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CAPture

A Selection of Recent Allergy Papers

SYNOPSIS

- Infants (n=143, ≤ 6 months, mean age 4.4 months) with atopic dermatitis were recruited.
- Infants were divided into breast-feeding (n=65), mixed feeding (n=62) and cow's milk-based formula feeding (n=16).
- There was no significant difference between the groups with respect to age, clinical score or family allergy history.
- Total serum IgE and allergen-specific IgE antibodies to egg white, cow's milk and soy protein were measured with ImmunoCAP® (Phadia AB, Uppsala, Sweden).
- Food-specific IgE antibodies < 0.7 kU_A/l were considered as sensitization.
- IgE antibodies > 2 kU_A/l for egg white and > 5 kU_A/l for cow's milk were used as diagnostic markers for clinical food allergy based on Sampson *et al.* (J Allergy Clin Immunol 2001;107:891).
- IgE antibody levels to egg white, but not to cow's milk or soy protein, were significantly (p=0.002) higher (8.43 kU_A/l *vs.* 0.09 kU_A/l) in breastfed infants than in formula fed.

Citation: Han Y et al. High sensitization rate to food allergens in breastfed infants with atopic dermatitis. Ann Allergy Asthma Immunol 2009;103;332-6.

High sensitization rate to egg white in breast-fed infants with atopic dermatitis compared to formula fed infants

The preventing effect of breast-feeding on development of allergy remains controversial. The authors point out some recent publications indicating that breast-feeding does not always prevent the development of atopic dermatitis. The aim of the present study was to investigate if the feeding type (breast *vs.* formula) effects food allergen sensitization and prevalence of clinical food allergy in infants with atopic dermatitis.

Sensitization was defined as allergen-specific IgE above 0.7 kU_A/l. Concentration of allergen-specific IgE was used as a clinical surrogate marker for clinical allergy to egg white (> 2 kU_A/l) and cow's milk (> 5 kU_A/l). Breastfed infants had a significant higher level of total serum IgE (p=0.004) and higher prevalence of allergen sensitization to egg white (40% *vs.* 6.25%; p=0.01), but not to cow's milk and soy proteins. In the breastfed population, 36.9% (p=0.06) of the infants had egg-specific IgE above 2 kU_A/l indicating clinical allergy, whereas none of the formula fed children had that level of sensitization.

The authors conclude that breastfeeding might not always be beneficial in allergy prevention in high-risk infants.

SYNOPSIS

- Cat allergic patients with rhinitis/asthma were recruited and treated with Xolair® (anti-IgE) according to the manufacturer's recommendation.
- Cat-specific IgE antibodies and total IgE were measured in serum by ImmunoCAP®.
- Patients with the lowest third of the ratio allergen-specific IgE to total IgE (low fraction group, n=28) were compared to those of the upper third (high fraction group, n=31).
- CD-63 up-regulation of basophils (flow cytometry) was used as a surrogate marker for *in vivo* provocation test.
- Basophil reactivity decreased significantly (p<0.001) in both treatment groups but not in those treated with placebo.
- None in the high fraction group turned negative in basophil reactivity after treatment compared to 72% (13/18) in the low fraction group.
- Patients with comparable basophil reactivity before treatment but low specific IgE fraction turned negative after treatment, but none from the high fraction group.

Citation: Johansson SGO et al. The size of the disease relevant IgE antibody fraction in relation to total-IgE predicts the efficacy of anti-IgE (Xolair®) treatment. Allergy 2009;64;1472-7.

A ratio of allergen-specific IgE to total IgE above 3-4% should be considered in calculating the dose of anti-IgE (Xolair®)

The recommended dose in anti-IgE treatment (Xolair®) is based on total serum IgE and body weight. The authors' hypothesis in this study was that the serum concentration of the allergen-specific IgE antibody to total serum IgE (IgE antibody fraction) should also be considered in calculating the therapeutic dose. This was based on an earlier study where they showed that patients with the lowest total IgE had the largest allergen-specific IgE antibody fraction. They speculated that those patients would still have allergen-specific IgE in serum after using present treatment recommendation.

In this study, they have compared the effect of recommended treatment on cat-sensitized patients with low and high serum fraction of cat-specific IgE antibodies using basophil activation as a surrogate clinical marker. In the low fraction population 72% (13/18) of the patients turned negative in the basophil activation test compared to none in the high fraction population. However, both populations decreased significantly in basophil reactivity compared to placebo, but significantly more in the low fraction population.

The authors conclude that a higher dose of anti-IgE must be considered if the allergen-specific IgE fraction is above 3-4% of total IgE. By this they point out the importance to measure allergen-specific IgE as well as total IgE in anti-IgE treatment and the biological relevance of these ratios.

SYNOPSIS

- Consecutive patients referred for systemic reactions (incl. anaphylaxis) to foods (n=51) or drugs (n=86) were recruited.
- The clinical severity was graded to grade III-IV according to the scoring by Mueller (J Asthma Re 1966;3:331) for *hymenoptera* reactions.
- Serum tryptase (cut-off 11.4 ng/ml) was measured (ImmunoCAP®) 2 weeks after last reaction and verified after two months.
- Bone marrow biopsy was evaluated with histology/cytology, flow cytometry (CD25 and CD2) and KIT mutation (PCR assay).
- Increased serum tryptase was detected in 6.6% (9/137) in patients with severe systemic reaction compared to 13.9 % in the reference *hymenoptera* allergic population.
- Only 14.2% (1/7) of patients with system reaction to drugs/food and increased serum tryptase had a clonal mast disorder compared to 80% in the *hymenoptera* allergic reference population.

Citation: Bonadonna P et al. How much specific is the association between hymenoptera venom allergy and mastocytosis? Allergy 2009;64:1379-82.

IgE-mediated anaphylaxis to *hymenoptera* venoms, but not to foods or drugs, shows a high association to clonal mast cell disorders revealed by tryptase measurement

The authors have in a recent publication shown a high prevalence of clonal mast cell disorders in patients with systemic reactions to *hymenoptera* stings. The study was based on selection and examination of patients with persistent increased serum tryptase levels. The aim of this study was to investigate if patients with anaphylaxis, of similar or higher clinical severity to other allergens (foods or drugs), and persistent increased serum tryptase revealed a similar high prevalence of clonal mast cell disorders.

Out of 137 patients with severe systemic reaction to drugs or food 6.6% (9/137) had increased serum tryptase above 11.4 ng/ml. Only two of seven patients who underwent bone marrow biopsy were diagnosed with mastocytosis. This gives an estimated least prevalence of clonal mast cell disorders of 1.9% compared to 11.1% in patients with anaphylaxis to *hymenoptera* venoms. The difference could not be explained by difference in the clinical severity of the systemic reactions.

The authors conclude that there is some specificity in the association between the mast cell disorder and *hymenoptera* sting reactions that deserve more mechanistic investigation.

Phadia