SYNOPSIS

- Fifty consecutive highly atopic patients (median age=7.25 yrs, range 2.92-18 yrs) were enrolled.

- 42 children had diagnosed food allergy, 5 reported food avoidance (due to positive tests) and 3 had no history of food hypersensitivity.

- Sera were aliquoted and sent to three different licensed laboratories using different assay systems; ImmunoCAP® (Phadia AB, Uppsala, Sweden), Turbo-MP (Aglient Technologies Co, CA) and Immulite 2000 (Siemens Medical Solutions Diagnostics, NY).

- Serum IgE antibodies to milk, egg white, peanut, birch, mite and cat were measured.

- 38-64% of all test results measured by Immulite, and 20-64% measured by Turbo-MP were outside the ± 20% limits compared with ImmunoCAP.

- The slop was highly significant (p<0.001) increased in the weighted regression test for egg white, birch and cat in Immulite measurements and decreased for birch in Turbo-MP measurements compared to ImmunoCAP.

Citation: Wang J et al. Correlation of serum allergy (IgE) tests performed by different assay systems. J Allergy Clin Immunol 2008;121:1219-24.

Published predictive values for clinical reactivity associated with food-specific IgE levels determined by ImmunoCAP® should not be applied to results from other systems

Several recent studies have shown the usefulness of food-specific IgE levels based on the ImmunoCAP® to help clinicians to avoid unnecessary food challenges or to predict the likelihood to develop food tolerance in children. The aim of the present publication was to study if allergen-specific IgE antibodies measured by ImmunoCAP are equivalent with IgE antibody levels measured by two other commercial assay systems also reporting test results in kU_A/l.

Sera from highly atopic children were analyzed for IgE antibodies to milk, egg white, peanut, cat, mite and birch by Turbo-MP and Immulite and compared to values obtained by ImmunoCAP. Immulite overestimated all allergen-specific IgE levels compared to ImmunoCAP. Using a Bland-Altman plot, depending on food 52-64% of the sera analyzed with Immulite for IgE antibodies to milk, egg white, and peanut showed more than 20% higher values than obtained with ImmunoCAP. When analyzed with Turbo-MP 42-56% of these sera were outside the 20% limits (higher or lower). Despite the low number of sera in the study, the slop was highly significant (p<0.001) increased in the weighted regression for egg white, birch and cat when assayed with Immulite compared with ImmunoCAP.

The authors conclude that the differences shown in measured values would alter treatment decisions using published clinical decision points based on ImmunoCAP. Values obtained by ImmunoCAP could therefore not be substituted by values obtained by the other two assays according to the authors.

SYNOPSIS

- Questionnaire data (n=2336) at 2 months and 4 years of age and serum IgE antibody measurements to food allergens from a population-based birth cohort were available.
- Food hypersensitivity was defined as reported symptoms such as eczema, vomiting/diarrhea, urticaria, facial oedema, itchy eyes/runny nose or asthma related to ingestion of a specified food.
- The most common reported symptoms was eczema (50%) > vomiting/diarrhea (39%) > urticaria (30%) > facial oedema (26%), itchy eyes/nose (18%) > asthma (6%).
- Serum IgE antibodies to milk, egg white, fish, peanut, soybean and wheat were measured by ImmunoCAP®.
- Odds ratios (OR) per logarithmic unit for reported food allergy were calculated by logistic regression; fish (OR=6.4), milk (OR=4.7), wheat (OR=3.6), egg (OR=3.5), soybean (OR=1.8) and peanut (OR=1.4).
- IgE antibodies in multiple logistic regression analysis were independent variables for all food allergens but wheat, as the OR changed less than 10% after adjustment.

Citation: Östblom E et al. Patterns of quantitative food-specific IgE-antibodies and reported food hypersensitivity in 4-year old children. Allergy 2008;63:418-24.

Quantitative measurements of serum IgE antibodies to milk, egg and fish are useful to evaluate food-allergy in preschool children

Recent studies have suggested the use of certain IgE antibody levels to food allergens as decision points to exclude food challenge or as prognostic indication of food tolerance. Those studies are primarily based on hospital patients and are of mixed age group. According to the present study, this is the first time the level of food-specific serum IgE antibodies is related to reported symptoms in a large population-based sample of 4-year-old children participating in a birth cohort study.

At the age of 4 years, 12% reported food reactions and of which 44% were based on doctor's diagnosis. Children with reported symptoms were significantly (p<0.001) more often sensitized to the tested foods (31% *vs*. 11%). However, when $0.35 kU_A/l$ was used as a cut-off only 11% of milk-sensitized, 29% of egg-sensitized, 41% of fish-sensitized, 38% of peanut-sensitized, 10% of soy-sensitized and 6% of wheat-sensitized reported corresponding food reactions. The 90% probability of having symptom to the corresponding food allergen was obtained at $4.7 kU_A/l$ for fish, $13 kU_A/l$ for egg white and $22 kU_A/l$ for milk. The 90% probability point was not reached for peanut, soy and wheat (89% at $100 kU_A/l$).

The authors conclude that using a cut-off of $0.35 kU_A/l$ to predict reported food allergy was too low. However, by using cut-off levels where 90% report food hypersensitivity to the corresponding allergen (milk, egg and fish) might be useful to evaluate food allergy in preschool children.

SYNOPSIS

- Fifty-one consecutive oral challenge tests to egg in clinical routine of children (n=35, median age = 3.9 yrs) were reviewed for IgE-mediated allergy.
- Challenge reactions were scored as negative, mild to moderate or severe according to a recent publication (Sampson HA, Pediatrics 2003;111:1601).
- IgE antibodies to egg white (f1) were analyzed by ImmunoCAP®.
- 69% of the challenge tests were positive and 37% of them were scored as severe reactions.
- Symptoms provoked by the challenge test were primarily gastrointestinal (88%) and less from skin (57%), respiratory (34%) and cardio-vascular (3%).
- A 90% probability of a positive challenge test was defined at $8.2 kU_A/l$, based on a logistic regression model.
- The concentration of egg-specific IgE antibodies were significantly related to the severity of reaction (p<0.006) and reaction to cooked egg (p=0.016), but not to threshold dose for positive reaction.

Citation: Benhamou AH et al. Correlation between specific immunoglobulin E levels and the severity of reactions in egg allergic patients. Pediatr Allergy Immunol 2008;19:173-9.

The serum concentration of IgE antibodies to egg is associated with the severity of reaction after food challenge in childhood egg allergy

A frequently asked question by parents is whether the level of serum IgE antibodies to a food allergen is associated with an increased risk of a severe reaction after accidental ingestion. Based on that question, clinical data from consecutive oral egg challenge tests in children were reviewed and related to the serum concentration of IgE antibodies to egg white.

ROC analyzes showed an area under the curve of 0.741 at a cut-off at $0.35 kU_A/l$, indicating a poor diagnostic capacity at that cut-off. All patients with egg white-specific IgE antibody level above $7 kU_A/l$ had a positive challenge test in this population. Based on a logistic regression model, a 90% probability of a positive challenge test was calculated to a cut-off at $8.2 kU_A/l$. There was a significant difference in egg white-specific IgE levels between patients with no, mild/moderate and severe reactions. The egg white-specific IgE levels were also significantly higher in patients with positive challenge test to cooked egg, but there was no significant difference in the severity of reaction. The threshold dose for a positive challenge test was not related to the severity of the reaction.

Besides predicting the challenge outcome, the authors conclude that the level of IgE antibodies to egg white may help to determine the potential risk of an egg challenge and the severity of a clinical reaction to egg.