

Streszczenie w języku angielskim

Food allergy (FA) is defined as an abnormal, individual immune response of the body to the ingested food causing repetitive clinical symptoms. It is estimated that about 6-8% of infants, 3-4% of adolescents and 1-3% of adults suffer from it. Based on the differences in the pathophysiology and symptomatology of AP, the following forms are distinguished: IgE-dependent, IgE-independent and mixed (IgE-dependent and IgE-independent). In the diagnosis of AP, an analysis of the clinical symptoms plays a basic role, based on which additional tests are planned. In case of the IgE-dependent FA these are skin prick tests (SPT) and / or plasma concentration of allergen-specific IgE (asIgE). In the IgE-independent food hypersensitivity there has been no reliable biomarker of this type of reaction. Currently, it is the oral food challenge (OFC), which is recognized as most reliable diagnostic tool in FA, regardless of IgE-involvement. However an OFC is primarily time-consuming, costly, requires qualified personnel and carries the risk of an anaphylactic reaction. Therefore, new, reliable diagnostic methods of FA in children are being sought.

The fecal biomarkers of an allergic inflammation within the intestine are promising diagnostic tools. Their advantages include: being non-invasive, easy to collect, relatively low cost and a simple to conduct. Fecal calprotectin (fCal) is a non-specific biomarker of inflammation in the gastrointestinal tract of recognized diagnostic value. Tumor necrosis factor alpha (TNF α) is another inflammatory marker, which is associated with increased intestinal permeability- a condition observed in various allergic diseases of the gastrointestinal tract. It is also known that IgE-independent hypersensitivity reactions are associated with the mobilization and activation of eosinophils, which can be detected by eosinophil derived neurotoxin (EDN) concentration.

The aim of the research work was to evaluate the diagnostic usefulness of fCal, EDN and TNF α in the diagnostic process of IgE-independent allergy of gastrointestinal tract in infants. A total of 34 infants with symptoms of hematochezia, hospitalized in the Department of Pediatrics, Gastroenterology, Hepatology, Nutrition and Allergology at the University Children's Teaching Hospital of L. Zamenhof in Białystok. After standard work-up of the lower gastrointestinal bleeding, 31 infants suspected of FA, were selected. Then, according to the ESPGHAN (ang. *European Society for Pediatric Gastroenterology, Hepatology and Nutrition*) guidelines, an elimination diet for 2-4 weeks was introduced, and afterwards an open OFC was performed in order to confirm the diagnosis of FA. Based on the OFC results, a final diagnosis

of food allergy was made in total of 27 infants. Twenty- five infants hospitalized in the same Department, diagnosed with functional disorders of the gastrointestinal tract were enrolled into the control group. Significantly higher concentrations of fCal and EDN were found in the study group compared to the control group ($p < 0.05$). The differences in TNF α concentration between both groups were statistically insignificant ($p > 0.05$). The cut-off level for fCal was 486 $\mu\text{g} / \text{g}$ and 885 $\mu\text{g} / \text{ml}$ for EDN. The simultaneous measurement of both fecal biomarkers presented a better diagnostic value than the analysis of each of them separately, with a sensitivity of 89% and specificity of 84% ($\text{AUC} = 0.8778$, $p < 0.05$).

In the review paper, the current state of knowledge on noninvasive biomarkers of intestinal, epithelial damage was presented. In the introduction authors discuss the structure and function of the intestinal barrier and the importance of its damage in the pathogenesis of food allergies. In the main body of article various biomarkers of epithelial barrier impairment are reviewed including sugar absorption test, citrulline, regenerating gene 1 α protein (REG1 α), intestinal fatty acid binding protein (I- FABP). Moreover the attention is paid to the proinflammatory cytokines involved in an inflammation process in the intestine, like: fCal, TNF α , EDN.