Omalizumab and specific immunotherapy

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Allergic diseases affect approximately one third of the general population resident in developed countries, having a significant impact on patient quality of life, and a very significant financial burden on the societies.

Allergen-specific immunotherapy (SIT) is the only causal treatment of allergic disorders, and one of the advantages is the potential to alter the course of the disease being therefore a cornerstone in the management of several allergic diseases. For 100 years, SIT has been a treatment option for allergic rhinitis, allergic asthma and venom allergy, being also recently used with non conventional extracts, such as foods also in patients with food allergy, including with anaphylaxis. In the last decades there was also a significant development of alternatives to subcutaneous immunotherapy, such as the use of sublingual and oral route administration.

The efficacy of allergen immunotherapy for the treatment of allergic rhinoconjunctivitis, asthma and anaphylaxis caused by the sting of the hymenoptera class of insects has been clearly demonstrated in numerous well-designed, placebo-controlled trials, whether by subcutaneous injection of allergen extract or by oral/sublingual routes.

Successful treatment is associated with decrease in allergic symptoms, namely of the upper and lower airways. The most relevant limitation in the daily routine is the restricted use of SIT in patients with moderate-to-severe allergic symptoms. A strategy to overcome this limitation is to combine SIT with immunomodulators as omalizumab. Nowadays, although few clinical trials have been performed, all showed that, in children as in adults, the combination of omalizumab and SIT is safe and clinically more effective than SIT alone. Moreover, administration of omalizumab prior to SIT reduces the risk of SIT-related systemic reactions.

Being SIT an established mode of treatment for hymenoptera venom anaphylaxis, severe anaphylactic reactions can occur during the treatment, namely in the beginning of the treatment. In this case, omalizumab can also be used as an adjuvant of the specific treatment in patients with severe insect IgE-mediated allergic disease that

were difficult to treat, allowing the prevention of anaphylaxis during the immunotherapy protocol.

Novel therapeutic strategies that interfere specifically with immunological mechanisms underlying allergen-induced pathology, such as anti-IgE, which directly targets IgE serum antibodies, thus inhibiting the central mechanism of immediate type hypersensitivity reactions, reduces IgE serum levels regardless of allergen specificity. It has been successfully tested not only in patients with allergic rhinitis, asthma, but also with food allergy, showing significant efficacy in reducing symptom scores and use of rescue medications. An apparent advantage of adding omalizumab to allergen immunotherapy is that anti-IgE treatment is not allergen specific and thus is effective also on symptoms induced by other allergens in polysensitized patients.

In conclusion, the aims of adding anti-IgE treatment to immunotherapy are to prevent or reduce the adverse effects of subcutaneous route and improve the efficacy of subcutaneous or sublingual route, which effects were demonstrated in patients with allergic rhinitis, asthma and insect venom allergy. Nevertheless omalizumab therapy is limited by it high costs and more data are needed regarding the use of omalizumab as an additive immunomodulator to SIT, improving safety, efficacy and broaden the indication of specific immunotherapy also in more severe allergic patients.

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