Review: Measures to control house dust mites are not effective in patients with asthma who are sensitive to mites


Question
Are measures to reduce exposure to dust-mite antigen in the home effective for patients with asthma who are sensitive to mites?

Data sources
Studies were identified by searching the Cochrane Airways Group database, which contains citations from MEDLINE, CINAHL, and EMBASE/Excerpta Medica; hand searching Respiration (1980 to 1996) and Clinical and Experimental Allergy (1980 to 1996); and contacting primary authors.

Study selection
Studies in any language were selected if they were randomised controlled trials that compared chemical or physical measures for controlling mites in the home with no treatment in patients with bronchial asthma. A diagnosis of asthma by a physician and confirmation of sensitisation to mites were required.

Data extraction
2 authors extracted data on subjective well-being, improvement in asthma symptoms, medication to control asthma, number of sick days, number of unscheduled visits to a physician or hospital, FEV1, peak expiratory flow rate (PEFR), provocative concentration of histamine, and results of skin-prick testing.

Main results
22 studies met the inclusion criteria; 1 study had 3 groups and was treated as 2 trials in the meta-analysis (23 trials involving 686 adults and children). Follow-up ranged from 2 weeks to 1 year (mean 19 wk). 13 studies used physical methods to control mites, with 3 reporting a reduction in mite exposure. 6 studies used chemical methods to control mites; none reported a reduction in mite exposure. 4 studies used a combination of methods, and only 3 reported a reduction in mite exposure. 5 studies did not assess mite exposure. No difference between groups existed in the number of patients who improved after intervention (5 studies), asthma symptom improvement (7 studies), PEFR in the morning (10 studies) or evening (6 studies), PC20, or medication use (Table). Heterogeneity existed among trials.

Reduced dust-mite antigen vs no treatment in asthma

<table>
<thead>
<tr>
<th>Outcome (mean follow-up)</th>
<th>Weighted event rates</th>
<th>RRI (95% CI)</th>
<th>NNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients who improved (13 wk)</td>
<td>37% 32%</td>
<td>11% (−20 to 54)</td>
<td>Not significant</td>
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<tr>
<td>Outcomes (mean follow-up)</td>
<td>Standardised mean difference (95% CI)</td>
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<td></td>
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<tr>
<td>Symptom improvement (17 wk)</td>
<td>−0.06 (−0.54 to 0.41)</td>
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<tr>
<td>Peak expiratory flow am (18 wk)</td>
<td>−0.03 (−0.25 to 0.19)</td>
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<tr>
<td>Peak expiratory flow pm (14 wk)</td>
<td>−0.13 (−0.48 to 0.22)</td>
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<tr>
<td>Provocative concentration (PC20)†</td>
<td>0.04 (−0.32 to 0.23)</td>
<td></td>
<td></td>
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<tr>
<td>Use of drugs†</td>
<td>−0.14 (−0.43 to 0.15)</td>
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</table>

*Abbreviations defined in Glossary; RRI, NNT, and CI calculated from data in article; †Follow-up data not reported.

Commentary
This meta-analysis by Gotzsche and colleagues is surprising for 2 reasons: First, the results are contrary to logical reasoning—that reduced exposure to mites in mite-sensitive, asthmatic patients would cause the patients to improve. Second, the results conflict with a recent narrative review by Custovic and colleagues (1), which showed a slight benefit but also included uncontrolled studies.

The evidence from this meta-analysis leads to the conclusion that house dust-mite control measures in the management of asthma are ineffective. This holds true for all outcome measures and for all subgroups (chemical methods, physical methods, and combinations). A more detailed look shows that the studies in which exposure to mites was reduced or not assessed did not produce more positive results than studies in which exposure to mites was not reduced. The ineffectiveness of this intervention is further supported by the consistency of the negative results, with no trend for benefit among subgroups. For clinical practice, it can be concluded that house dust-mite control measures studied so far are ineffective. Possible explanations (i.e., that initial mite exposure is already low in these patients and that compliance with the programme might be suboptimal) do not change the conclusion of ineffectiveness in clinical practice.

Only large, randomised, controlled trials that assess both reduction in mite exposure and all relevant outcome measures can change this conclusion.

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Reference