Age characteristics of the specific IgE response in children with food allergy: Russian experience

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Background: Food allergy (FA) is an important health problem which determines decrease of quality of life in patients and their families. Any food product may potentially cause allergic reactions. The aim was to study the age dynamics of specific IgE (sIgE) response and identify the meaningful food allergens in children with FA.

Methods: The study included 682 children with FA divided into groups according to age: 2-5 months, 6-18 months, 1.5-4 y, 4-10 y, and 10-17 y. The sIgE levels to essential food allergens (milk, egg proteins, soy, wheat, and nuts) have not been investigated. The sIgE levels to cereals, vegetables, bananas, meat, and poultry allergens were measured in blood samples.

Results: The age dynamic of sIgE responses was assessed. The frequency of positive responses was higher in older children. The most significant sIgE production triggers for 2-5 mo children were allergens of potatoes, pork and cereals (8-14%); for 6-18 mo - potatoes (22.7%), buckwheat (19.3%), cereals (10-15%); for 1.5-4 y – bananas (29.5%), cereals, carrots and potatoes (19,5-24%); for 4-10 y – bananas, carrots and cereals (20-28%); for children 10-17 y – carrots (47.5%), bananas, cereals and tomatoes (30-36%). Chicken-specific IgE was minimal for all ages. Meat or poultry sIgE were observed in 8-15% of patients.

Discussion: The performed research has shown that sIgE to many food allergens arises in children at 0-6 mo before they started receiving a feeding up. A number of authors explain this phenomenon as a possibility of children’s organism sensitization by contact with the allergen coming to time of prenatal development through a placenta or infant contact with allergen through mother’s milk. Also casual contact with allergen through inadvertent consumption of food or even allergen inhalation isn’t excluded. The revealed regularities of sIgE profile changing depending on patient age allowed us to define the most actual diagnostic panels of allergens and to optimize allergy diagnostics. This approach is especially appropriate for infants for which is difficult to perform skin tests, and also blood volume for testing is limited.

Conclusion: Different groups of food allergens provoke sensitization in children during different periods of life. The range of food products with low allergic activity remains constant in various ages. The age characteristics of sIgE production determine differentiated diagnosis approach.