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CLINICAL IMMUNOLOGY

CL-1
MONITORING CHANGES IMMUNITY DURING ALLERGEN-SPECIFIC IMMUNOTHERAPY

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Allergic diseases are characterized by complex changes in the immune system. Specific allergen immunotherapy (SIT) is a challenging process that induces changes in the immune system. Previously, this process was referred to as desensitization or hypoensitization. Treatment with low concentrations of allergens leads to the induction of a physiological immune response. Drug therapy is now being implemented with antihistamines. These drugs have no effect on the mechanism of allergic reaction. Here is the advantage of SIT, which affects the processes of allergic reaction.

In our study we observed in patients with allergen-specific immunotherapy for wasp and bee venom. We monitor patients with severe anaphylactic shock (type IV). The tracking time is 5 years. Every year we monitor the parameters of humoral and cellular immunity. SIT induces tolerance to allergens. We were observing clinical response by reductions in reactivity in skin tests, by decreasing the intensity of symptoms, and by lower consumption of the anti-allergy drugs. We found an increase in specific IgG4 and a decrease in specific IgE. Changes in levels of specific IgE were significant, ranging from 2% to 10% reduction. Furthermore we monitored changes in the quantitative expression of the FcεRI receptor on the surface of basophilic granulocytes. We also discovered changes in the representation of T regulatory lymphocytes. This subpopulation of CD4-positive lymphocytes increased during specific allergen immunotherapy. SIT effected the Th1 / Th2 system balance as well. In our case there was a decrease in IL-4 production in T helper lymphocytes. These changes had an impact on the synthesis of immunoglobulin’s and led to the production of specific IgG4. SIT affects also B-lymphocytes, which are converted to B regulated lymphocytes (Br1). These cells with a specific CD19 positive / CD71 negative / CD73 positive phenotype produce high levels of IL-10. This subpopulation of B lymphocytes was monitored in vitro after stimulation with the specific antigen of Ap1 m1. We observed an increase in the population of Br1 lymphocytes during the SIT. We also recognized a change in the representation of peripheral circulating dendritic cells (DC) measured as CD123 +, HLA-Dr ++ cells. Their level in the peripheral blood increased during treatment and later, after completing the SIT, the circulating DC count went to normalize.

With SIT, there is a decrease in specific IgE levels. Levels of specific antibodies in IgG4 increase. The FcεRI receptor expression on basophilic granulocytes was reduced. The presence of T regulatory and B regulatory lymphocytes increased at the same time. There was a reduction in T helper cell production and a transient increase of dendritic cells in peripheral blood during the SIT period. The SIT may affect the development of an allergic disease. By understanding the exact effect of SIT we can improve the effectiveness of treatment, find a suitable biomarkers of the efficacy of specific allergen immunotherapy.