Allergen Mixtures for Monosensitized and Polisensitized Patients

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The natural history of respiratory allergy is commonly characterized by a worsening of symptom severity, frequent comorbidity of rhinitis and asthma, and polysensitization to aeroallergens. The polysensitization phenomenon starts since childhood and is rare to find monosensitized adult patients. However, there are few studies investigating the characteristics of polysensitized patients[1].

Polysensitization is more prevalent than monosensitization in the general population, and much more prevalent in patients consulting an allergist[2,3]. In addition, polysensitized patients with asthma and allergic rhinitis have higher symptom and medication scores poorer prognosis and also a poorer response to SIT.

With the use of component-based diagnostic tests with purified natural or recombinant allergens, it has been shown that a minority of polysensitized patients have specific IgE against highly cross-reactive panallergens, ranging from 10% for calcium binding proteins to approximately 40% for profilin[4].

Allergen immunotherapy (AIT) is a treatment that modifies in a specific way the immune response to an allergen[5,6] or components contained in an 'allergenic source (e.g. mite, grass, trees)[7].

Probably due to methodological issues, almost all clinical studies of SCIT and SLIT have evaluated therapy with a single allergen and not multiple allergens, and one of the unmet clinical needs in AIT, is the efficacy for both modalities of AIT with multiple-allergen extracts[8].

The studies that have investigated the efficacy of multiallergen SIT are few and have produced conflicting results, with some demonstrating a significant clinical improvement compared with placebo and others showing no benefit over optimal pharmacotherapy and environmental control measures[9].

One of the possible reasons of these conflictive results may be due to the fact that low maintenance doses are generally not effective. An important consideration when mixing extracts, or preparing individualized vaccines, is the need to deliver an optimal therapeutically effective dose of each of one the constituents in the allergen immunotherapy extract. It is therefore important to avoid a dilution effect; i.e., as one mixes multiple extracts, the concentration of each in the final mixture is decreased.

Stock mixes containing cross-reactive allergen extracts are commonly used in practice in the USA and in Latin America (i.e., house dust mite species, ragweed, birch mixes, grasses etc). However, mixes of unrelated species have not been well studied.

Finally, another issue that we must take into account is the potential for allergen degradation caused by proteolytic enzymes present in some extracts (i.e. molds, cockroach, mites, etc.). This could be another reason for conflictive results in AIT studies using these mixtures of allergens[10].

Although the efficacy of single-allergen-specific immunotherapy in polysensitized subjects is a matter of debate, there is new evidence that there are no significant differences in the clinical efficacy of HDM SLIT between polysensitized and monosensitized children with respiratory allergic diseases[11].

Well-designed trials with well-selected patient and well-selected, clinically important allergen are needed to firmly establish if the use of allergen mixtures is another approach to be included with strong evidence in future practice parameter on AIT.

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