FEATURES OF THE IMMUNE RESPONSE IN PATIENTS WITH PERENNIAL ALLERGIC RHINITIS WITH SENSITIZATION TO HOUSE DUST MITES

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A***bstract. The aim*** of the study was to evaluate the features of the immune response in patients with allergic rhinitis (AR) sensitized to house dust mites.
Materials and methods. The study included 60 patients with AR aged 20-60 years. According to the level of total IgE (IgE > 100 kU/L), patients were divided into two groups with IgE-dependent and IgE-independent form of AR. All patients were tested for CD3+CD4+, CD3+CD8+, CD19+, CD16+56, CD4+CD25+ and cytokines IL-2, IL-4, IL-10, IL-13, TGF-β, IFN-γ. Evaluation of cytokine synthesis was performed *in vivo* and *in vitro*.
Results of the research. According to our data, both in patients with IgE-dependent and in patients with IgE-independent form of AR was found an increase in the number of CD3+CD4+ T-lymphocyte helpers only in percentage values. However, no significant differences in T-lymphocyte helpers counts between the two groups of patients with different forms of AR were found. Decreases in B-lymphocyte counts were observed only in patients with IgE-dependent AR. Significant differences in the number of NK cells between the group of people with IgE-dependent and IgE-independent form of AR were also not detected. A decrease in the number of T-regulatory lymphocytes was found only in the group of people with IgE-dependent form of AR. Patients with IgE-dependent form of AR were characterized by a decrease in the level of T-lymphocytes helpers I type (Th1) cytokines IL-2 and γ-IFN, an increase in the level of T-lymphocytes helpers II type (Th2) cytokines — IL4, IL-5 and IL-13, and a decrease cytokines by T regulatory cells — IL-10 and TGF-β. At the same time, a probable decrease in the level of the suppressive cytokine IL-10 was found in comparison with the group of patients with IgE-independent form of AR. Patients with the IgE-independent form were characterized by only elevated IL-13 levels. *In vitro* studies have shown that in patients with IgE-dependent form, the development of allergic inflammation occurs with the participation of Th2 lymphocyte response, which was reflected in significantly increased levels of expression of IL-4, IL-5 and IL-13, and decreased IL synthesis — 2, IFN-γ. Increased synthesis of these cytokines was due to a decrease in the number of T-regulatory lymphocytes, which was reflected in a decrease in the synthesis of both IL-10 and TGF-β. In patients with IgE-independent form of AR, such a clear response of Th2 and T-regulatory lymphocytes was not observed, which may indicate the activation of other pathogenetic pathways and the involvement of other immunocompetent cells and cytokines in the immune response to the allergen.
Conclusions. Thus, our results show that the development of allergic inflammation in the group of patients with IgE-dependent and IgE-independent forms of AR with sensitization to house dust mites can occur in different ways. The obtained results require further research, which may further be a basic for development of new approaches to treatment and evaluation of the effectiveness of AR treatment.

Key words: allergic rhinitis, house dust mites, immune response, regulatory T lymphocytes, cytokines.