High IgE antibody level to indoor allergens indicates higher allergen exposure as well as higher risk for severe asthma in inner-city adolescents

The difference in severity of asthma in inner-city children in US has been associated with exposure to indoor allergens. According to the authors this relationship is poorly understood since sensitization has previously been assessed as a dichotomous variable and not to the serum concentration of allergen-specific IgE. The aim of this study was to measure the concentration of IgE antibodies to indoor allergens (cat, mouse, mite, cockroach) among inner-city adolescents with asthma and to relate it to corresponding allergen concentration in bedroom dust, different clinical biomarkers (eosinophils, ENO, FEV1/FVC) and clinical outcome (exacerbation, hospitalization).

A certain correlation was found (r=0.190.38), however highly significant (p<0.0001), between allergen-specific serum IgE and the corresponding allergen in analyzed dust except for cat. Higher allergen-specific IgE was also associated to exhaled nitric oxide and blood eosinophils. This was shown for all tested allergens and the sum of the IgE concentrations for the allergens. A similar effect was also shown in relation to lower lung function and clinical outcome but did not reach significance for all allergens. No such associations could be shown between allergen exposure and the different clinical biomarkers or clinical outcome.

The authors suggest that higher allergen-specific IgE levels may indicate both higher allergen exposure and a greater degree of sensitization, which in turn may result in greater asthma severity.

Food allergy could be an under-recognized risk factor for severe asthma

According to the authors, this is the first objective serologic measurement of food sensitivity in a representative sample of the US population. The aim was to estimate the prevalence of clinical food allergy and association to other atopic diseases.

IgE antibodies to 4 food allergens (milk, egg white, peanut and shrimp) were analyzed in a large representative population for US. Three food allergy risk groups (unlikely, possible, likely) were based on previous studies where the predictive values had been defined at certain food-specific IgE antibody concentrations. The highest prevalence of IgE sensitization was shown in preschool children (28.1%) and decreased with age to 13.0% in adult above 60 years of age. Sensitization level to milk and egg was highest in preschool children, whereas sensitization to peanut was highest in older children to young adults. The estimated prevalence of clinical food allergy based on the three risk groups was highest in preschool children (4.2%) and decreased to 1.3% in adults above 60 years of age. The prevalence of food sensitization was higher in patients with doctor-diagnosed asthma. The OR for an emergency department visit in the previous year was highest (OR, 6.9) for patients with likely food allergy.

The authors conclude that based on these serologic data of selected food allergens the prevalence of estimated clinical food allergy is 2.5% in US and could be an under-recognized risk factor for severe asthma.

High IgE level to egg white has very high specificity, but low sensitivity to clinical allergy. No increased diagnostic efficiency from IgG1/IgG4 abs

It is well established that high concentration of serum IgE to egg white is associated with a positive outcome of oral food challenge. However, there is a need for other parameters as well since a number of egg-allergic patients do not have high IgE levels to egg white. It has recently been shown in some immunotherapy studies that tolerance development was associated with an increase in serum IgG4 concentration. The aim of the present study was to investigate if egg white-specific IgG4 was associated with the natural tolerance development in children with egg allergy and could be used as a biomarker for this.

Children with suspected egg allergy were analyzed for IgE, IgG and IgG4 antibodies to egg white. Children with a positive food challenge test had significantly (p<0.0001) higher concentration of serum IgE to egg white than sensitized children with negative challenge test. All children with a serum IgE to egg above 12 kU/l had a positive challenge test. Despite the high specificity the sensitivity was low since most egg-allergic patients had values below this cut off. There was no difference in egg white-specific IgG or IgG4 between egg sensitized patients with positive or negative challenge test.

The authors conclude that the study confirm the results of others that high egg white-specific IgE concentration has a very high specificity to clinical egg allergy. However, in this study IgG4 antibodies don’t add any diagnostic value as a biomarker for natural tolerance.

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