The Role of Cockroach Allergy and Exposure to Cockroach Allergen in Causing Morbidity among Inner-City Children with Asthma

David L. Rosenstreich, M.D., Peyton Eggleston, M.D., Meyer Kattan, M.D., Dean Baker, M.D., M.P.H., Raymond G. Slavin, M.D., Peter Gergen, M.D., Herman Mitchell, Ph.D., Kathleen McNiff-Mortimer, M.P.H., Henry Lynn, Ph.D., Dennis Ownby, M.D., Floyd Malveaux, M.D., Ph.D., for The National Cooperative Inner-City Asthma Study

ABSTRACT

Background It has been hypothesized that asthma-related health problems are most severe among children in inner-city areas who are allergic to a specific allergen and also exposed to high levels of that allergen in bedroom dust.

Methods From November 1992 through October 1993, we recruited 476 children with asthma (age, four to nine years) from eight inner-city areas in the United States. Immediate hypersensitivity to cockroach, house-dust-mite, and cat allergens was measured by skin testing. We then measured major allergens of cockroach (Bla g 1), dust mites (Der p 1 and Der f 1), and cat dander (Fel d 1) in household dust using monoclonal-antibody–based enzyme-linked immunosorbent assays. High levels of exposure were defined according to proposed thresholds for causing disease. Data on morbidity due to asthma were collected at base line and over a one-year period.

Results Of the children, 36.8 percent were allergic to cockroach allergen, 34.9 percent to dust-mite allergen, and 22.7 percent to cat allergen. Among the children's bedrooms, 50.2 percent had high levels of cockroach allergen in dust, 9.7 percent had high levels of dust-mite allergen, and 12.6 percent had high levels of cat allergen.
After we adjusted for sex, score on the Child Behavior Checklist, and family history of asthma, we found that children who were both allergic to cockroach allergen and exposed to high levels of this allergen had 0.37 hospitalization a year, as compared with 0.11 for the other children (P = 0.001), and 2.56 unscheduled medical visits for asthma per year, as compared with 1.43 (P < 0.001). They also had significantly more days of wheezing, missed school days, and nights with lost sleep, and their parents or other care givers were awakened during the night and changed their daytime plans because of the child's asthma significantly more frequently. Similar patterns were not found for the combination of allergy to dust mites or cat dander and high levels of the allergen.

Conclusions The combination of cockroach allergy and exposure to high levels of this allergen may help explain the frequency of asthma-related health problems in inner-city children.

Source Information

From the Division of Allergy and Immunology, Department of Medicine, Albert Einstein College of Medicine, Bronx, N.Y. (D.L.R.); the Division of Pediatric Allergy and Immunology, Johns Hopkins School of Medicine, Baltimore (P.E.); the Department of Pediatrics, Mount Sinai School of Medicine, New York (M.K.); the Center for Occupational and Environmental Health, University of California, Irvine (D.B.); the Division of Allergy and Immunology, Department of Medicine, St. Louis University School of Medicine, St. Louis (R.G.S.); the National Institute of Allergy and Infectious Diseases, Bethesda, Md. (P.G.); New England Research Institutes, Watertown, Mass. (H.M., K.M.-M., H.L.); the Division of Allergy, Henry Ford Hospital, Detroit (D.O.); and Howard University, Washington, D.C. (F.M.). Presented in part at the Annual Meeting of the American Thoracic Society, New Orleans, May 11–15, 1996.

Address reprint requests to Dr. Rosenstreich at Albert Einstein College of Medicine, 1300 Morris Park Ave., Bronx, NY 10461.

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