ASSESSMENT OF CYTOKINE STATUS IN CHILDREN WITH FOOD ALLERGIES

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10.1136/archdischild-2021-europaediatrics.167

According to the European Academy of Allergy and Clinical Immunology (EAACI, 2019), food allergy affects 8% of children in Western European countries and is characterized by negative medical and social consequences. In recent years, there has been a significant increase in allergic diseases around the world, which is due to an increase in environmental and allergen load on the body, which contributes to continuous improvement methods of early detection and further treatment and care of this category of patients.

The aim of the present study is to investigate cytokine status in children with gastroduodenal pathology and atopic dermatitis with manifestations of food allergy.

Materials and Methods of Research

In order to achieve this goal, a comprehensive clinical and immunological examination of 120 children aged 6 to 15 years with gastroduodenal pathology (1 group; n=64) and atopic dermatitis (2 group; n=56), who had unwanted allergic reactions in their anamnesis while consuming food. The control group consisted of 22 practically healthy children stratified by age and gender features in accordance with the main groups. To achieve the goal, a cytokine profile was determined in children with the definition of IL-4, IL-10 and TARC/CCL-17 chemokine.

Results of the Research

Among examined children, an increased level of total IgE was detected in half of patients (51.6%) with gastroduodenal pathology and in 67.9% of patients with atopic dermatitis. IL-4 content in blood serum in children with gastroduodenal pathology was significantly higher in relation to the control values ($p < 0.001$) and at the same time 1.5 times lower compared to the indicators of children with atopic dermatitis.

The decrease in the concentration of IL-10 in both groups of patients compared with healthy children may be a reflection of the trend in chronic inflammation. The results of our study revealed that the level of TARC/

CCL17 in patients of the first (average value of 116.6 ± 16.7 pg/ml) and the second group (the average value of 141.5 ± 18.7 pg/ml) exceeded the indicators of the children's control groups. It should be noted that almost half (47.1%) of the examined level of chemokine was recorded in the range of ≥ 100 pg/ml, while it should be noted that in a group of children with atopic dermatitis percentage of children with TARC/CCL17 ≥ 100 pg/ml was higher (63.3%). Reliable increase in chemokine TARC/CCL17 ($p = 0.001$) in children with atopic dermatitis confirms the active participation of this cytokine in the implementation of allergic inflammation and makes it possible to recommend it as a biomarker diagnosis of allergic diseases.

Conclusions The presented results confirmed that the development of allergic lesions of the digestive tract and skin occurs with the participation of various mechanisms, not necessarily involving the IgE indirect process. The presence of the clinical manifestations of IgE-mediated and non-IgE indirect reactions of hypersensitivity to food antigens, as well as the possibility of their combination in one patient, complicates the diagnostic search. Investigation of the cytokine status of surveyed patients

that demonstrated a significant increase in proinflammatory cytokines – interleukin-4, chemokine TARC/CCL-17 and reduce of anti-inflammatory interleukin-10, allows to highlight specific immunological markers of food allergy, which have certain correlation dependences on skin or gastrointestinal manifestations.

NOT ALL THAT WHEEZES IS ASTHMA!

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10.1136/archdischild-2021-europaediatrics.168

Recurrent infections and obstructions of upper airways are common respiratory problems in small children and the cause often lies in tonsillar or adenoidal hypertrophy. Tonsils are ring-shaped collection of lymphatic tissue located in pharynx, so-called Waldeyer's Ring. Inside of Waldeyer's Ring, there are pharyngeal tonsil, two tubular tonsils, two palatine tonsils, and lingual tonsils. Palatine tonsils are difficult to visualize before sixth to the ninth month of a child's life and tonsils may stay enlarged throughout the entire childhood. Tonsils are immunologically the most active between the fourth and tenth year of life. In most children, tonsils become smaller in volume after the eighth year, and their immunological activity decreases after puberty. The decision for elective tonsillectomy and/or adenoidectomy is individual. Main indications for these procedures are recurrent infections, including recurrent throat infection for severely affected children based on official criteria, PFAPA syndrome and peritonsillar abscess. The second important indication, except for the recurrent infections is upper airway obstruction, especially obstructive sleep apnea, Eustachian tube dysfunction and recurrent otitis media in otherwise healthy children with adenotonsillar hypertrophy. However, tonsillectomy and adenoidectomy are very rarely performed in children younger than two years.

We report a case of a one-and-a-half-year-old boy, who initially presented with recurrent wheezing, starting from the age of three months. Laboratory and microbiological workup, immunoglobulins, sweat test, chest x-ray and the skin prick test to a panel of nutritive and inhalant allergens were performed and all the findings were unremarkable. Cardiological examination including ultrasound revealed a hemodynamically not significant left-to-right shunt. Twenty-four-hour esophageal impedance-pH monitoring was done as well. The results showed mild acid gastroesophageal reflux and reflux and symptomatic measures were recommended, but wheezing persisted.

Empiric therapy with inhalant corticosteroids and montelukast was started, but the only mild improvement has been noticed. Along with persistent wheezing, the patient started to snore while sleeping. He was examined by an otorhinolaryngologist and was diagnosed with significant adenotonsillar hypertrophy. At the age of one-and-a-half years, tonsilloadenoidectomy with myringotomy was performed. After the procedure the patient's symptoms fully disappeared, and he had no need for any medications.

Wheezing disorders are common in children, especially in infants and toddlers, and diagnostic workup should include possible causes originating from the upper airways. This approach may spare the patient from unnecessary and sometimes unpleasant diagnostic procedures and ineffective treatment.