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# CLINICAL SIGNIFICANCE, PROGNOSIS AND TREATMENT EFFECTIVENESS OF FOOD ALLERGY IN YOUNG CHILDREN WITH ATOPIC DERMATITIS

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**Abstract**

In recent years, there has been an increase in the prevalence of food allergies and atopic dermatitis. Thus, in the early 90s, according to epidemiological studies conducted in different countries, its level among children was 3-4%, and in early childhood - 5-8%. Also, the proportion of children sensitized to potentially dangerous food allergens in the population is increasing, which causes an increase in the prevalence of food anaphylaxis. The prevalence of atopic dermatitis is increasing. In Uzbekistan, according to ISAAC, the prevalence of atopic dermatitis among children is 6.7%-12.3% of cases. At the same time, the treatment of young children suffering from atopic dermatitis and food allergies is accompanied by serious difficulties in choosing the optimal elimination diet and. pharmacotherapy. The relationship between atopic dermatitis and food allergies has been known for a long time. At the same time, there are still significant disagreements in determining the contribution of food allergy to the development of atopic dermatitis in children. According to various authors, the prevalence of food allergy among children suffering from moderate and severe atopic dermatitis ranges from 20 to 80%. In addition, the significance of specific food products in the development of food allergy manifestations has not been sufficiently determined. The role of food allergy in the development of atopic dermatitis is largely associated with the induction of synthesis and release of mediators of allergic inflammation, which, in particular, include eosinophilic cationic protein (ECP). The significance of ECP in the formation of clinical manifestations of atopic dermatitis has previously been studied by a number of authors, but the data obtained on the relationship between the level of ECP and the severity of atopic dermatitis were contradictory. It can be assumed that this circumstance is associated with the heterogeneity of patients with atopic dermatitis. On the other hand, it is possible that food allergy causes activation of esinophilic inflammation, which affects the severity of atopic dermatitis. One of the urgent scientific and practical problems is predicting the course of food allergy. The solution to this problem will allow us to identify groups of children with persistent and transient food allergy; establish possible time frames for the development of food tolerance; and optimize the elimination diet. In addition, identifying children with persistent food allergy will probably allow us to determine indications for the use of methods for inducing tolerance to food products. Currently, a number of criteria are being actively developed (the level of specific immunoglobulins of class E; the type of immunopathological reaction (immediate or delayed)), which, with a certain degree of probability, allow us to determine the prognosis of the course of food allergy. It has been shown that there is a relationship between the level of specific immunoglobulins E and the cessation of



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clinical manifestations of food allergy. However, to date, it is impossible to accurately indicate the threshold level of specific IgE at which tolerance will develop with a high probability. The view on changes in the level of specific IgE in the serum as a criterion for the development of clinical tolerance still remains ambiguous. Currently, there are isolated studies devoted to the study of indicators of the state of cellular immunity (subpopulation composition of T-cells) as criteria for predicting the development of tolerance in children with food allergies, and the question of the role of regulatory cells in the development of food tolerance has not yet been resolved.

## INTRODUCTION

**The Purpose of the Study:** to determine the clinical significance and prognosis of the course of food allergies in young children suffering from atopic dermatitis to improve the effectiveness of therapy.

### Objectives of the Work

To establish the clinical significance of food sensitization in young children with atopic dermatitis**.** To identify the relationship between the severity of clinical manifestations, atopic dermatitis in patients with food allergies and the level of eosinophilic cationic protein. To determine prognostically significant criteria for the formation of tolerance to food allergens in young children suffering from atopic dermatitis.

### Results of the Study

In recent decades, there has been a sharp increase in the incidence of food allergies and related allergic diseases, especially noticeable in developed countries, in families with a high socio-economic level. Food allergy is a pressing issue in pediatrics and allergology. Researchers' interest in food allergies has increased significantly in recent years due to the sharp increase in this pathology among young children. In the vast majority of cases, food allergy is the first clinical manifestation of a hereditary predisposition to atopy and serves as a trigger factor in the development of many allergic diseases in children. Late diagnosis of food allergies and untimely implementation of dietary measures contribute to the development of severe, chronic forms of allergic diseases that require long-term use of therapeutic nutrition and expensive drugs. The International Association of Allergists and Clinical Immunologists - World Allergology Organization (IAACIWAO) attaches great importance to the prevention of allergic diseases and identifies this problem as one of the important modern tasks on the way to reducing the incidence of allergic diseases. The relevance of food allergies dictates the need to develop preventive programs aimed at preventing or significantly reducing allergic diseases caused by food sensitization. Initial manifestations of food allergies in children of the first months of life in 70-80% of cases are associated with the use of cow's milk-based products in their diet. Clinical manifestations of food allergies can be prevented or their severity significantly reduced by excluding cow's milk and dairy products from the diet of a child in the first year of life. The attention of specialists developing dietary approaches to the prevention and treatment of allergic diseases is focused on elimination diets. Clinical studies have shown the high efficiency of using



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hypoallergenic mixtures based on hydrolyzed protein in the treatment of children suffering from food allergies. However, the issue of their early use as preventive products in "children with a high risk of developing atopy" remains not fully understood. Taking into account the above, it seems relevant to study the effectiveness of early use of a specialized hypoallergenic formula in children with a high risk of developing atopy for the prevention of clinical manifestations of food allergies from a clinical and immunological perspective, which served as the basis for this work.

**Conclusions**

1. Food allergy is detected in 83% of young children with atopic dermatitis, in 90% of cases it is IgE-mediated. Children with severe atopic dermatitis are characterized by polyvalent sensitization, high levels of total IgE, specific IgE to β-lactoglobulin, allergens of chicken eggs and fish, cosensitization to allergens of chicken eggs and fish. In 53% of children in the first 2 years of life, with atopic dermatitis, sensitization to products that were not previously included in the diet (chicken eggs, fish) is detected.
2. Food allergy contributes to the clinical manifestation of atopic dermatitis in young children due to the activation of eosinophilic inflammation, and is manifested by an increase in the level of eosinophilic cationic protein and the absolute number of eosinophils. The concentration of eosinophilic cationic protein is higher in patients with sensitization to products that were not previously included in the diet and depends on the number of food allergens to which hypersensitivity was detected.
3. Favorable prognostic criteria in terms of the development of food tolerance are monovalent sensitization (OR - 2.8), sensitization to inhalation allergens in children with isolated atopic dermatitis (OR - 2.07), allergy to chicken eggs in the absence of such to cow's milk proteins (OR - 2.9).
4. Unfavorable prognostic criteria in terms of developing food tolerance are the presence of a combined allergy to cow's milk proteins and chicken egg allergen (OR - 0.255), high concentrations of specific IgE to the corresponding allergens (cow's milk and chicken egg proteins), manifestation of an allergic disease in the form of atopic dermatitis and bronchial asthma (OR - 1.38).
5. In patients with an allergy to chicken eggs, a significant prognostic criterion is the level of specific IgE. If the concentration of specific IgE to the chicken egg allergen is less than 3 kU / L, then food tolerance develops with a fairly high degree of probability (77.8%) within 12 months. If the concentration of specific IgE to the chicken egg allergen is more than 3 kU / L, the probability of developing food tolerance within 12 months is only 11.5%.
6. An elimination diet is effective in food allergies in young patients with atopic dermatitis, which is manifested by a decrease in the activity of the inflammatory skin process and a decrease in the number of exacerbations. The greatest decrease in the SCORAD index is noted in patients with favorable prognostic markers for the development of food tolerance.

**Practical Recommendations**

1. Young patients with atopic dermatitis with suspected allergy to cow's milk proteins or chicken egg allergen are recommended to be treated in accordance with the proposed algorithms.



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2. Before introducing chicken eggs, beef, and wheat into the diet of young children with an allergy to cow's milk proteins, it is necessary to determine sensitization to these allergens. Including goat's milk in the diet of such patients is not advisable.
3. It is recommended to determine the eosinophilic cationic protein in the blood serum to monitor the activity of allergic inflammation and the effectiveness of atopic dermatitis therapy in young children with food allergies.
4. For children with high levels of total IgE (>800 kU/L) and/or ECP (>12 ug/L), it is recommended to determine sensitization to an extended spectrum of food allergens.
5. For children in the first two years of life with severe atopic dermatitis, having an ECP level above 20 ug/L, it is necessary to determine sensitization to these products before introducing chicken eggs and fish into the diet.
6. In children with allergy to cow's milk proteins, before prescribing therapeutic highly hydrolytic mixtures, it is recommended to determine sensitization to both native whey proteins (a-lactoalbumin and (3-lactoglobulin) and casein.
7. In the presence of monovalent sensitization in children with food allergy, sensitization to inhalation allergens, a review of diet therapy after a repeated allergological examination should be performed after 12 months; in case of combined allergy to cow's milk proteins and chicken egg allergen, the presence of high concentrations of specific IgE to these allergens, manifestation of an allergic disease in the form of atopic dermatitis and bronchial asthma, a repeated allergological examination is recommended to be performed after 24 months.

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