The Effect of Self-IgG on Basophil function in Japanese Cedar Pollinosis

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Although Basophils account for less than 1% of peripheral blood leukocytes and have often been neglected in immunological studies, recent studies have now defined roles for basophils in both immune regulation and allergic responses. Antigen binds to the IgE–FcεRI complex, and activated basophils secrete cytokines and other factors that in turn act on tissue-resident cells, such as fibroblasts, and induce them to produce more chemokines. Inflammatory cells, such as eosinophils and neutrophils. Antigen-specific IgE antibodies are produced and captured by circulating basophils through the high-affinity Fc receptor for IgE (FcεRI). Following re-exposure to the same antigen, basophils efficiently bind free antigens through IgE–FcεRI complexes, become activated and secrete IL-4 and IL-6. These antigen-stimulated basophils interact with antigen-specific B cells and Th cells during the secondary immune response. Cross-linking basophil FcεRI by multivalent antigen activates tyrosine phosphorylation of immunoreceptor tyrosine-based activation motifs (ITAMs), thereby initiating downstream signaling through Syk. Basophils also express FcγRIIb, which contains a single conserved immunoreceptor tyrosine-based inhibition motif (ITIM). Studies indicate that aggregating FcγRIIb to FcεRI leads to rapid tyrosine phosphorylation of the FcγRIIb ITIM tyrosine by FcεRI-associated Lyn and inhibition of FcεRI signaling. Experiments using a human Ig Fcγ–FcεRI fusion or Ig Fcγ–antigen fusion protein that directly cross-links FcεRI and FcγRIIb on human basophils support this hypothesis. We have proposed and tested whether the patients’ own IgG including antigen-specific IgG could cross-link FcεRI and FcγRIIb or not, and reported the effect of self-IgG on basophil function in Japanese cedar pollinosis.
Changes of Specific Immunoglobulins to House Dust Mite and Relationship Between Immunoglobulin and Symptom Scores in Early Period of Immunotherapy in Allergic Rhinitis Patients

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Introduction: In many studies, suppression of seasonal increase in specific Immunoglobulin (Ig) E, late decline in specific IgE, increase in specific IgG1, IgG4 during immunotherapy (IT) have been noted. The patients, who didn’t get improvement of their symptoms in early period of IT, usually want to stop the treatment. There have been many studies showing the changes of levels of serum specific Igs to allergen at the finish of IT, but not in early period of immunotherapy. The aim of this study was to evaluate the change of specific Ig to house dust mite in early period of IT and correlation of change of various Ig with the symptoms.

Subjects and Methods: We enrolled 50 allergic rhinitis (AR) patients who sensitized to Dermatophagoides farinae (Dfa) through allergic skin prick test and/or MAST, and treated by IT. During the course of the study allergic symptoms were measured by total nasal symptom score (TNSS) that composed of 5 points scale of 4 symptoms including nasal obstruction, rhinorrhea, sneezing, nasal pruritis. We measured the levels of Dfa–specific IgE, IgA, IgG1, and IgG4 in serum by ELISA on before and after 6 months of IT. And we compared the level of serum Igs levels between before and 6 months after IT and investigate correlation between Igs levels and changes of TNSS.

Results: TNSS after 6 months of IT in AR patients were significantly lower than those before IT. Dfa–specific IgA levels after 6 months of IT were significantly higher than those before IT. In contrast, Dfa–specific IgE and IgG4 levels after 6 months of IT were significantly lower than those before IT. Dfa–specific IgG1 levels were not changed after 6 months of IT. The changes of Dfa–specific IgE levels were significantly correlated with those of TNSS after 6 months of IT. But the changes of Dfa–specific IgA, IgG1, IgG4 levels were not correlated with those of TNSS.

Conclusions: We found that the changes of levels of serum specific Igs and symptom scores may occur even at the early period of IT in AR patients. And we also found the decrement of serum specific IgE to allergen which may contribute to the improvement of TNSS in the early period of IT.
The effects of Asian sand dust phenomenon on allergic rhinitis

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Allergic rhinitis, especially Japanese cedar pollinosis, has become a major social problem in Japan. It has been reported that the symptoms of allergic rhinitis is affected by some factors. As the Asian sand dust (ASD) phenomenon originating in the deserts of Mongolia and China is mainly accompanied with pollen dispersal season in Japan, the aim of this study is to investigate the effects of ASD on allergic rhinitis in the periods of the ASD phenomenon. Two ASD phenomenons in Matsue were observed during Feb 1st to May 31st in 2008. Fifty patients of allergic rhinitis were investigated retrospectively. The symptoms and the findings in the nasal cavity were compared with before and after these ASD phenomenons. The nasal findings were evaluated by according to the practical guideline for the management of allergic rhinitis in Japan, 2005 edition. After the ASD phenomenon, 33 of 50 cases (66%) with allergic rhinitis suffered from aggravated nasal symptoms and developed respiratory symptoms, such as sore throat, abnormal sensation in the pharyngolarynx and cough. In the nasal cavity findings, the swelling of the inferior turbinate and the quantity of nasal discharge were mainly affected. The results suggest that ASD is one of possible factors that affects the symptoms of allergic rhinitis. Although further investigation is required, it is important to pay more attention to ASD to maintain a good quality of life of the patients with allergic rhinitis.