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CAPture

A Commentary on Recent Allergy Papers

SYNOPSIS

- Consecutive adult patients (n=45, mean age = 40) with skin test verified clinical (grade III-IV Mueller) hymenoptera allergy were studied.
- IgE antibodies to honeybee (*Apis*), yellow-jacket (*Vespula*), European paper wasp (*Polistes*) and European hornet (*Vespa*) were assayed by ImmunoCAP® (Phadia AB, Uppsala, Sweden)
- ImmunoCAP-inhibition was performed by pre-incubating sera with increasing dilution of venom for 12 h at 4 °C and then assayed for allergen-specific IgE antibodies.
- All sera were positive to yellow-jacket (12.03+5.7 kU_A/L) and European paper wasp (10.7+2.0 kU_A/L), but the concentrations were not significant different.
- The *Polistes* venom effectively (> 75%) bound *Vespula*-specific IgE in 56% (25/45) of the patients and *Vespula* venom bound effectively *Polistes*-specific IgE in 13% (6/45) of the patients.
- 69% of the population should only receive venom from one species when treated with immunotherapy and both species has to be tested with ImmunoCAP-inhibition to disclose this.

Citation: Caruso B et al. Evaluation of the IgE cross-reactions among vespid venoms. A possible approach for the choice of immunotherapy. Allergy 2007; 62:561-4.

In hymenoptera allergic patients with positive tests to several venoms species, the ImmunoCAP®-inhibition assay can be used to identify patients who only need immunotherapy with one venom species

According to the authors, multiple venom extracts are often prescribed in immunotherapy of hymenoptera allergic patients showing positive tests to more than one species. This may result in increased costs, increased risk of adverse events and in sensitization to new allergens. The aim was to investigate if the positive reaction to both yellow-jacket (*Vespula*) and European paper wasp (*Polistes*) in a population of patients with clinical hymenoptera allergy was due to cross-reaction or not. In the study they used the ImmunoCAP®-inhibition assay technique, where the patient sera are pre-incubated with homologous or heterologous venoms before testing for venom-specific IgE antibodies.

There was no significant difference in the level of IgE antibodies to *Vespula* venom and *Polistes* venom before the pre-incubation step. Preincubation with homologous venom showed more than 90% decrease in venom-specific IgE for both species. In the heterologous ImmunoCAP-inhibition assay it was shown that *Polistes* venom effectively (> 75%) bound *Vespula*-specific IgE in 56% of the patients and *Vespula* venom bound effectively *Polistes*-specific IgE in 13%.

In conclusion the authors state that 69% of the population should only receive venom from one species when treated with immunotherapy and that both species has to be tested with ImmunoCAP-inhibition to disclose this.

SYNOPSIS

- Allergy high-risk children were recruited from an ongoing prospective cohort.
- Allergen-specific IgE was assayed by ImmunoCAP® at birth and at 6, 12, and 24 months of age. Detection limit was extended to 0.1 kU_A/L by including a zero control
- Mononuclear cells were isolated from cord blood and peripheral blood and then cryopreserved.
- Cytokine levels (time-resolved fluorescence) and cytokine-specific mRNA (PCR-technique) were assayed in the cell culture after 48 hours exposure to allergen.
- A transient low production of IgE antibodies, in a few children above 0.35 kU_A/L (especially for peanut), was noted and peaked at 6 or 12 months and then returned to baseline in the population with no sensitization at 2 years of age.
- The scientific basis for existing recommendation for allergen avoidance by high-risk women during pregnancy was questioned.

Citation: Rowe J et al. Prenatal versus postnatal sensitization to environmental allergens in a high-risk birth cohort. J Allergy Clin Immunol 2007;119:1164-73.

Immunological key events associated with development of a stable atopic constitution occurs postnatally within one years of age as opposed to *in utero*

Pregnant atopic women have been recommended to avoid food allergen to prevent food allergy in the child. A recent expert review has questioned the clinical evidence for this recommendation. The aim of the present paper was to study the biological rational for this recommendation. T-cell immunity and associated IgE production were analyzed in cord blood and in peripheral blood from high-risk children. The population was divided into mite-sensitized and non-mite sensitized depending on the outcome at two years of age. Allergen-specific IgE antibodies were determined by the ImmunoCAP® with a limit of detection down to 0.1 kU_A/L.

There was a significant increase and progression of mite-specific IgE from 6 months of age and onward in the mite-sensitized population. However, a transient low production of IgE antibodies was noted and peaked at 6 or 12 months and then returned to baseline in the non-mite sensitized population. Similar results were shown for peanut, cat and grass allergens. Atopy related cytokines (IL-4 and (L-5) in cell cultures from peripheral blood but not from cord blood correlated increasingly with a positive sensitization outcome at 2 years age.

The authors suggest that the key events associated with development of a stable atopic constitution occurs postnatally as opposed to *in utero*.

SYNOPSIS

- Families, adults (n=119) and children (n=137), who intended to buy a dog, a cat or intended to start riding a horse were recruited by newspaper advertisement.
- They were examined by symptom scores and IgE allergen sensitization at baseline and once a year for 5 years.
- The symptom score was based on 5 symptoms scored 0-4 and thus a max score at 20.
- Allergen-specific IgE was assayed by ImmunoCAP® to a mixture of common allergen (Phadiatop®) and to the individual animal allergens.
- The symptom score of the atopic population was 5 to 6.
- There was no change in symptom score in atopic patients over the follow up period even if they were sensitized to their own animal.
- In the atopic population, 26.7% of the children but no adults or non-atopic individuals develop sensitization to their new animal.

Citation: Millqvist E et al. A prospective study of allergy development in 158 children and 128 adults with new extensive exposure to furred animals. Clin Exp Allergy 2007; 37:948-53.

Extensive exposure to furred animals such as cat, dog and horse for five years induced IgE sensitization in atopic children but not in atopic adults and non-atopic children/adults

It is known that both atopic and non-atopic workers exposed to furred laboratory animals have an increased risk to be sensitized to these animals. However, atopic individuals have a higher risk. The aim of this study was to investigate if families who have decided to buy a dog, a cat or start horse riding will be sensitized within a period of five years.

Adults and children were recruited by newspaper advertisements irrespective if they were atopic or not. They were examined by symptom scores and IgE allergen sensitization at baseline and once a year for 5 years. In this recruited population 15% were defined as atopic at baseline and increased to 20% after 5 years.

None of the non-atopic individuals developed sensitization to the new animal allergen except one adult who showed a positive test result at one time-point. This despite 7.3% of non-atopic individuals, mainly children, developed other sensitizations during the follow up period. In the atopic population, 26.7% of the children but no adults develop sensitization to their new animal.

In conclusion, in this population the extensive exposure to furred animals such as cat, dog and horse did not induce an IgE sensitization in non-atopic individuals or atopic adults in contrast what has been shown with respect to exposure to laboratory animals.

Phadia