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CAPture

A Selection of Recent Allergy Papers

SYNOPSIS

- Peanut allergic children/teenagers (n=166, age = 3-18 years) and pollen sensitized patients (n=61) without peanut allergy were recruited.
- Peanut allergy was based on positive food challenge tests (DBPCFC and open challenge).
- IgE measurement to peanut extract and peanut allergen components Ara h 1, Ara h 2, Ara h 3, Ara h 6*, Ara h 7* and Ara h 8) was done with ImmunoCAP® (Phadia AB, Uppsala, Sweden). A cut-off at ≥ 0.1 kU_A/l was used for positive test.
(*Ara h 6 & 7 Streptavidin-coated ImmunoCAP).
- IgE sensitization to the peanut allergen components in peanut allergic patients was as follows; Ara h 2 (96%) > Ara h 6 (92%) > Ara h 1 (75%) > Ara h 3 (61%) > Ara h 7 (43%) > Ara h 8 (40%).
- In pollen sensitized patients without peanut allergy IgE sensitization to the birch related peanut component Ara h 8 was 69%, but below 17% for all other components.

Citation: Codreanu F et al. A novel immunoassay using recombinant allergens simplifies peanut allergy diagnosis. Int Arch Allergy Imunol 2010;154:216-26.

IgE antibody measurement of peanut extract & peanut component rAra h 2 is suggested to replace food challenge in diagnosing peanut allergy

The background of this study is that IgE sensitization to peanut extract has too low specificity to replace food challenge test. The aim of the present report was to study if the use of IgE antibodies to peanut allergen components could increase the sensitivity and specificity of ImmunoCAP testing for peanut allergy.

Sera from peanut allergic children/teenagers and pollen sensitized patients without peanut allergy were analyzed for IgE antibodies to six peanut allergen components. All peanut allergic patients showed a positive test (100% sensitivity) to peanut extract. However, the specificity of a positive peanut extract test was low (21-22%). IgE antibodies to Ara h 2 was judged as the best individual marker to diagnose peanut allergy, with a sensitivity of 96% and specificity of 85%. If the cut-off was increased from 0.1 to 0.23 kU_A/l the specificity become 96% and sensitivity 93%. Including Ara h 6 in the testing increased the sensitivity further, from 96 to 98%. In the pollen sensitized population without peanut allergy, 79% were positive to peanut extract and 69% to the birch related component Ara h 8 (Bet v 1 homologue).

The authors conclude that food challenge should no longer be considered to be a mandatory diagnostic procedure since it could be replaced by testing for IgE antibodies to peanut extract in combination with recombinant Ara h 2.

SYNOPSIS

- Timothy-allergic rhinitis patients (median age = 31 years) with (n=27) and without asthma (n=33) were recruited.
- ImmunoCAP® was used to measure IgE antibodies to timothy extract and to timothy allergen components (rPhl p 1, rPhl p 2, nPhl p 4, rPhl p 5b, rPhl p 6, rPhl p 7, rPhl p 11, and rPhl p 12).
The cut-off for positive test was ≥ 0.35 kU_A/l.
- In a ROC analysis using the optimal cut-off > 5.8 kU_A/l (sum of Phl p 4 and Phl p 5) to discriminate between AR and ARA the AUC was 0.77 (95% CI 0.612-0881), *i.e.* a test efficiency of 77% to predict/exclude asthma in rhinitis patients.
- Patients monosensitized to grass were all sensitized to Phl p 1 and Phl p 4, but only 7% of them to Phl p 12 (profilin).

Citation: De Amici M et al. Component-resolved diagnosis for Phleum allergy: The role of recombinants. Journal of Asthma 2010;47:750-3.

The level of IgE antibodies to timothy components, but not to complete allergen extract, could be used to discriminate rhinitis patients with and without asthma

Sensitization to grass pollen is the most common cause of allergic rhinitis (AR) in southern Europe and is frequently associated to asthma (ARA). The aim of the present study was to evaluate if IgE antibodies to allergen components of timothy could be used to discriminate between AR and ARA patients sensitized to timothy.

Serum from adult grass-allergic patients with AR or ARA was analyzed for IgE antibodies to seven different timothy components. No significant difference could be shown in the serum level of allergen-specific IgE when complete native allergen extract was used in the assay. However, when allergen components were used patients with ARA showed a significant higher concentration of IgE antibodies to Phl p 4 (p=0.0073), Phl p 1 (p=0.0193), Phl p 5 (p=0.0373) and for the sum of Phl p 1 and Phl p 5 (p=0.0194). Using ROC analysis a cut-off > 5.8 kU_A/l, based on the sum of IgE to Phl p 4 and Phl p 5, was optimal to discriminate between AR and ARA. Negative and positive predictive values of 76.2% and 72.7% were obtained in this population.

The authors conclude that the serum levels of IgE to timothy allergen components are significantly higher in patients with asthma symptoms and could be used to discriminate between AR and ARA.

SYNOPSIS

- 18 years old teenagers (n=565) from a birth cohort were recruited to the study.
- They were interviewed for early-life (< 1 year) exposure, cumulative exposure and specific age exposure (1-5, 6-12, ≥ 13 years) to pets.
- Total serum IgE and allergen-specific IgE antibodies to common allergens (mite, peanut, dog, cat, grass, ragweed and *Alternaria*) were analyzed with ImmunoCAP®.
- Sensitization (atopy) was defined as having at least 1 allergen-specific IgE result ≥ 0.35 kU_A/l.
- There was no difference in those included in the study and those who did not participate with respect to early-life exposure to pets, parental history of allergy and allergen sensitization at the age of 6 years.

Citation: Wegienka G et al. Indoor pet exposure and the outcome of total IgE and sensitization at 18 years. J Allergy Clin Immunol 2010;126:274-9.

The protective effect of early-life pet exposure on atopy in childhood did not persist in teenagers

The authors state that there are no or few studies that have examined if the reported effect of early pet exposure on atopy persists beyond childhood. The authors have shown in an earlier study that the exposure to pets in the first year of life was associated with a decreased risk of allergic sensitization at 6 years of age. These results were based on the same birth cohort as in the present study. The aim of this study was to investigate if this protective effect remained to age 18 years.

Serum from 18 years old teenagers of a birth cohort was analyzed for total serum IgE and allergen-specific IgE antibodies. They were interviewed for early exposure and cumulative exposure to pets.

Pet exposure in the first year of life was neither associated to lower or higher risk of atopy (IgE sensitization) nor family history of allergy at the age of 18 years. However, atopic children with pet exposure in early life had lower total IgE, which decreased with dose of pet exposure. Neither was the cumulative exposure to pets or exposure at a specific age (> 1 year) associated with atopy or low total serum IgE at the age of 18 years.

The authors conclude that the protective effect of early-life pet exposure on childhood atopy did not persist when these children became teenagers. However, lower total serum IgE was shown in atopic teenagers with early-life pet exposure.

Phadia