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Issue 3

CAPture

A Commentary on Recent Allergy Papers

SYNOPSIS

- Sera were obtained from 79 AEDS patients with negative IgE antibody test to *M. sympodialis* (m70 ImmunoCAP™).
- Six other species (*M. globosa, M. restricta, M. slooffiae, M. furfur, M. obtusa* and *M. pachydermatis*) were separately coupled to a solid phase (ImmunoCAP™).
- No non-specific binding of IgE was found.
- Sixteen (20%) patients had IgE to other *Malassezia* species than m70 *M. sympodialis*.
- *M. globosa* showed most (11/16, 69%) positive reactions and *M. slooffiae* was least reactive (3/16, 19%).
- Elevated total serum IgE was found in 75% (12/16) and positive Phadiatop® test in 88% (14/16) of the patients.
- There was a significant correlation (r=0.51-0.67, P<0.001) between total serum IgE and allergen-specific serum IgE to all seven *Malassezia* species.
- Four patients had IgE antibodies to only one *Malassezia* species.

Citation: Zargari A et al. IgE-reactivity to seven Malassezia species. Allergy 2003 Apr;58(1):90-5.

The use of only one *Malassezia* species is not sufficient to detect all patients with IgE antibodies to *Malassezia* in AEDS (atopic eczema/dermatitis syndrome)

Yeast species of the *Malassezia* genus are supposed to play an important role in the pathogenesis of AEDS. The aim of the study was to investigate the presence of IgE antibodies to different *Malassezia* species in AEDS to optimize detection of associated IgE antibodies.

Seventy-nine AEDS patients, negative to *M. sympodialis*, were tested for IgE antibodies to six other *Malassezia spp.* (ImmunoCAP™, Pharmacia Diagnostics AB). In this patient population, 20% (16/79) were found to have IgE antibodies to one or more of the tested *Malassezia* species and most frequently (69%, 11/16) to *M. globosa*.

The authors also observed that four patients had IgE antibodies to only one species, indicating the presence of more species-specific epitopes.

In conclusion the authors suggest a mixture of *M. sympodialis*, *M. globosa*, and *M. restricts* to provide a broad spectrum of allergens in the detection of *Malassezia*-specific IgE antibodies in patients with AEDS.

SYNOPSIS

- Ten sera of patients, allergic to tomato and with IgE reactivity to defined glycopeptides in a glycan ELISA were studied (CCD-positives).
- Two sera of patients allergic to tomato, but without reactivity in the glycan ELISA served as controls (CCD-negatives).
- Stripping of non-specific IgE from normal basophils and passive resensitization with IgE antibodies from the selected sera were performed according to Pruzansky *et al*.
- Histamine release from sensitized basophils were measured after exposure with natural or recombinant tomato β-fructofuranosidase, native or deglycosylated horseradish peroxidase, and a defined glycopeptide coupled to BSA.
- All sera could sensitize basophils for histamine release when exposed to tomato extract.
- Four of the CCD-positive sera sensitized basophils to release histamine when exposed to glycoproteins, but not by nonglycosylated or monovalent controls.

Citation: Foetisch K et al. Biological activity of IgE specific for cross-reactive carbohydrate determinants. J Allergy Clin Immunol 2003 Apr;111(4):889-96.

IgE antibodies specific for cross-reactive carbohydrate determinants (CCD-specific IgE) can be biologically active and mediate histamine release *in vitro*

The clinical relevance of IgE antibodies specific to cross-reactive carbohydrate determinants (CCDs) is controversial. Until now, according to the authors, no convincing experiments have been performed to test the biological significance of allergens that carry multiple carbohydrate epitopes.

In this study basophils of normal donors were sensitized with IgE antibodies from CCD-positive or CCD-negative sera from patients with tomato allergy. Tomato extract induced histamine release in basophils sensitized with all sera. Basophils sensitized with 4 of the 10 CCD-positive sera released histamine when exposed to all tested glycoproteins containing multiple carbohydrate epitopes, but not to the same allergens without those epitopes or to monovalent controls. The authors draw the conclusion that approximately one third of CCD-positive sera from patients with tomato allergy have biological relevant CCD-specific IgE antibodies. Therefore they suggest that the claim that CCD-specific IgE is clinically irrelevant has to be reconsidered.

SYNOPSIS

- Eighty-four patients (12 to 60 years of age) with peanut allergy symptoms were included.
- A double-blind, randomized, dose-raging trial with TNX-901, a humanized monoclonal antibody that binds to IgE and thereby inhibits the binding of IgE to mast cells and basophils, were performed.
- Patients received 150 mg, 300 mg, or 450 mg of TNX-901 subcutaneously every four weeks for four doses.
- A strong trend (P<0.001) in increase of mean threshold of peanut sensitivity was obtained with increasing doses.
- Compared to placebo, only the highest treatment dose reached statistical significance (P<0.001).
- Free serum IgE level decreased only in the treatment groups throughout the dosing period, and the reduction was still 71.6% up to 88.7% at the final evaluation eight weeks after the last dose.

Citation: Leung DY et al. Effect of Anti-IgE Therapy in Patients with Peanut Allergy. N Engl J Med 2003 Mar 13;348(11):986-93.

Decrease in serum IgE by anti-IgE therapy increases the threshold of clinical sensitivity to peanut in patients with severe immediate hypersensitivity reactions

Peanut-induced anaphylaxis cause 50 to 100 deaths per year in United States. Recently a new therapeutic strategy has been introduced where humanized monoclonal antibodies are used to block IgE binding to mast cells and basophils.

In this study a double-blind, randomized, dose-ranging trial was performed in 84 patients with immediate hypersensitivity to peanut confirmed by double-blind, placebo-controlled oral food challenge. The patients received injections of anti-IgE in different doses every four weeks for four times.

The free serum IgE level decreased 88.7% in the group treated with the highest concentration of anti-IgE. This treatment was associated with a statistical significant (P<0.001) increase in the mean threshold of sensitivity to peanut at the final oral food challenge within two to four weeks after the fourth dose. The authors calculated that the treatment increased the threshold of the clinical sensitivity to peanuts from a level equal to approximately half a peanut to a level equal to almost nine peanuts. They believe that this effect should translate into protection against most unintended ingestion of peanuts. Furthermore the study clearly shows the relation between the IgE concentration and the clinical expression.

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