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CAPture

A Selection of Recent Allergy Papers

SYNOPSIS

- Patients (n=324, median age 6.1 years, age range 2.4 months-40.2 years) referred to two US clinics for evaluation of suspected IgE-mediated allergies to peanut, tree nuts and seeds were recruited.
- A diagnosis of food-allergy was based on self-reported convincing histories of reaction (questionnaire) and not on challenge tests.
- 57% of the patients had atopic dermatitis in their clinical history and 58% had asthma.
- The frequencies of tree nut allergies were: walnut, 16.4%; cashew, 13.6%; pistachio, 13.3%; almond, 12.7%; hazelnut, 11.4%; pecan nut, 6.5%; pine nut, 4.6%; Brazil nut, 1.5%.
- Cashew and pecan resulted in the highest percentages of generalized reactions.
- IgE antibodies to peanut, hazelnut, almond, pecan nut, cashew, pistachio, walnut and sesame seed were analyzed by ImmunoCAP® (Phadia AB, Uppsala, Sweden).
- IgE antibody levels with a 90% and 95% predicted probability of clinical reactivity was only acquired for peanut and walnut.

Citation: Maloney JM et al. The use of serum-specific IgE measurements for the diagnosis of peanut, tree nut, and seed allergy. J Allergy Clin Immunol 2008; 122:145-51.

High levels of IgE antibodies to peanut and and walnut predict symptomatic food allergy and decrease the need of challenge tests

The authors have in earlier publications shown that the serum level of food-specific IgE antibodies measured by ImmunoCAP® System can be used to predict symptomatic IgE-mediated food allergy. The aim of the present study was to determine the usefulness of measuring the serum level of IgE to peanut, tree nuts and seeds to predict symptomatic allergies to these allergens.

Patients referred to the clinic for evaluation of suspected IgE-mediated allergies to peanut, tree nuts and seeds were clinical evaluated by a standardized questionnaire and food-specific IgE. Most patients reported symptoms to peanut (n=234) compared to tree nuts (n=21-53) and seeds (n=54). Using a logistic regression model, 90% and 95% predicted probability for clinical relevant sensitization were obtained at 6.0 and 13 kU_A/l respectively for peanut, and at 9.0 and 18.5 kU_A/l respectively for walnut. Most peanut allergic patients (86%) were also sensitized to tree nuts but only 34% reported clinical symptoms to tree nuts. There was a high correlation between the allergen-specific IgE levels to walnut and pecan (r=0.96), cashew and pistachio (r=95) and to almond and hazelnut (r=84).

The authors conclude that quantification of food-specific IgE antibodies is a valuable tool to diagnose symptomatic food allergy and might decrease the need for challenge tests.

SYNOPSIS

- Cat allergic children (n=68, age range 2-12 years) and adults (n=72, age range 20-60 years) from Sweden and Austria were recruited to the study.
- Patients had doctor's diagnosis of asthma and/or rhinitis induced by cat.
- A recently described rFel d 1 was covalently bound to ImmunoCAP® solid phase, specially made for this study (similar to commercial ImmunoCAP rFel d 1, e94).
- IgE antibodies to both rFel d 1 and to cat dander extract (e1) were analyzed by ImunoCAP.
- Similar frequencies of positive allergen-specific IgE to rFel d 1 and to cat dander extract were seen.
- The IgE antibody concentrations to rFel d 1 were significantly ($p<0.05$) higher in asthmatic children (mean: 19.4 kU_A/l) compared to children with rhinitis only (mean: 6.6 kU_A/l).
- Adults had significantly lower IgE ab levels to rFel d 1 than children (median 3.0 and 2.9 kU_A/l for asthma and rhinitis respectively).

Citation: Grönlund H et al. Higher immunoglobulin E antibody levels to recombinant Fel d 1 in cat-allergic children with asthma compared with rhinoconjunctivitis. Clinical and Experimental Allergy 2008; 38:1275-81.

Cat allergic children with asthma have higher concentration of IgE antibodies to the cat allergen component rFel d 1 than children with rhinitis

The aim of this report was to study the quantitative relation of serum IgE antibodies to the major cat allergen component Fel d 1 and the clinical expression of asthma and rhinitis. Cat allergic children and adults from Sweden and Austria were recruited to the study. IgE antibodies to cat dander extract and to the recombinant allergen component Fel d 1 were measured.

The IgE antibody concentrations to rFel d 1 were significantly ($p<0.05$) higher in asthmatic children (mean: 19.4 kU_A/l) compared to children with rhinitis only (mean: 6.6 kU_A/l). This could not be shown for the adult population. However, adults had significantly ($p<0.001$) lower levels of IgE to cat dander extract as well as to rFel d 1. Neither total IgE nor the relative ratio of rFel d 1-specific IgE to total IgE was higher among asthmatic children compare to children with rhinitis as a possible explanation of the observation. There was a high correlation ($r=0.85$, $p<0.001$) between the IgE concentration to cat dander extract and rFel d 1. However, no data was given if the difference between asthma and rhinitis could be shown with extract based tests as well.

The authors suggest that having an increased Fel d 1-specific IgE antibody level is a potential risk factor for allergic asthma in cat allergic children.

SYNOPSIS

- Bakers (n=107, 77% males) with work-related symptoms (rhinitis, conjunctivitis, asthma-like symptoms) were recruited in a multicenter study.
- IgE antibodies to wheat and rye flours were measured by ImmunoCAP®.
- Nasal and bronchial challenge tests were performed, but some heterogeneities of test procedure were unavoidable between the centers.
- A positive challenge test to any flour was obtained in 67% of the patients.
- The IgE antibody concentration to wheat ranged from <0.35 to 27.1 kU_A/l (median 0.56 kU_A/l) in patients challenged with wheat.
- The IgE antibody concentration to rye ranged from < 0.35 to > 100 kU_A/l (median 1.31 kU_A/l) in patients challenged with rye.
- All bakers with wheat flour-specific IgE ≥ 2.32 kU_A/l (n=19) and rye flour-specific IgE ≥ 9.64 kU_A/l (n=20) had a positive challenge test.

Citation: Van Kampen V et al. Prediction of challenge test results by flour-specific IgE and skin prick test in symptomatic bakers. Allergy; 2008; 63:897-902.

Moderate concentrations of IgE antibodies to wheat or rye are good predictors for a positive inhalation challenge test in bakers

High associations between IgE antibody levels to some food allergens and a positive food challenge test to the corresponding food are well established today. The aim of the present study was to investigate if the IgE antibody levels to wheat and rye flours could be used as predictors for a positive challenge tests in baker's asthma.

Bronchial and nasal challenge tests were performed in symptomatic bakers and allergen-specific IgE was measured.

All bakers with IgE antibodies to wheat ≥ 2.32 kU_A/l (n=19) or to rye ≥ 9.64 kU_A/l (n=20) had a positive challenge test. When 0.35 kU_A/l was used as a cut-off level the positive predictive value for a positive challenge test was 74% for wheat and 82% for rye in this population of bakers with work-related symptoms. According to ROC plots the AUC was 0.83 for both wheat and rye and higher compared to skin prick tests.

The authors conclude that moderate concentration of flour-specific IgE in the sera of bakers suffering from work-related symptoms is a good indicator for a positive inhalation challenge test with flours. They propose that challenge tests with flours may be avoided in strongly sensitized bakers.

Phadia