correlated significantly with previous episodes of wheezing.

Reviewer’s Comments. Although this study was conducted in a general pediatric population, there are 3 messages that are very consistent with others that have focused on inner-city children with diagnosed asthma. First, wheezing is very common; second, allergic sensitization is extremely common, especially considering the age group included in this study; and third, cockroach is the allergen that is most associated with asthma morbidity in inner-city children.

ALAN B. GOLDSOBEL, MD
San Jose, CA

COCKROACH ALLERGEN EXPOSURE AND SENSITIZATION IN SUBURBAN MIDDLE-CLASS CHILDREN WITH ASTHMA


Purpose of the Study. To evaluate the prevalence of cockroach allergen exposure in middle-class suburban environments and its relationship to sensitization.

Study Population. A total of 339 children (6–17 years of age) with physician-diagnosed asthma were recruited from 3 pediatric practices located in suburban and rural counties surrounding Baltimore, Maryland, and from 1 practice located within Baltimore city. The children were required to have currently active asthma, and the families needed to agree to a home visit.

Methods. The families completed a demographic questionnaire, and an environmental technician conducted a house inspection and collected dust samples, which were analyzed for cat, dog, cockroach, and dust mite allergens. The children underwent skin testing with a sampling of perennial and seasonal allergens, including cat, dog, cockroach, and dust mite allergens.

Results. Of the study children, 44% were male and 49% were white. Seventy-seven percent lived in rural or suburban areas, 53% of the families had an annual income of more than $50,000, and 49% of the mothers had college degrees. Thirty percent of the suburban-rural homes were found to have measurable cockroach antigen, whereas dust mite, cat, and dog allergens were detected for 40%. Only 5% of the suburban-rural homes with measurable cockroach antigen had evidence of cockroach infestation. Sensitization testing with perennial allergens revealed that 71% of subjects were sensitized to dust mite allergen, 29% to cockroach allergen, 76% to ≥1 seasonal outdoor allergen, and 10% to dog allergen. Cockroach allergen sensitization did discriminate between urban and suburban dwellers, identifying 35% of urban residents, compared with 21% of suburban-rural residents. A kitchen cockroach allergen (Bla g 1) level of >1 U/g was significantly associated with cockroach sensitization and was found in both urban and suburban groups.

Conclusions. The presence of cockroach allergen occurs more frequently in suburban middle-class homes than previously thought, and low-level exposure to this antigen is a risk factor for sensitization.

Reviewer’s Comments. Cockroach allergen was demonstrated for a surprisingly high percentage of middle-class suburban homes. The results show that even low levels of exposure can cause sensitization. Interestingly, only a small percentage of homes in which cockroach allergen was identified exhibited evidence of infestation when examined by the environmental technician. The reason for this is not totally clear. This study suggests that reliance on ques-

TIONS ABOUT THE PRESENCE OF COCKROACH INFESTATION IN THE HOME MAY UNDERESTIMATE THE RISK OF COCKROACH EXPOSURE AMONG CHILDREN WITH ASTHMA.

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LAURIE SMITH, MD
Washington, DC

THE PREVALENCE OF RAT ALLERGEN IN INNER-CITY HOMES AND ITS RELATIONSHIP TO SENSITIZATION AND ASTHMA MORBIDITY


Purpose of the Study. To determine the prevalence of rat allergen in the homes of inner-city children with asthma and to examine the relationship between rat allergen exposure, sensitization, and asthma morbidity.

Study Population. Children enrolled in the National Cooperative Inner-City Asthma Study were studied.

Methods. Dust samples collected from the homes of 1528 asthmatic children from 8 major inner-city areas were analyzed with the use of a new monoclonal antibody-based enzyme-linked immunosorbent assay, to determine the prevalence of rat allergen in dust samples from inner-city homes of the National Cooperative Inner-City Asthma Study population. Home characteristics were evaluated to identify variables that were associated with the presence of rat allergen. Data were also analyzed to assess the relationships between the presence of rat allergen, sensitization, and asthma morbidity.

Results. Thirty-three percent of inner-city homes had detectable rat allergen (Rat n 1). The presence of rat allergen was associated with reported rat and mouse infestation, as well as evidence of mouse infestation in home inspections. Twenty-one percent of the participants were sensitized to rat allergen; however, sensitization was not more common when rat allergen was found in the home. The numbers of hospitalizations, unscheduled medical visits, and days with decreased activity because of asthma were significantly increased for individuals who were both sensitized and exposed to rat allergen.

Conclusions. Rat allergen sensitization and exposure were associated with increased asthma morbidity among inner-city children.

Reviewer’s Comments. Rodent allergens are known to cause immunoglobulin E-mediated hypersensitivity in occupational settings. Recently, mouse allergen was identified as an important allergen among asthmatic children. This is the first study to investigate the prevalence and significance of rat allergen in inner-city homes. The most remarkable finding in this study was the relationship between rat allergen and morbidity among inner-city asthmatic children. These results suggest that rat allergen exposure is an important public health concern and control measures should be implemented in inner-city neighborhoods. Rat allergen reduction measures might have significant effects on asthma morbidity and might reduce overall health care utilization for inner-city children with asthma.

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EFFECT OF MATTRESS AND PILLOW ENCASINGS ON CHILDREN WITH ASTHMA AND HOUSE DUST MITE ALLERGY


Reviewer’s Comments. Allergens from dust mite and mold are the most common allergens in the home. Encasing mattresses and pillows with impervious nylon or polyester encasings reduces exposure to both dust mites and mold allergens. Encasings are found to block 99.5% of small mites and 99.9% of large mites, whereas pillow encasings block both dust mites and molds. The use of an impervious mattress cover blocks 97% of dust mite allergens and 99% of mold allergens. The use of a mattress and pillow encasement is effective in reducing symptoms and improving quality of life in patients with asthma. It is also effective in reducing the amount of allergens in the home, which decreases the risk of allergic sensitization and asthma.

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SUPPLEMENT 539

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Purpose of the Study. Allergy to house dust mite (HDM) is an important contributor to childhood asthma, and these investigators sought to determine whether the use of mattress and pillow encasings resulted in effective long-term control of mattress HDM levels, thus reducing the need for maintenance asthma medication.

Study Population. The subjects were 60 children (5–15 years of age) with asthma and HDM allergy, in the absence of any other clinically relevant allergy. Inclusion criteria included physician-diagnosed asthma, positive HDM puncture skin test results, positive HDM bronchoprovocation test results, and total HDM concentrations of ≥2000 ng/g dust from the child’s mattress. All except 4 of the study patients were treated with inhaled corticosteroids.

Methods. In this prospective, double-blind, placebo-controlled, 1-year study, children were randomized to the use of active (allergy control) or placebo mattress and pillow encasings. Baseline measures included mattress dust sampling, spirometry, and adjustment of medications. Symptom scores and peak flows were recorded throughout the study. Clinical assessments, including medication adjustments, and dust sampling were performed every 3 months. Bronchoprovocation was performed at the time of inclusion and at completion of the study.

Results. Twenty-six children in the active treatment group and 21 children in the placebo group completed the study. A significant perennial reduction in levels of HDM allergen recovered from mattresses was noted only for the active treatment group. Significant decreases in the doses of inhaled corticosteroids also were noted only for the active treatment group. There were no significant differences between the active treatment and placebo groups in any of the secondary endpoints, including peak flow and forced expiratory volume in 1 second, symptoms, and HDM bronchoprovocation results.

Conclusions. The use of mattress and pillow encasings led to significant long-term reductions in HDM allergen levels in mattresses and in the need for inhaled corticosteroids among children with asthma and HDM allergy.

Reviewer’s Comments. Greater HDM allergen exposure in childhood is associated with more severe asthma. However, it has been difficult to demonstrate in clinical studies that HDM avoidance is both achievable and associated with subsequent clinical improvement. This is not surprising, given the ubiquitous nature of HDMs and concomitant exposure to other contributing allergens. These authors chose their patient population carefully, to allow greater focus on the allergens in question. The 1-time cost of these encasings is approximately equal to the cost of 1 month of asthma drug therapy in the United States, and encasings are labor- and risk-free. They should be made available to HDM-allergic persons of all ages unless there is compelling evidence against them, which there is not currently. The same cannot be said for measures such as duct cleaning and the use of special filters, which likely have very little effect on either the ambient load of HDM allergen or clinical status.

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CONTROL OF EXPOSURE TO MITE ALLERGEN AND ALLERGEN-IMPERMEABLE BED COVERS FOR ADULTS WITH ASTHMA


Purpose of the Study. To determine whether decreased exposure to house dust mites improves control of asthma among adults.

Study Population. A total of 1222 adults with asthma who were being treated with inhaled corticosteroids and required short-acting β-receptor agonist treatment more than once per day were studied.

Methods. This was a double-blind, randomized, placebo-controlled study of the use of impermeable mattress covers among adults with symptomatic asthma. House dust mite antigen levels were measured in mattress dust at baseline, 6 months, and 12 months.

Results. The prevalence of sensitivity to house dust mite allergen was ~65% in both the active intervention group (allergen-impermeable bed covers) and the control group (permeable bed covers). The concentration of house dust mite antigen for the treated group was 33% of that for the control group at 6 months, but levels were not different at 12 months. The mean morning peak expiratory flow improved significantly in both groups. There was no significant difference in inhaled corticosteroid doses.

Conclusions. Use of impermeable mattress covers brought no significant change in symptom control, pulmonary function, or inhaled corticosteroid doses among adults with asthma.

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KNOWLEDGE AND PRACTICE OF DUST MITE CONTROL BY SPECIALTY CARE


Purpose of the Study. To compare the knowledge and practice of environmental control measures in families of children with asthma who were treated by either an allergist or a pediatrician.

Study Population. The subjects were 114 asthmatic children (age range: 6–17 years; mean age: 11.2 years) with positive skin test results for house dust mites. The children were recruited from 4 pediatric practices in the Baltimore metropolitan area.

Methods. A cross-sectional study using secondary analyses of data from a clinical trial of parents and their children with asthma was performed. In the initial visit, skin testing was performed and the parent answered baseline questions related to the child’s health history. A baseline home environment evaluation consisted of 35 questions addressing the family’s cleaning habits, knowledge of environmental control measures, and self-reported changes in the home to reduce the child’s exposure to indoor allergens. A home inspection evaluated the home characteristics, as well as evidence of dust mite environmental controls (eg, mattress encasement, pillow encasement, removal of wall-to-wall carpeting, and removal of stuffed animals). Dust samples were collected and analyzed for indoor allergens with standard methods. The children were divided into 2 groups, according to whether they had been treated by an allergist. The study then
EFFECT OF MATTRESS AND PILLOW ENCASINGS ON CHILDREN WITH ASTHMA AND HOUSE DUST MITE ALLERGY

James R. Banks

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/content/114/Supplement_1/539.3.full.html