

SYNOPSIS

- Sixty-four adult asthmatic patients (mean age 28.7 years, range 14-55 years) were studied.
- According to GINA guidelines, 28.1% had intermittent, 53.1% had mild persistent and 18.8% had moderate persistent asthma.
- Forty-three (67.2%) were cat owners, 9.4% were occasional exposed and 23.4% had no contact to cats.
- Sensitization to cat was quantified by ImmunoCAP® Specific IgE (Phadia AB, Uppsala, Sweden), skin prick test (SPT) and intradermal skin test (IDST).
- Bronchial allergen provocation test with cat allergen was performed according to Chai *et al.* *J Allergy Clin Immunol* 1975;56:323.
- 73.4% of the patients thought their symptoms were not related to cat.
- 73.4% had other concomitant allergies, mainly pollen allergy.
- 78% of patients were sensitized to cat (mean = 4 kU_A/l).
- Patients living with cats had significantly ($p < 0.015$) higher cat IgE antibody level than those living without (13.4 kU_A/l vs. 4.49 kU_A/l).

Citation: Fernández C *et al.* Analysis of skin testing and serum-specific immunoglobulin E to predict airway reactivity to cat allergens. *Clin Exp Allergy* 2007;37:391-9.

SYNOPSIS

- One children cohort from northern Sweden (n=3431) and one from New Zealand (n=1155) were included.
- ISAAC-based questionnaire was used for parental assessment of wheezing.
- Serum sample were collected at age 10-12 years.
- ImmunoCAP® was used to analyze total IgE and IgE antibodies to mite, cat, dog and locally relevant allergens.
- Total IgE was higher in New Zealand than in Sweden (218 kU/l vs. 65.2 kU/l; $p < 0.001$).
- IgE antibodies to mite was related to high total IgE (> 200 kU/l, $r = 0.47$, $p < 0.001$) in New Zealand.
- Sensitization to cat did not contribute to high total IgE in either country.

Citation: Erwin EA *et al.* Contribution of dust mite and cat specific IgE to total IgE: Relevance to asthma prevalence. *J Allergy Clin Immunol* 2007;119:359-65.

SYNOPSIS

- Children and their mothers were recruited from schools in Finnish (mean age = 11.3 years, range = 6-16 years) and Russian Karelia (mean age = 11.5 years, range 6-16).
- An extended phase I of the ISAAC questionnaire was used.
- In the study, 334 children and 344 mothers from Finland and 448 children and 439 mothers from Russia were recruited for IgE antibody measurements.
- Serum IgE antibodies to common airborne allergens (birch, timothy, mugwort, horse, cat, dog, mites and *Cladosporium*) and food allergens (milk, egg, cod, soy, wheat, peanut) were tested with ImmunoCAP®.
- Children with one or more positive IgE antibody tests were defined as atopic.

Citation: Pekkarinen PT *et al.* The disparity in the association of asthma, rhinitis, and eczema with allergen-specific IgE between Finnish and Russian Karelia. *Allergy* 2007;62:281-7.

Quantitative analyzes of cat-specific serum IgE by ImmunoCAP® is a good diagnostic tool, and more efficient than skin testing, to predict a positive bronchial provocation test in patients with unclear clinical history

The authors refer to earlier publications showing that accuracy of clinical history for predicting atopic sensitization to airborne allergens is modest. The aim of this study was to analyze the diagnostic efficiency of serum IgE antibodies and skin tests to cat allergens to predict airway reactivity to cat as measured by bronchial allergen provocation.

Sixty-four adult asthmatic patients were studied. No significant difference could be shown between patients with positive and negative bronchial provocation test with respect to cat exposure, cat related symptoms or asthma severity.

In ROC-analysis the area under the curve was 0.85 for cat-specific serum IgE compared to 0.54 and 0.74 for SPT and IDST respectively. This indicates that quantitative analyzes of IgE antibodies to cat by ImmunoCAP is a good diagnostic tool to predict a positive bronchial provocation test in this population. A positive predictive value of 100% and negative predictive value of 72% were obtained at a cat-specific IgE value of 13 kU_A/l. In a risk-assessment analysis the estimated probability of having a positive bronchial provocation test was 50% at 6.28 kU_A/l and it increased to 93% at 17 kU_A/l to reach a final estimate of 99.99% at 30 kU_A/l.

The authors conclude that quantification of specific-serum IgE antibodies can be used to improve the diagnostic accuracy of asthmatic patients sensitized to cat allergens and with an unclear clinical history.

The high prevalence of childhood wheezing in New Zealand is associated to high levels of allergen-specific IgE antibodies (> 50 kU_A/l) to mite contributing significantly to total serum IgE

The aim of this study was to compare total IgE and allergen-specific IgE antibodies among children in Sweden and New Zealand, where both allergen exposure and prevalence of asthma are markedly different.

The prevalence of wheezing the last year was significantly ($p < 0.001$) lower in Sweden (9.4%) than in the New Zealand (21.8%) cohort. Total serum IgE above 200 kU/l was significantly ($p < 0.001$) associated with wheezing in both countries with an OR 2.6 in Sweden and OR 4.3 in New Zealand. There was a significant association between allergen-specific IgE antibody concentration and total serum IgE in both Sweden ($r = 0.57$, $p < 0.001$) and New Zealand ($r = 0.78$, $p < 0.001$). Only 5% of the wheezing children in Sweden had IgE antibodies to mite and in low concentrations, in contrast to New Zealand where 35.7% of the children had high level (> 50 kU_A/l) IgE to mite. In Sweden only 13% of the wheezing children had allergen-specific > 50 kU_A/l to any tested allergen and none of them were quantitatively sufficient to make an important contribution to total IgE above 200 kU/l. When looking at patients with total serum IgE above 200 kU/l, the contribution of more than 10% of the total was only common to mite allergens in New Zealand.

In conclusion the authors propose the hypothesis that allergen-specific IgE antibodies to different allergen such as mites could differently influence both the quantity of total IgE and the prevalence of wheezing in a community.

A substantial proportion of children with wheezing, rhinitis and eczema from Russian Karelia are not atopic in contrast to the same clinical conditions in the Finnish Karelia

The authors refer to earlier studies showing a considerable worldwide variation in the prevalence of asthma, rhinitis and eczema and the association to allergen-specific IgE antibodies. The aim of this study was to analyze serum IgE antibodies in relation to atopic symptoms in children and their mothers in Finnish and Russian Karelia. These populations have a similar genetic background and live in an area with similar geo-climatic and vegetative conditions, but have lifestyle and living conditions that differ fundamentally.

The prevalence of atopic children was significantly ($p < 0.001$) higher in the Finnish area (48.8%) compared to the Russian area (19.7%). Children in Finland, but not in Russia, had a much higher atopy rate than their mothers (25.3%). The sensitization rate to all tested allergens except mite, were significantly higher among Finnish children. In the Russian area the prevalence of atopic diseases was much lower than in the Finnish area; hay fever 1.5% vs. 16%, asthma 2% vs. 9% and atopic eczema 7% vs. 38%. The proportion of atopic children was significantly ($p < 0.001$) higher in Finnish children with wheezing, rhinitis and eczema.

The authors conclude that asthma, rhinitis and eczema are rare in Russian Karelia and the prevalence of IgE sensitization to common allergens is low.