

SYNOPSIS

- Preschool children (n=521) was recruited from a population-based birth cohort (The Manchester Asthma and Allergy Study).
- Current wheeze was defined as wheezing in the previous 12 months at age 5 years.
- Specific airway resistance was measured at the age 5 years.
- Serum IgE antibodies to mite, cat, dog, grasses, milk, egg, and peanut were measured by ImmunoCAP™ (Pharmacia Diagnostics AB, Uppsala, Sweden), with a detection limit of 0.2 kU_A/L.
- Skin prick test (Bayer) were performed with the same allergens as above.
- Logistic regression was used to analyze the relationship between sensitization and outcome measurements.
- Increased OR for current wheeze in sensitized 5 years old children were found that varied between 1.20-1.45 using IgE antibodies to mite, cat and dog individually (p=0.004/0.004/0.005) or the sum of them (p=0.0002).
- OR for future persistent wheeze in 3 years children who have wheezed previously using the sum of IgE to mite, cat and dog was 2.15 (p=0.02).

Citation: Simpson A et al. The antibody quantification and the probability of wheeze in preschool children. *J Allergy Clin Immunol* 2005; 116:744-9.

SYNOPSIS

- A cross-sectional study design recruiting patients from local clinics and national advertisements.
- Twenty-three children (> 6 years of age) and 17 adults were recruited.
- Inclusion criteria were convincing clinical history of an allergic reaction to peanut in the last 3 years and a positive skin prick test.
- A validated scoring system based on clinical reactivity and allergen exposure were established for accidental and DBPCFC.
- Histamine challenge was performed using incentive-based spirometry.
- Double-blind placebo-controlled food challenge (DBPCFC) was performed by a protocol published recently (*Clin Exp Allergy* 2003; 33:1158).
- Quantitative levels of peanut-specific IgE, determined with ImmunoCAP™, could predict severity of reactions in DBPCFC.
- No apparent correlation was found between the mean diameter of peanut skin prick test (SPT) and peanut-specific IgE concentration.

Citation: Hourihane JOB et al. Does severity of low-dose, double-blind, placebo-controlled food challenges reflect severity of allergic reactions to peanut in the community? *Clin Exp Allergy* 2005; 35:1227-33.

SYNOPSIS

- Blood donors were recruited from Sweden (n=1,002) and Norway (n=500).
- The donors were first screen with three multiple allergen ImmunoCAP™: a mix of common inhalant allergens (Phadiatop®), a mix of food allergens (fx5) and a new prototype with hospital environmental relevant allergens ("hospital mix").
- Donors positive (≥ 0.35 kUA/L) to mixes were retested with ingredient allergens:
 - Phadiatop: timothy, birch, cat and mite
 - fx5: peanut, soya bean, egg white, cow's milk, cod fish and wheat flour
 - "Hospital mix": penicilloyl G, suxamethonium, latex and hazel nut.
- High levels of allergen-specific IgE are common among blood donors and it is recommended that each donor is tested to avoid a potential risk.

Citation: Johansson SGO et al. High prevalence of IgE antibodies among blood donors in Sweden and Norway. *Allergy* 2005; 60:1312-5.

IgE antibodies to mite, cat and dog are risk factors for current wheeze and the level can predict future persistent wheeze in preschool children

The aim of this study was to investigate if there is a quantitative relation between IgE sensitization to common inhalant allergens and wheezing in preschool children.

A population-based birth cohort was investigated at 3 and followed to 5 years of age.

At the 5 year follow-up 35.3% of the children were sensitized and current wheeze was reported in 21.9%. In the allergen sensitized group, increasing levels of serum IgE antibodies to mite, cat, and dog were associated with a significant increased risk of current wheeze. The odds ratios were highest for dog and cat and reached predicted probability > 80%. Tested food and grass specific IgE showed no association. The sum of allergen-specific IgE to mite, cat and dog was significantly associated with decreasing lung function. There was no association between the size of the skin prick test and current wheeze or lung function. It was also shown that the risk of future persistence wheeze in 3 years children, who had wheezed previously, significantly increased with increasing sum of allergen-specific IgE to mite, cat and dog. This could not be shown using individual allergens. It was shown in all calculations that using the sum of IgE-values gives a better significance than using IgE-values to individual allergens.

In conclusion the authors showed that quantitative serum measurements of IgE antibodies to mite cat and dog individually or added together are significant risk factors for current wheeze in 5 years old children and can predict future persistent wheeze in 3 years old children. This was not possible using the size of the skin prick test.

Quantitative levels of peanut-specific IgE are strongly associated with severity of double-blind, placebo-controlled food challenges (DBPCFC)

The authors have developed a scoring system to evaluate the clinical reactivity to accidental peanut exposure and to DBPCFC. The aim of the study was firstly to compare the scoring between accidental and controlled exposure, and secondly to investigate if quantification of peanut-specific IgE in serum could predict the outcome of DBPCFC.

Forty children and adults with a clinical history of allergic reaction to peanut in the last 3 years and a positive SPT were recruited. Serum levels of peanut-specific IgE correlated significantly ($r=0.62$, $p<0.001$) to the challenge score. The correlation was stronger in adults ($r=0.77$) or if patients with asthma were excluded ($r=0.72$). According to the challenge scoring system the patients were categorized into two groups to predict moderate/severe reaction. Using a decision point of 15 kU_A/L there was a 14-fold increased risk to have a moderate/severe reaction in comparison to having a mild one, and the positive predictive value was as high as 93% at this level. The authors found only a low correlation ($r=0.37$, $p<0.03$) between controlled exposure and the most recent accidental exposure, but not to earlier and the most severe accidental exposure.

The authors conclude that this is the first prospective study showing that quantification of peanut-specific IgE can predict the severity in DBPCFC. However, they also stated that past clinical history may be an unreliable factor and asthma may modify the clinical reactivity.

Allergen sensitization is common in blood donors and threshold levels for IgE antibodies are suggested to exclude risk donors

The authors have recently shown that basophils and mast cells will remain sensitized to allergens for weeks after transfusion of blood containing allergen-specific IgE. In the present study they investigated the prevalence of IgE antibodies among blood donors in Sweden and Norway to possible allergens that the recipient could be exposed to.

The donors were screened with three different multiple allergen ImmunoCAP™ and retested with single allergens if positive. A positive test was obtained to the inhalant mix in 25.8 % of the donors, in 3.6 % to the food mix and in 3.2 % to the "hospital mix". Very high concentration (> 10 kU_A/L) of allergen-specific IgE was primarily found in positive sera to inhalant allergens such as timothy (35.5 %), birch (32.0 %), cat (14.3 %) and mite (13.2 %). Levels above 10 kU_A/L to food allergens were only found to peanuts in Swedish donors (17.4 %), otherwise all other food sensitizations were below this level. 71 donors were positive to the new "hospital mix", 6 of them had levels above 3.5 kU_A/L and only two had levels above 10 kU_A/L, to Penicilloyl G and latex respectively. Of Swedish donors denying clinical symptoms 23.6 % were sensitized in comparison to 13.0% of the Norwegian donors.

The authors conclude that questionnaires cannot be used reliably to predict IgE-sensitized donors. Thresholds for allergen-specific IgE are suggested to exclude potential risk donors; 10 and 3.5 kU_A/L respectively for allergens common at home and allergens common within the hospital environment.