DIFFERENTIATION OF PATHOLOGICAL AND ADAPTIVE IMMUNOLOGICAL MECHANISMS IN BRONCHIAL ASTHMA AND THEIR IMPORTANCE IN PREDICTING ITS UNCONTROLLED COURSE

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Abstract. *The aim of this study* was enhancement of uncontrolled bronchial asthma (BA) prognosis which was based on the study of the role of immunological mechanisms maladjustment in reduction of control of this disease. *Materials and research methods*. A total of 144 BA patients were examined: 22 with controlled BA, 63 with partially controlled BA, and 59 with uncontrolled course of the disease. The leukogram was determined, the content of lymphocytes population and subpopulation, absorption capacity of blood granulocytes and monocytes, their production of reactive oxygen species, levels of spontaneous, activated and dexamethasone-induced lymphocytes apoptosis were detected by flow cytofluorometry, the levels of immunoglobulins of the main classes (IgA, IgM, IgG, IgE), circulating immune complexes in the blood serum were estimated. The presence and direction of deviations of these parameters and their frequency were determined in patients with different controllability of BA. *Research results.* Immunological changes that lead to the emergence, maintenance and progression of allergic inflammation in asthma were pathological, and adaptive those immunological changes that restrain it, reduce the activity of inflammatory processes. Criteria for these changes were developed and their frequency in patients with different asthma controllability was studied. The proposed score on the risk assessment of uncontrolled BA according to the general immunogram at up to 7 points, low risk is determined, at a score of 8 to 12 is moderate risk, at 13 points and above is high risk of loss of disease control. The frequency of low, moderate and high risk in patients with different controllability of asthma has been studied. It was found that one third of patients with controlled asthma had a low risk of losing control of asthma, moderate every second, and only 13.6 % of patients had a high risk. *Conclusions.* Criteria for differentiation of adaptive and pathological immunological mechanisms in BA are determined. The frequency of these changes in patients with controlled, partially controlled and uncontrolled asthma was studied and its growth was proved in patients with unsatisfactory disease control. Pathological reactions in BA include leukocytosis, lymphocytosis, eosinophilia, granulocytosis, neutrophilia and monocytosis, which determine the phenotype and endotype of the disease. Decreased content of pan-T cells, T-helpers, immunoregulatory index, proliferative response of T-lymphocytes to mitogen, increased content of cytotoxic T-cells are adaptive reactions of the T-immune system. The opposite direction of changes in these indicators is inherent in immunopathological mechanisms. Expressive inhibition by dexamethasone of the proliferative response of T cells to phytohaemagglutinin (75 % and above) and induction by dexamethasone of activating apoptosis Lf are inherent in steroid-sensitive patients with BA and belong to the mechanisms of adaptation. The absence of changes in these indicators indicates a probable steroid resistance. Scoring the risk of losing control of the disease allows timely examination of patients for resistance to corticosteroids and, if necessary, adjust the therapy, increases the effectiveness of treatment of patients and improves their quality of life.

Key words: bronchial asthma, controllability, prognosis, criteria for differentiation of adaptive and immunopathological mechanisms, risk assessment of loss of disease control.

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Asthma and Allergy, 2020, 4, P. 13–24.

DOI: 10.31655/2307-3373-2020-4-13-24 ISSN 2307-3373