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Issue 1

CAPture

A Selection of Recent Allergy Papers

SYNOPSIS

- Eight years old children (n=1,029) were recruited from an unselected population based cohort.
- Peanut sensitization (110/933) was measured by ImmunoCAP® (≥0.2 kU_A/l) and/or SPT (≥3mm).
- Clinical peanut allergy (19/85) was defined by a positive oral food challenge test or typical clinical history and peanut serum IgE ≥15kU_A/l (according to published recommendation).
- In children with positive challenge test 55% had peanut serum IgE ≥15kU_A/l.
- Asthma, eczema, and food allergy were more common in children with positive peanut challenge test.
- Upper respiratory symptoms were more common in children with negative peanut challenge test.
- Component resolved diagnostics (CRD) was performed using microarray with pure allergen components from peanut (Ara h 1-3, 8), grass (Phl p 1, 4, 5b, 7, 12), birch (Bet v 1), peach (Pru p 3) and CCD.
- Sensitization to grass was verified in 94.4% of peanut sensitized children.
- Majority of peanut-sensitized children did not have clinical peanut allergy.

Citation: Nicolaou N et al. Allergy or tolerance in children sensitized to peanut: Prevalence and differentiation using component-resolved diagnostics. J Allergy Clin Immunol 2010;125:191-7.

IgE sensitization to peanut allergen Ara h 2 is more useful in predicting clinical peanut allergy than currently used tests based on whole peanut extract

Recent studies indicate that peanut extract in current used blood/skin tests contains allergen components that are not clinical relevant. The aim of this study was to compare the sensitizing profile to allergen components (CRD) in sera from peanut sensitized children with and without clinical symptoms. Both populations were sensitized to peanut extract based on routine tests, and recruited from a population-based birth cohort. In the tested birth cohort 11.8% were peanut sensitized and the prevalence of clinical peanut allergy was estimated to only 22.4%.

If an IgE antibody level to peanut extract of >15 kU_A/l was used to discriminate between clinical peanut allergy or not the misclassification was 17.3%. If all allergen components in the microarray assay were used the misclassification was 6.9% for children with clinical allergy and 7.7% for children without clinical allergy. The overall misclassification rate was 7.4%. Children with clinical symptoms had higher IgE antibody levels to Ara h 1-3 and lower to grass components and CCD than children without clinical symptoms. The Ara h 2 component contributed incomparably to accurate discrimination compared to other tested components. Adding clinical information did not improve the discriminative accuracy.

The authors conclude that IgE sensitization to peanut allergen Ara h 2 is more useful in predicting clinical peanut allergy than currently used tests based on whole peanut extract.

SYNOPSIS

- Patients (n=24, median age = 27, range 12-49 years) with a positive double-blind placebo-controlled food challenge test to celery were recruited.
- IgE antibodies were measured by ImmunoCAP® to extracts of celery, birch, mugwort and timothy, but also to allergen components from celery (rApi g 1, rApi g 4 and rApi g 5), birch (Bet v 1, Bet v 2 and Bet v 4) and CCDs (MUXF3).
- The biological activity of allergen components were assayed by using a passively sensitized basophilic cell line and measuring of mediator release.
- Api g 1 was confirmed as the major celery allergen in patients with positive challenge test.

Citation: Bauermeister K et al. Assessment of component-resolved in vitro diagnosis of celeriac allergy. J Allergy Clin Immunol 2010;124:1273-81.

Component resolved diagnostics (CRD) with individual celery allergen components showed improved test sensitivity in celery allergic patients

Celery is one of the most important causes of food allergies in central Europe and can even result in life-threatening reactions. The aim of this study was to evaluate if the use of recombinant celery allergen components (CRD) could increase the diagnostic sensitivity.

When 3 celery allergen components were used in the ImmunoCAP® assay instead of celery extract the sensitivity increased from 67% to 88%. The median IgE value for the sum of the used allergen components correlated with the median IgE value when extract was used. All patients with celery allergy were sensitized to birch (92%), or mugwort (75%), or grass (67%) or all. Mono-sensitization to rApi g 1 or rApi g 4 was shown in 42% of the allergic patients, but none to rApi g 5. All patients sensitized to rApi g 1 (PR-10) also react to Bet v 1 and all sensitized to rApi g 4 (profilin) also react to mugwort extract but not vice versa. This indicates that birch and mugwort are the primary sensitization pollens for celery allergy. IgE levels to rApi g 5 were close correlated to the levels of IgE to CCDs indicating no contribution of protein epitopes. Furthermore, rApi g 5 did not release mediators from a passively sensitized basophil cell line, indicating low clinical relevance in this population.

The authors conclude that this is the first study evaluating the use of CRD in celeriac allergy. By using individual celery allergen components the diagnostic sensitivity of the ImmunoCAP® test was increased about 20 percentage units.

SYNOPSIS

- Children (n=122, median age =2.7 year) below 5 years of age and with allergy-like symptoms consecutively referred to a specialist were studied.
- Eczema was the most prevalent single symptom (49%) below 2 years of age and 63% of these patients were atopic.
- Only 18% had wheezing as single symptom and most were non-atopic (55% <2 years; 40% >2 years).
- Phadiatop® Infant and allergen-specific IgE antibodies were measured in a blinded manner by ImmunoCAP®, Phadia AB, Uppsala, Sweden
- Pre-test diagnosis of atopy, based on clinical symptoms, SPT and allergen-specific IgE, was compared to the performance of Phadiatop® Infant.
- Phadiatop® Infant detects IgE antibodies to common food and inhalant allergens relevant in the development of IgE-mediated disease in young children.

Citation: Halvorsen R et al. Phadiatop® Infant in the diagnosis of atopy in children with allergy-like symptoms. Int J Pediatr 2009, Article ID 460737, 4 pages.

Phadiatop® Infant as a complement to clinical information in the differential diagnosis in IgE-mediated diseases in young children with allergy-like symptoms

The authors have in a recent study shown that measurements of allergen-specific IgE antibodies highly improved the discrimination between IgE- and non-IgE-mediated diseases in young children. They also state that better diagnostic markers for allergic diseases are needed since allergy-like symptoms may not have an atopic background. The aim of the present study was to evaluate the diagnostic performance of the Phadiatop® Infant test to detect allergen-specific IgE antibodies relevant in early childhood allergy.

Children referred to an allergy clinic were consecutively analyzed with Phadiatop® Infant for allergen-specific IgE to a mixture of food and inhalant allergens. The results of Phadiatop® Infant test were compared to the diagnosis made by the investigating allergologist. The sensitivity of Phadiatop® Infant to identify atopy was 98% and the specificity 89%. The PPV and NPV were 95% and 94% in this population with a pre-test prevalence of atopy of 70%. No difference in test performance could be shown between children above and below 2 years of age.

The authors recommend Phadiatop® Infant as a complement to clinical information in the differential diagnosis of IgE-mediated diseases in young children with allergy-like symptoms.

Phadia