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Issue 3

CAPture

A Commentary on Recent Allergy Papers

SYNOPSIS

- Serum samples from 504 asthmatic children (rang 4-9 years, median 6 years) from the National Cooperative Inner City Study (NCICAS) in the US were analyzed.
- Basement assessments included demographics, health history, access to care, environmental factors, and asthma symptoms.
- Allergen-specific IgE to egg, cow's milk, soy, peanut, wheat, and fish were analyzed (ImmunoCAP™, Pharmacia Diagnostics, Uppsala, Sweden).
- Sensitized patients had a higher rate of hospitalization ($p<0.01$) and required more steroid treatment ($p=0.025$).
- Sensitization to more than 1 food was associated ($p=0.0003$) with increased hospitalization for asthma.
- Food sensitization was shown in 45% of the population and 4% had IgE antibody values >95% positive predictive value for true food allergy.
- Patients with allergen-specific IgE to one food were more likely to be sensitized to other foods.

Citation: Wang J et al. Food allergen sensitization in inner-city children with asthma. J Allergy Clin Immunol 2005; 115:1076-80.

Presence of food sensitization is a helpful marker for increased asthma severity in children

Food sensitization is believed to be a risk factor for fatal asthma in food-induced anaphylaxis. The aim of this study was to assess association between food sensitization with symptoms and healthcare utilization in asthmatic children.

Serum samples from asthmatic children were evaluated for IgE antibodies to egg, milk, soy, peanut, wheat, and fish. Food sensitization was shown in 45% of the population. Sensitized patients had a higher rate of hospitalization and required more steroid treatment. Sensitization to more than one allergen was associated with increased hospitalization. Patients who had allergen-specific IgE antibodies to one food were more likely to be sensitized to other foods. In the patient group with food-specific IgE levels above a decision point with a >95% predictive value for food allergy almost all (96%) were sensitized to more than one food allergen and 25% were sensitized to all six allergens. Children sensitized to egg and peanut had the highest food-specific IgE levels and 13% of egg sensitized patients and 16% of peanut-sensitized patients belong to the high-risk group for true food allergy.

The authors pointed out that their study is the first to demonstrate a correlation between food sensitization and severity of symptoms related to asthma. They suggest that caretakers should consider screening for food sensitization in patients with moderate to severe asthma whose disease is not well controlled with asthma medications.

SYNOPSIS

- Children (n=5,021), age range 1 to 16.1 years (median 13 months), were admitted consecutively due suspicion of food-related symptoms by parents or physicians.
- Eighty-eight percent suffered form atopic dermatitis; 204 mild disease, 116 moderate and 56 severe.
- Oral allergen provocations were performed; 728 challenges DBPCFC and 264 in an open manner (children < 1 years old).
- Allergen-specific IgE (ImmunoCAP™) to hen's egg, cow's milk and wheat were assayed.
- Sensitivity values were between 69% and 97%, and specificity values were between 38% and 53%.
- IgE antibody level to egg at 12.6 kU_A/L predicted positive challenge at a probability of 95%. At 59.2 kU_A/L a positive prediction of 99% was obtained.
- IgE antibodies to milk could only predict positive challenge at 90% level (88.8 kU_A/L).

Citation: Celik-Bilgili S et al. The predictive value of specific immunoglobulin E levels in serum for the outcome of oral food challenges. Clin Exp Allergy 2005;35:268-73.

The serum concentration of IgE antibodies to food allergens showed a correlation with the outcome of positive oral food challenges in children

Controlled oral challenges were performed in children consecutively admitted to a clinical routine ward due to suspicion of food-related symptoms by parents or physicians. Serum samples were drawn before challenges and analyzed for allergen-specific IgE antibodies to egg, milk, wheat, and soy. The objective of this study was to evaluate the use of serum concentration of food-specific IgE to predict the outcome of oral food challenges. Eighty-eight percent of the children suffered from atopic dermatitis. Challenges, DBPCFC in older children and open oral challenges in children below 1 year of age, were performed with the same allergens. Of the 992 challenges performed 45% were assessed as positive, but only 3% of the placebo challenges. Using a logistic regression model (proposed by Sampson HA, 2001) a 95% positive prediction of positive oral food challenge was obtained at a allergen-specific IgE level to egg at 12.6 kU_A/L and 99% positive prediction at 59.2 kU_A/L. Only a 90% positive prediction of positive challenge to milk could be calculated for allergen-specific IgE at a concentration of 88.8 kU_A/L. For wheat and soy the predictive probabilities did not exceed 61% and 37% respectively.

The authors conclude that allergen-specific IgE levels show correlation with the outcome of positive oral food challenges and can be used to avoid oral food challenges in some cases.

SYNOPSIS

- Newborns (n=207) were recruited and followed up to the age of 7 years.
- Follow-up by parental questionnaire, allergen-specific IgE (ImmunoCAP™) and antigen-specific IgG (radioimmunoprecipitation) to cat, cat allergen and endotoxin in dust samples and bronchial histamine challenges (BHR).
- Cat allergen exposure during the first 2 years of life correlated with IgE and IgG antibody responses to cat at the age of 5 and 7 years.
- Homes of cat owners were not found to have higher endotoxin levels in carpet dust.
- Allergen-specific IgE to cat was clearly associated with wheeze ever, current wheeze and BHR at the age of 7 years.
- The risk of wheezing was strongest in those children with both IgE and IgG antibodies to cat (OR 6.2, $P<0.0001$).
- In the highly cat exposed group 50% of the exposed children showed only IgG but no IgE response to cat.
- The highest risk for IgE sensitization was found in the medium exposed group.

Citation: Lau S et al. Longitudinal study on the relationship between cat allergen and endotoxin exposure, sensitization, cat-specific IgG and development of asthma in childhood – report of the German Multicentre Allergy Study (MAS 90). Allergy 2005;60:766-73.

IgG antibodies to cat does not protect children with IgE-mediated sensitization from wheeze

The protection against cat sensitization and development of asthma at school age is controversial. The present study was designed to analyze if the observed discrepancy in tolerance induction could depend on differences in cat allergen exposure in different populations. In a prospective study newborns were recruited and assessed for the association between cat allergen and endotoxin exposure, IgE and IgG sensitization to cat, and the development of asthma up to the age of 7 years.

Cat allergen exposure during the first 2 years of life correlated with IgE and IgG responses to cat at the age of 5 and 7 years. Homes of cat owners were not shown to have higher endotoxin levels in dust samples. In the highly cat exposed group 50% of the exposed children showed only IgG but no IgE response to cat. The highest risk for IgE sensitization was found in the medium exposed group. IgE antibodies to cat was clearly associated with wheeze ever, current wheeze and BHR at the age of 7 years.

The risk of wheezing was strongest in those children with both IgE and IgG antibodies to cat.

The authors conclude that cat-specific IgG antibodies did not protect children with IgE-mediated sensitization from wheeze. The mechanism inducing decreased IgE sensitization towards cat allergens in highly exposed children remains unclear.

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