SYNOPSIS

- Young children (n=156, aged 1-4) with persistent cough (≥5 days) were recruited from 72 general practices.

- A structured questionnaire was completed and blood samples collected at inclusion.

- A simple scoring formula including age at inclusion (3-4 years), wheezing, and family history of pollen allergy were designed.

- IgE antibodies to cat, dog and mites were measured to predict asthma at the age of 6 years.

- Bronchial histamine challenge tests were performed at the age of 6 with a DeVilbiss 646 nebuliser.

- The range of predictive values for asthma development increased from 6.1-75.2% to 1.3-94.5% when IgE testing was included.

Citation: Eysink PED et al. Accuracy of specific IgE in the prediction of asthma: development of a scoring formula for general practice.
Br J Gen Pract 2005;55:125-31.

IgE testing is helpful for GPs in determining those young children with persistent cough who will and will not develop asthma at age of 6 years

The aim of this study was to investigate the diagnostic added value of allergen-specific IgE measurements to predict development of asthma at the age of 6 in young children with persistent cough.

A structured questionnaire and a blood sample at inclusion were used to construct a simple scoring formula including age at inclusion (3-4 years), wheezing, and family history of pollen allergy. A follow-up examination with lung function tests and questionnaires was performed at the age of 6 years.

Adding IgE antibody testing and using the baseline criteria could categorize the children into 16 groups. The range of predictive values for asthma development in these groups increased from 6-75% to 1-95% when IgE antibody testing was included. In 3 years old wheezing children without family history of pollen allergy the probability to develop asthma at age of 6 was 48.1%. After testing for allergen-specific IgE the children could be categorized into an IgE-positive group with high risk (88.1%) and an IgE-negative group with low risk (28.3%). The predictive values were below 5% in non-wheezing children with negative test but increased to 20-50% if the test were positive.

In conclusion allergen-specific IgE antibody testing may be helpful in determining those children with persistent cough who will and will not develop asthma at age of 6 years.

SYNOPSIS

- Twenty birch pollen allergic adults (range, 17-39 years) were recruited and had history of food allergy to peanut.

- OAS occurred in all patients and 60% reported more severe symptoms (flush, rhinitis, conjunctivitis, throat tightness, urticaria, nausea and vomiting).

- IgE antibodies to rBet v1, rBet v2, birch and peanut were analyzed using ImmunoCAP™ (Pharmacia Diagnostics AB, Uppsala, Sweden).

- Biotinylated recombinant Ara h 8 coupled to Streptavidin ImmunoCAP was used to measure rAra h 8-specific IgE antibodies.

- IgE antibodies to purified Ara h 1, Ara h 2, and Ara h 3 were assayed using the allergens bound to cyanogens bromide-activated Sepharose.

- Molecular structures of rBet v1 and rAra h 8 were determined using Far UV circular dichroism spectroscopy.

Citation: Mittag D et al. Ara h 8, a Bet v 1-homologous allergen from peanut, is a major allergen in patients with combined birch pollen and peanut allergy.
J Allergy Clin Immunol 2004;114:1410-17.

Clinical peanut allergy in adults might be associated to birch pollen sensitization and cross-reactivity between Bet v 1 and Ara h 8

The aim of this study was to investigate if clinical peanut allergy could be acquired after a primary sensitization to birch pollen allergens on basis of allergen-specific IgE cross-reactivity. Twenty birch pollen allergic adults were recruited and had history of food allergy to peanut. A new peanut allergen, Ara h 8, with 45.9% amino acid identity with Bet v 1 was identified, cloned, expressed and used in the study. IgE antibodies were measured to birch and peanut allergen components. Peanut allergy was confirmed in all patients by DBPCFC and all but two patients had IgE antibodies to peanut. All patients were sensitized to Bet v 1 and 35% to Bet v 2. Allergen-specific IgE (0.6 to >100 kU_A/L) to rAra h 8 was found in 85% of the patients. No or low IgE antibody levels were detected to the classical peanut allergens rAra h 1, h 2, and h 3 in 9 of 17 tested patients. In 4 of 7 tested patients rBet v 1 and rAra h 8 strongly (56-97%) inhibited IgE antibodies to peanut whereas in three patients no significant inhibition was observed. In accordance with the observed cross-reactivity, secondary structure similarities between Bet v 1 and Ara h 8 were shown.

These data suggest that the Bet v 1-homologous peanut protein Ara h 8 is a major allergen involved in cross-reaction in birch pollen sensitized patients with clinical symptoms to peanut.

SYNOPSIS

- Eighteen birch pollen allergic patients were recruited; mean age: 45.6 years, range; 28 to 58 years.

- All patients had moderate to severe rhino-conjunctivitis and five had mild asthma and all 18 also had detectable IgE antibodies to rBet v1 (1.65-79.9 kU_A/L).

- IgE antibodies to rBet v1 were quantified using ImmunoCAP™ or a RAST-based assay using ^{125}I-labelled recombinant α-chain of $Fc_\varepsilon RI$.

- Basophil histamine release test were performed with rBet v 1 in a dose-response fashion according to Tanizaki *et al.*

- Threshold intradermal skin tests were performed by injection of 10-fold dilutions of rBet v 1.

- There was no association between allergen-specific IgE levels and skin sensitivity (r=-0.007, P=0.977) or basophil degranulation (r=-0113, P=0.656).

- There was a significant trend (r=0.0614; P=0.007) of association between skin sensitivity and basophil degranulation.

Citation: Purohit A et al. Poor association between allergen-specific serum immuno-globulin E levels, skin sensitivity and basophil degranulation: a study with recombinant birch pollen allergen Bet v 1 and an immunoglobulin E detection system measuring immunoglobulin E capable of binding to $Fc_\varepsilon RI$.
Clin Exp Allergy 2005;35:186-92.

Skin tests and basophil degranulation tests are not necessarily related to the concentration of allergen-specific serum IgE

The aim of this study was to investigate the association of allergen-specific IgE levels with basophil degranulation and intradermal skin testing. Eighteen birch pollen allergic patients were recruited strictly out of the birch pollen season. Serum determination of allergen-specific IgE antibodies to rBet v 1, intradermal skin tests using end-point titration with rBet v 1 and basophil histamine release tests using rBet v1 were performed. No quantitative clinical correlation was used in the study.

There was no association between allergen-specific IgE antibody levels and skin sensitivity or Bet v 1 induced basophil degranulation.

This discrepancy was not due to biological inactive IgE since a good correlation (r=0.888) was found between rBet v 1-specific IgE levels and binding to $Fc_\varepsilon RI$ *in vitro*. The discrepancy was neither depending on the percentage allergen-specific IgE of total serum IgE nor presence of allergen-specific IgG. However, there was a significant trend of association between skin sensitivity and basophil degranulation.

The authors pointed out that they found a good agreement between the three methodologies and clinical birch reactivity, but the intradermal skin test and basophil degranulation tests did not reflect the allergen-specific IgE levels. Several possibilities for inter individual variations in cellular reactivity were discussed.