diagnosed.

Atopic dermatitis in young children is characterized by the predominance of

exudative and erythematosquamous forms of the disease, while the onset of the disease is most often associated with sensitization to cow's milk proteins, eggs, fish, soybeans, gluten; in some children, its formation is due to sensitization to household allergens. dust, Dermatophagoides pteronyssinus, Dermatophagoides farinae, to allergens of domestic animals (cats, dogs), sensitization to certain vegetables, fruits, cereals. In young children, mild and moderate atopic dermatitis prevails, less often severe atopic dermatitis is observed [3].

In preschool children, the erythematosquamous form of atopic dermatitis often develops with lichenification, less often erythematosquamous and lichenoid forms of atopic dermatitis are noted [1]. Along with the importance of food allergy in these patients in the development of the disease, the importance of sensitization to aeroallergens of dwellings in the pathogenesis of atopic dermatitis increases. At the same time, when a repeated allergological examination is carried out for children aged 4-6 years, in comparison with the results of an allergological examination up to 1 year, a decrease in the level of sensitization to cow's milk, chicken eggs, beef, seafood is revealed. covey, potatoes, soybeans, rice, wheat and an increase in sensitization to allergens of eggs, fish, chocolate, nuts, oranges, strawberries, raspberries, grapes, peaches, apricots, apples, tomatoes, green peas, sunflowers [5], which indicates about the possible development of tolerance to the first group of products and an increase in the level of sensitization to the second group of products due to their wider use in nutrition.

In some patients with atopic dermatitis, it is noted in preschool age that the disease is associated with allergic rhinitis, bronchial asthma, and hay fever. In young children and adolescents, erythematous with lichenification and lichenoid forms of atopic dermatitis prevail [4]. The pruriginous form was found in 3.2% of adolescents. In the majority of children of primary school age and adolescents with atopic dermatitis, allergological examination reveals sensitization to house dust allergens, house dust mites, epidermal and food allergens. In such patients, the main disease is often accompanied by bronchial asthma, allergic rhinitis, hay fever. Children with atopic dermatitis in adolescence are more likely to have a mild and moderate course. At the same time, a number of patients have a severe course of atopic dermatitis. In a number of patients with atopic dermatitis, its exacerbation is observed when clinical manifestations of pollinosis occur, which is caused by the effect of sensitization to pollen allergens. A more severe course in children has atopic dermatitis, complicated by secondary bacterial and fungal infections.

The cause of exacerbations of atopic dermatitis in children may be layering of intercurrent acute respiratory infections. Their attachment is accompanied by an exacerbation of the allergic skin process in 29% of patients. Exacerbation of atopic dermatitis in 89.2% of cases was observed with parainfluenza or RS viral infection [3].

Bronchial asthma can occur in any period of childhood, starting from the first year of life. Its onset at an early age is often associated with the addition of acute respiratory viral infections. In 70% of children, the occurrence of the first attack of bronchial asthma is caused by an acute respiratory viral infection [6]. Subsequently, the importance of exposure to exogenous allergens in the development of exacerbations of bronchial asthma increases.

During bronchial asthma in children, there are some features associated with the age of patients. In young children, an exacerbation of bronchial asthma is accompanied by a more pronounced exudative component of inflammation in the form of wet wheezing, which is associated with a well-developed network of blood and lymphatic vessels in them. In this age group of patients, food sensitization is often causal in the onset of asthma exacerbations: in 7.4% of patients in the first year of life and in 19.8% of patients for 1 to 3 years [5]. In the development of bronchial obstruction in children during the first two years of life, infection with the respiratory syncytial virus is often significant [6]. In a number of young children suffering from bronchial asthma, during an allergological examination, sensitization to aero-allergens of dwellings is revealed: house dust allergens, Dermatophagoides pteronyssinus, Dermatophagoides farinae, mold allergens, epidermal allergens. The onset of bronchial asthma in young children was preceded by atopic dermatitis in 48.0% of cases. It should be noted that in some young children, the diagnosis of bronchial asthma is made with a delay. A number of patients were admitted to hospitals before the true nature of the disease was established with diagnoses of pneumonia, bronchiolitis, obstructive bronchitis, acute respiratory viral infection with obstructive syndrome. On debut in young children, a more severe course of bronchial asthma is noted. [4-7]

In preschool children, bronchial asthma in most cases is typical. In addition to the connection of the disease with causally significant sensitization to exogenous allergens, they show a connection between exacerbations of the disease with a layer of acute respiratory infections, exposure to nonspecific trigger factors (air pollution with chemical compounds, passive smoking, unsatisfactory living conditions). It should be noted that among preschool children suffering from bronchial asthma, 44.0% can be attributed to the group of children who often suffer from acute respiratory viral infections that induce the development of exacerbations of this disease. When carrying out an allergological examination in this age group of children with bronchial asthma, in addition to sensitization to house dust allergens, mite, epidermal and fungal allergens, pollen sensitization is revealed in some of the examined patients.

In children of school age, as well as in children of preschool age, bronchial asthma proceeds typically, while the greatest significance in the development of exacerbations belongs to exposure to exogenous allergens and the effects of nonspecific trigger factors. In this group of patients, the importance in the pathogenesis of its sensitization

to allergens of domestic animals, cockroaches, bird feathers, pollen allergens and the phenomenon of nonspecific bronchial hyperreactivity increases. In schoolchildren with bronchial asthma, the examination usually reveals other concomitant allergic diseases: atopic dermatitis, allergic rhinitis, chronic urticaria, angioedema, hay fever.

Bronchial asthma in many adolescents is a continuation of this disease, which began in the previous periods of the child's development. In a number of patients, the onset of asthma is noted in adolescence. In adolescents, a moderate course of bronchial asthma prevails. As in children of school age, in adolescents, its development is determined by the influence of environmental factors, among which allergenic effects and the effects of nonspecific factors are also determining the course of this disease. A significant influence on the course of bronchial asthma is exerted by age-related changes in adolescents in the system of neuroendocrine regulation, which have a certain influence on the formation of an adolescent as a person, his behavior. A sharp change in mood noted in adolescents with bronchial asthma, impulsive behavior, dependence on the opinion of peers, increased demand, failure to comply with the attending physician's prescriptions, the presence of complexes for diseases, excessive use of short-acting inhaled bronchospasmolytics, the presence of bad habits (smoking, drinking alcohol) can aggravate the course of the disease. These factors can be the reason for the uncontrolled course of bronchial asthma in adolescents. [5] This can also be facilitated by an imbalance in nutrition, the lack of a proper psychological climate in the family, and a tendency to stress.

In some children and adolescents, with age, the course of bronchial asthma takes on a milder course and it is possible to achieve in them, under the influence of treatment, a long and stable remission. It should be borne in mind that in addition to typical bronchial asthma in children, there are atypical forms of asthma, the true nature of which is established on the basis of clarification of the allergological history data, clinical and allergological examination. To such atypical forms of bronchial asthma can be attributed to cough bronchial asthma, asthma of physical exertion, refractory to therapy bronchial asthma.

Allergic rhinitis is a very common allergic disease in children and adolescents. There are two forms of allergic rhinitis: intermittent (seasonal) and persistent (year-round). The pathogenetic basis of allergic rhinitis is immune (allergic) inflammation of the nasal mucosa [7]. The development of intermittent (seasonal) allergic rhinitis is most often due to the development of sensitization to pollen allergens and is characterized by the appearance of clinical manifestations of it during the flowering season of causally significant plants. In patients with intermittent seasonal allergic rhinitis, the most often causal are allergens from tree pollen, cereal composites. The onset of intermittent allergic rhinitis may be due to food allergies. Due to the presence of hypo- and overdiagnosis, the diagnosis of allergic rhinitis in young children must

be verified in all cases.

The development of persistent (year-round) allergic rhinitis is most often associated with sensitization to aeroallergens in dwellings (house dust allergens, Dermatophagoides pteronyssinus, Dermatophagoides farinae, allergens of pets, especially cats and dogs, mold fungi allergens). Exacerbation of year-round allergic rhinitis may be associated with sensitization to bird feathers and dry fish food when birds and aquarium are kept at home. The reason for the exacerbation of allergic rhinitis can be the use of medications, more often antibiotics, nonspecific anti-inflammatory drugs, sulfonamides. Allergic rhinitis in children may be caused by latex sensitization. [11]

Intermittent allergic rhinitis is characterized by a more acute onset of the disease with a predominance of the exudative component of inflammation; persistent allergic rhinitis is characterized by a less acute onset of the disease with a predominance of nasal congestion in the clinical picture.

In young children, the predominant form is the intermittent form of allergic rhinitis, the development of which is associated with food allergy and sensitization to airborne allergens in dwellings. In cases of allergic rhinitis in the first year of life, the appearance of its symptoms makes it difficult for the child to suck and can lead to malnutrition. The connection of exacerbations of allergic rhinitis with food sensitization is most often traced in the first or second years of life.

The onset of seasonal allergic rhinitis as a manifestation of hay fever usually occurs at the age of 5 to 6 years [8]. In a number of children, it is preceded by other allergic diseases (atopic dermatitis, bronchial asthma, persistent allergic rhinitis).

In schoolchildren and adolescents, in addition to exposure to exogenous allergens, the development of allergic rhinitis is significantly influenced by the effect of nonspecific trigger factors (tobacco smoke, other chemical pollutants, changes in meteorological conditions), leading to the development of nonspecific nasal hyperreactivity.

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