Is allergen immunotherapy effective in asthma: a meta-analysis of randomized controlled trials
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Authors' objectives
To assess the efficacy of allergen immunotherapy in asthma.

Searching
MEDLINE was searched from 1966 to 1990 using the keywords 'allergen immunotherapy', 'desensitization' and 'asthma'. Dissertation Abstracts was also searched, and reference lists of review papers on allergen immunotherapy and text books were examined. Only trials published in the English language were included.

Study selection
Study designs of evaluations included in the review
Double-blind, randomised, placebo-controlled trials were included.

Specific interventions included in the review
Allergen immunotherapy.

Participants included in the review
Asthma patients were included.

Outcomes assessed in the review
The outcomes assessed were symptomatic improvements, and reduction in medication and bronchial hyper-reactivity.

How were decisions on the relevance of primary studies made?
The authors do not state how the papers were selected for the review, or how many of the authors performed the selection.

Assessment of study quality
The authors do not state that they assessed validity.

Data extraction
The data were extracted by one reviewer and checked by another.

Methods of synthesis
How were the studies combined?
Overall odds ratio (OR) was estimated by the Mantel-Haenszel method. The effect size was calculated for continuous outcomes as the difference in mean scores between the treatment and control groups, divided by the standard deviation for the control group.

How were differences between studies investigated?
The chi-squared statistic was used to test heterogeneity across the individual studies.

Results of the review
Eleven studies involving 426 patients were included.
Immunotherapy for house dust mite:

significant heterogeneity was found across studies with respect to symptomatic benefit (p<0.05).

OR for symptomatic improvement 2.7 (95% confidence interval, CI: 1.7, 4.4);  
OR for reduction in medication 4.2 (95% CI: 2.2, 7.9);  
OR for reduction in bronchial hyper-reactivity 13.7 (95% CI: 3.8, 50).  

Immunotherapy for other allergens:

OR for symptomatic improvement 4.8 (95% CI: 2.3, 10.1);  
OR for reduction in bronchial hyper-reactivity 5.5 (95% CI: 2.8, 10.7).  

Overall effect of immunotherapy:

symptomatic improvement, OR 3.2 (95% CI: 2.2, 4.9), significant heterogeneity (p<0.05); reduction in bronchial hyper-reactivity, OR 6.8 (95% CI: 3.8, 12.0); the mean effect size for any allergen immunotherapy on all continuous outcomes was 0.71 (95% CI: 0.43, 1.00), which corresponded to a mean 7.1% predicted improvement in the forced expiratory volume in 1 second (FEV1) from immunotherapy.

Side-effects of immunotherapy:

systematic reactions, 32% (95% CI: 20%, 44%) of patients receiving immunotherapy as compared with 18% (95% CI: 7%, 29%) of patients receiving placebo.

Authors' conclusions

The results support the view that allergen immunotherapy may be a useful adjunct to therapy in extrinsic (allergic) asthma, provided that a clinically relevant and unavoidable allergen can be identified. The possibility of major adverse effects must be fully discussed with patients.

CRD commentary

Details of patient characteristics were not presented and discussed in the review. The potential reasons for significant heterogeneity were not investigated.

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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.