The diagnosis of hypersensitivity in children with atopic dermatitis and assessment of its relevance


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**Introduction**

Atopy patch test (APT), skin prick test (SPT) and specific IgE measurement represent the methods used for examination of hypersensitivity in atopic disorders such as atopic dermatitis (AD). However, the clinical relevance of the obtained results can vary and it may be difficult to give the appropriate recommendation on allergen avoidance to the patient. Therefore, we started a study of AD children to investigate the clinical relevance of various hypersensitivity tests.

**Methods**

A group of 11 children with AD (7 boys, 4 girls; median age 4 years) was tested for allergy to four common aeroallergens (grass and birch pollen, Der. pteronyssinus, Der. farinae) using APT (Stallergenes), SPT (Stallergenes) and specific IgE (Immulite, Siemens) measurement. The clinical relevance of these tests was evaluated on the basis of:

1/ Personal history – subjects or their parents completed the questionnaire on eczema worsening after exposure to the tested allergens (answer YES/NOT);
2/ SCORAD changes – a clinical score of eczema (SCORAD, SCORing Atopic Dermatitis) was evaluated every month for the entire study period of 12 months. The SCORAD change of ≥ 10 points was considered as positive.
3/ AITD (Anti-Inflammatory Treatment Days) changes – for a study period (12 months), the number of days with a need of topical anti-inflammatory treatment (corticosteroids, calcineurin inhibitors) was recorded. % of AITD ≥ 10% was considered as positive.

By the enrollment, all subjects were also randomized into the active and the control group. Patients of the active group were equipped with the allergen-impermeable covers for mattresses, pillows and quilts (ProtecSom) and with the information on mite avoidance regimen management. The active group applied avoidance regimen in a period (after the pollen season (September to February) for six weeks; SCORAD and AITD were assessed three times in this period (initially and then two times after avoidance regimen application (after 3 and 6 weeks). The patients of control group did not perform any mite avoidance measures at that time. Then, the crossing was done: mite avoidance measures were applied to subjects from the control group and, inversely, the measures discontinued in subjects from formerly active group. SCORAD and AITD were assessed the same way like before in both groups. The effectiveness of mite avoidance regimen was monitored by assessment of mite allergens concentrations (Der p 1, Der f 1)in subjects’ beds: Firstly before mite avoidance regimen application; secondly after 6 weeks of avoidance application; thirdly 6 weeks after avoidance discontinuation. The procedure of the allergen samples taking and dust extraction was in accordance to van Strien’s study (1), the method of allergen concentration evaluation (ELISA) was in accordance to the recommendations of the manufacturer (Indoor Biotechnologies).

**Results**

4 patients completed the whole observational period of 1 year and 7 patients completed 6 weeks of mite avoidance regimen. APT, SPT and specific IgE measurement were performed in all subjects. APT was positive in 9 patients and the most common positive allergens were house dust mites (n = 7). At least one test of immediate-type hypersensitivity (SPT, specific IgE) was positive in 5 patients, the most frequently to grass pollen (n = 4) (see Tab.1). The differences of AITD were not significant (see Tab.2). Mite concentrations decreased significantly in all subjects after avoidance regimen implementation (see Tab.3). SCORAD values were significantly different in some patients at the time of stronger exposure to specific allergens.

**Discussion**

The most frequent sensitization to house dust mites in AD patients is in accordance with previous findings about close relationship of AD and mite allergy. The use of APT increases our chance to detect possible allergy in AD patients. (2). The assessment of clinical relevance of hypersensitivity to a distinct allergen on the basis of personal history is unreliable and, in case of reactivity to house dust mites, rather complicated. The assessment of the relevance on the basis of the need for topical anti-inflammatory treatment seems to be useless. Maybe, it is strongly influenced by parents’ acceptance of the topical treatment of AD (possible corticophobia). By contrast, the assessment on the basis of SCORAD changes looks more promising. Stronger impact on SCORAD values was apparent in patients allergic to house dust mites both in APT and SPT/specific IgE.

**Conclusions**

> Our results are only preliminary; to obtain more powerful data, it is necessary to continue in the study and enlarge the study group.
> SCORAD changes depending on allergen exposure seem to be a good tool of allergen clinical relevance assessment in AD patients, especially in house dust mite allergy.
> The changes in need of topical anti-inflammatory treatment do not seem to be suitable for this purpose.

**References:**


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