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ALLERGIC REACTION TO FOOD ALLERGENS IN CHILDREN

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ANNOTATION: Food is an important problem in children with allergy, clinical manifestations often cover a wide range of diseases of the gastrointestinal tract, skin and respiratory tract. Each region is characterized by plant and animal food allergens, which depend on food traditions and climatic and geographical conditions. Homologous proteins found in foods can cause allergic reactions in sensitized individuals. The main principle of the diet for food allergies in children is elimination of allergens and choosing the tactics of diet therapy, taking into account clinical and laboratory parameters and the age of the child.

Keywords:food allergy, food allergens, children, immunoglobulin E, cross-reactive carbohydrate determinants (CCD).

The literature often provides data on immediate-type hypersensitivity to foods. It should be noted that, due to contact with food allergens appearing hypersensitivity to certain proteins (atopy) and formation of antibodies to IgE is observed . By re-contacting of IgE- antibodies recognize these proteins and making cross-links. Aggregates are forming, mast cells releasing mediators , they are forming into histamine, or on membrane observed prostaglandins, leukotrienes re-formation. Upon contact with specific receptors on different cells of the body (nerve, vascular, muscle, glandular cells) occur reactions of a different nature. Symptoms are appear depending on target organs such as skin, mucous membranes, respiratory tract, gastrointestinal tract, cardiovascular system.

There are regional differences in FA to animal allergens, so according to researchers, FA to milk is common in 1-3% of individuals (Rance et al ., 1999, Bahna , 2002), while for beef it is about 1-10% (Lessof et al ., 1980; Sampson and McCaskill , 1985; Bock , 1987; Fiocchi et al ., 1995; Werfel et al ., 1997, Burks , 1999), to fish varies up to 8% in children (Werfel et al ., 1997; Emmett et al ., 1999; Sicherer et al ., 2004, Soller et al ., 2012; Van Veen et al ., 2013; Hochwallner et al ., 2014) and within 0.56-0.73% in adults (Hochwallner et al ., 2014, M . Inam et al ., 2016). FA on chicken varies up to 13% (Sampson and McCaskill 1985; Burks 1999; Obeng et al. 2011; Laoaraya and Trakultivakorn 2012) [7]. FA for eggs was 0.9% among all children and 1.3% among children under 5 years of age in the United States [11].

Among legumes, the FA for peanuts in Pakistan was 12% and in the Netherlands (Añibarro-Bausela et al . 2010) - 13% , in the USA (Kumar et al . 2011) - 13.4%, in the UK in children under the age of 3 years - 0.4%. FA for soy in children was found up to 1.5% (Kristjansson et al ., 1999; Emmett et al ., 1999; Venter et al ., 2006; Osterballe et al ., 2009, Obeng et al ., 2011; Van Veen et al ., 2013), and in adults it was 0.03% (Vierk , 2007). FA for lentils was detected in Pakistan in 15.4% of persons, in Spain - in 12.6% of respondents (Dalal et al . 2002), and in the UK (Emmett et al . 1999) - at 0.04%, in Europe (Martinez-Gimeno et al . 2000) - in 2% of individuals. FA on rice was 12.5% in Pakistan (M. Inam et al ., 2016), about 30% in Malaysia (Burks , 1999), 121% in India (Woods et al ., 2002) [7]. FA on hazelnuts can develop in adulthood or childhood, with a prevalence of 0.52% in children and 0.87% in adults [4].

The prevalence of food sensitization is very high in infants and gradually decreases after one year, so in boys with atopic dermatitis up to a year, sensitization to CM and EC is observed. Food

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sensitization at 1 year of age may predict an increased risk of adolescent sensitization and probable FA in children at 12 and 18 years of age [2]. According to the researchers, there is no relationship between the age of introduction of CM products: cheese and yogurt and the risk of PA and atopic dermatitis [8].

Materials and research methods: In order to identify plant and animal food allergens, we studied the serum of 186 children with allergic diseases aged 1-18 years, who received treatment at the Republican Scientific and Specialized Allergological Center and the Republican Scientific and Specialized Center for Dermatovenereology and Cosmetology, in a private diagnostic centre Medik - as , TMD (Tashkent Medical Diagnostics) . From 186 patients, 110 patients are boys and 76 are girls, average age is 11.77±7.98 years.

Whitin plant allergen in children under 3 years of age was detected specific IgE for wheat, buckwheat, gluten, in children of 3-7 years old: for wheat, gluten, buckwheat, oats; in children of 7-14 years old: wheat, gluten , buckwheat, oats, rice; in children of 14-18 years old: wheat and buckwheat.

Among animal food allergens, we studied in patients up to 3 years old and 3-7 years old EC and CM prevailed, in patients 7-14 years old their frequency decreased to goat's milk, cheese, lamb, veal, pork, horse meat; chicken meat , duck, goose, turkey, chicken eggs; fish (cod, shrimp, salmon, edible mussel, tuna), bovine serum albumin, as you know, meat contains 2 types of protein: serum albumin and γ-globulin.

Using modified panels of allergens, we studied allergen-specific immunoglobulins E.

It should be noted that FA for peanuts/hazelnuts persists more often in adulthood [1, 6, 8]. The reported prevalence of FA for hazelnuts is as high as 5% worldwide, the main proteins involved in allergic reactions to hazelnuts are lipid transport proteins, 2S-albumins, legumins , vicilins and oleosin proteins . Homologues and profilins Bet v 1 are involved in allergy associated with hazelnut pollen [3, 5].

In children aged 1-18 years in the main group, FA prevailed in boys compared to girls, monosensitization was observed in 22 (11.82%) children, polysensitization in 98 (52.69%) children, and in the control group there were 66 children aged 1-18 years of age: 36 boys and 30 girls who were not found to be sensitized to food and other allergen groups.

As the results of the study showed, in children in the control and main groups, boys predominated (59.1%), more than half of the children had polysensitization , sensitivity to several allergens.

In our studies, among plant and household allergens in children, sensitization was noted for birch allergen in 11.3% of boys and 7.52% of girls, for cat allergen in 6.46% of boys and 4.84% of girls, for mites in the dust of the genus Dermatophagoides farina e in 6.45% of boys and 8.06% of girls, Dermatophagoides pteronissinus in 7.54% of boys and 6.46% of girls.

Specific IgE for bovine serum albumin was detected in 8.6% of boys and 4.84% of girls (Figures 7 and 8).

As you know, food allergens have plant and animal origin. As a result of research, we have identified the most common allergens in children, such as wheat (23.12%), buckwheat (18.28%), gluten (17.74%), EC (15.59%), peanuts and nuts (14 .52%), lemon, strawberry, pineapple, banana,

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pear (11.29%), oats (10.22%), KM (9.68%), yogurt (9.14%), rice (8.6 %), beef, lamb and pork (4.3%), poultry meat: chicken, duck, goose, turkey 3.23%.

For detection cross allergic reactions into the allergen panel was addicted birch allergen extract , sIgE for birch was found in 19.89% of patients , it proves the presence of cross-allergic reactions. In addition, the CCD molecular diagnostics component has been added to the allergen panel . This marker is an indicator of cross-allergic reactions and is very informative for the diagnosis of true reactions, including FA to plant foods. This marker was positive in 17.2% of the examined patients.

It should be noted that if a patient had sIgE on EC, FA was noted on CM (9.68%), products containing milk components, i.e. yogurt (9.14%), BSA (12.37%). Thus, sensitivity to EC allergen components in early childhood is a predictor of the development of atopy and bronchial asthma in the future.

Conclusions: Thus, cross-reactive carbohydrate determinants of CCD are indicative of the presence of cross-allergic reactions in children with food allergies. The detection of this marker is informative for the diagnosis of allergic reactions that proceed according to the type of immediate hypersensitivity, especially for the detection of latent sensitivity to allergens of plant origin. An important approach to food allergy in children is the creation of new prevention models and innovative dietary strategies.

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