Baseline response to stimulation with bee venom at different concentrations during the course of venom immunotherapy

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Background: Several laboratory methods are focused on the assessment of venom immunotherapy (VIT) efficacy and safety in patients with hymenoptera venom allergy, basophil activation test (BAT) being one of them. We tried to appoint an optimal allergen concentration for basophil stimulation in this test.

Methods:
- BAT has been performed using flow cytometry (BD FastImmune) for detection HLA-DR negative cells expressing CD63 and CD123.
- Allergen (honey bee venom; HAL-Allergy G.m.b.H.) for basophil stimulation was used at two different concentrations: 1.0 and 0.1 μg/ml.
- Levels of serum specific IgE against honey bee venom (sIgE) have been assessed (UniCAP, Phadia) and compared to the changes of percentage of activated basophils after exposure to allergen.

Patients:
- 24 patients with a history of honey bee venom anaphylaxis have been undergoing VIT (Allergo SQ; ALK-Abelô)
- VIT lasted one year in the group of 24 patients and two years in 19 patients of this group in the time of last examination.
- Evaluation of both BAT and sIgE was performed before the beginning of VIT, after the 1st and 2nd year of VIT.

Statistical evaluation:
The Friedman and Kendall coefficient of concordance, signed test and Pearson correlation coefficient were used for the statistical evaluation of the changes.

RESULTS: sIgE
We found a significant decrease in the levels of specific IgE against honey bee venom after the 1st year of VIT (24 patients), but insignificant changes after the 2nd year (19 patients).

Correlation sIgE/B1/B2:
- Changes in the levels of specific IgE did not correlate to changes in basophil response to both allergen concentrations at any time during VIT (19 patients).

RESULTS: BAT (B1); c = 1.0 μg/ml
The percentage of activated basophils after stimulation with bee venom at a concentration of 1.0 μg/ml (B1) after the 1st year of VIT also decreases significantly (24 patients; p < 0.03), but changes after the 2nd year were insignificant (19 patients).

BAT (B2); c = 0.1 μg/ml
We observed a significant decrease in the percentage of activated basophils after exposure to bee venom at a concentration of 0.1 μg/ml (B2) after the 1st year of VIT (24 patients; p < 0.002) and after the 2nd year (19 patients; p < 0.001).

Correlation B1/B2:
Changes in basophil response after stimulation with bee venom at concentrations of 1.0 μg/ml and 0.1 μg/ml during the 1st and 2nd years of VIT significantly correlate (cor. coeff. = 0.53; p < 0.01) to each other.

CONCLUSION:
- Asuming that changes of the basophil response to allergen during VIT may reflect the effectiveness of VIT, the concentration of 0.1 μg/ml of venom appears to be more suitable for this purpose.
- Changes of sIgE levels during VIT seem not to be a suitable parameter for monitoring of VIT efficacy regarding its dynamics during VIT.

References:

Supported by grant VZ MSM0021620812