

Does Sensitization to Food Allergens in Patients with Rhinitis Mean Food Allergy?

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Molecular based diagnostics (MD) is used to map the allergen sensitization of a patient at a molecular level, using allergen components instead of total allergenic extracts. It is increasingly entering routine care and currently, there are more than 130 allergen components available for in vitro specific IgE testing [1,2]. One of the main roles of MD is in food allergy diagnosis and prevention: resolving genuine versus cross-reactive sensitization to an allergen component, thereby improving the understanding of triggering allergens and assessing the risk of severe reactions based on defining allergen stability [1-3].

To verify the frequency of positive specific IgE to food allergens in patients with respiratory allergic diseases using molecular analysis, a cross-sectional study involved 101 children and adolescents (aged 6-18 years) diagnosed with allergic rhinitis in Curitiba, Southern Brazil. None of subjects presented food allergy history. The study was approved by the Institution Review Board of Research Projects and written informed consent was obtained from the parents or caregivers. Patients underwent serum specific IgE analysis by Immuno CAP ISAC, a method that employs molecular biology for detection of allergic components, 42 of them related to food and coming from the following sources: pineapple, celery, peanut, hazelnut, codfish, shrimp, carp, cashew nut, Brazil nut, carrot, sesame, kiwi, cow's milk, apple, egg, peach, soy and wheat. The test was considered positive if values were $\geq 0,3$ ISU (ISAC standardized units) [4].

Descriptive Statistics Analysis

Although none of the participants had food allergy symptoms, twenty seven (26.7%) presented specific IgE to at least one of the food allergens tested. Among the 42 allergic components from food sources tested, 20 (47.6%) were positive in at least one of the patients. Allergens that had the higher frequency of reactivity were: shrimp (Pen a 1 15.8%, Pen i 1 16.8%, Pen m 1 16.8%) and peach (Pru p 3 5.9%). Pen a 1, Pen i 1 and Pen m 1 can present cross-reactivity with Der p 10, allergen component from the mite species *Dermatophagoides pteronyssinus*, detected among 15.8% participants (data not shown). Probably, specific IgE positivity to these allergens occurred due to the presence of tropomyosin, a protein identified in both food (crustaceans, mollusks) and inhalant components (house dust mites, cockroaches). Therefore, the presence of IgE to shrimp allergen components in this case means sensitization, and not true food allergy [5,6]. Peach component Pru p 3, whose protein is known as LTP (lipid transfer protein) was detected in a relatively high rate. LTPs are considered panallergens that cross-react with pollen components. All participants with positive specific IgE to Pru p 3 were also positive to Pla a 2, a platanus component (data not shown). Again, this was probably due to cross-reactivity, meaning sensitization, not food allergy. Lipid transfer protein (LTP) can cause clinically relevant food allergy symptoms even at low sIgE concentrations. Positivity to the panallergen Pru p 3 is a predictor of severe food allergy in these patients. A follow-up of our patients for clinical symptoms of food allergy may demonstrate the importance of this LTP asymptomatic patients [7,8].

Cross-reactive Carbohydrate Determinants (CCDs) are widely distributed in plants and approximately 20% of patients with pollen

allergy have IgE antibodies which bind on carbohydrate determinants. Our patients did not have seasonal symptoms but it could be interesting to verify how many of them were sensitized to CCD epitopes [2].

The evaluation of food allergy based on molecular analysis must consider several factors, particularly the correlation with clinical symptoms and knowledge of IgE cross-reactivity between allergens from different sources. Incorrect diagnosis of food allergy can lead to inappropriate treatment, with unnecessary restrictive diets and nutritional consequences for the patients.

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