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Short-term preseasonal pollen allergoid immunotherapy in the causal therapy of allergic asthma in children, a prospective, randomized controlled trial

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Background: Allergen-Specific Immunotherapy (SIT) is recommended for the causal therapy of allergic diseases. Little is known about the effects of short-term SIT with allergoids on allergic asthma in children.

Methods: We recruited strictly 87 children with only pollen induced seasonal asthma between the age of 6-14 yrs. and divided the patients randomly in 2 groups. Group A (n=47) was treated yearly preseasonal with 7 s.c. injections of a depot-allergoid extract for 3 years plus standard medications. Group B (n=40) was treated only with standard medications. Igs, allergen-specific IgE & IgG, IL-4 and IFN-gamma in serum were measured and titrated prick tests and spirometry were performed before and after SIT and during pollen season for 3 years. All patients were examined before and after SIT, during pollen season and at two extraseasonal visits. We assessed clinically all patients 3 years after discontinuation of SIT during pollen season and performed spirometry.

Results: It was possible to evaluate 42 patients in group A and 32 patients in group B. In group A clinical symptoms and drug requirement decreased significantly in the first year, compared to group B ($p < 0.01$). In the third year all patients in group A were symptom free and did not use any medications for asthma, whereas the clinical symptoms and medication intake in group B had increased, compared to the base line. Spirometry in group A showed normal findings before and after challenge test in the third year of SIT and until three years after discontinuation of SIT, whereas in group B we found pathological findings. Parallel to the clinical improvement we measured in group A an elevation of IFN-gamma in serum ($p < 0.01$), an increase of sIgG4/sIgE ($p < 0.01$) and a decrease of skin reaction on pollens by prick tests ($p < 0.01$), compared to group B. We observed new sensitization in one patient of group A vs. 7 patients of group B three yrs. after SIT. Three yrs after discontinuation of SIT 2 patients of group A vs. 11 patients of group B showed new sensitization. SIT with depot-allergoid extract was well tolerated and did not show any notable side events.

Conclusion: In our study we could show the causal effect of short-term preseasonal SIT with depot-allergoid extract on asthmatic children with pollen allergy. The effect lasted until the end of our study over 3 yrs. after discontinuation of SIT. The occurrence of new sensitization could be prevented.

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