

The principal route for sensitization to egg proteins seems to be the digestive one; however, sensitization by the inhalational route has been reported.³ Our patient has a heterogeneous allergic response with both respiratory and oral allergy to egg proteins, indicated by results of both challenge tests.

It has been shown that albumin involved in bird-egg syndrome also induced sensitization to chicken meat.^{2, 4, 5} Our patient also has a positive skin prick test and RAST results to chicken meat, even though he has a good clinical tolerance.

Finally, we think that in bird-egg syndrome avoidance of both inhaled (feathers) and oral (egg) forms of allergens is required.

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Socioeconomic status and allergy in children with asthma

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Minority children with asthma have increased morbidity and mortality rates. This appears to be due to socioeconomic status rather than culture or race. The purpose of this study was to determine whether socioeconomic status (SES) affects the incidence of allergies in children with asthma.

METHODS

Patient population

Allergy skin test results from 315 urban children with chronic asthma from San Diego, California were studied. All were followed up at the University of California, San Diego Pediatric Allergy Clinic, the Logan Heights Family Health Center, or the Division of Asthma and Allergy at the Sharp Rees-Stealy Medical

Abbreviation used

SES: Socioeconomic status

Group. This study was approved by the Institutional Review Boards of the University of California, San Diego and the Logan Heights Family Health Center.

The lower SES group was defined as children from families with no insurance or with Medi-Cal as their only form of health insurance. The higher SES group was defined as children from families with private insurance.

Skin test method

Each subject underwent allergy skin tests within the last 3 years in which the prick-puncture method was used. Saline and histamine controls were used in all patients. A positive skin test result was defined as any wheal at least one half the size of that produced by the histamine control. Wheals were read 15 minutes after placement, and responses were measured in millimeters. Personnel who read the skin tests were unaware of insurance status. Standard mite, grass, weed, tree, and mold mix extracts (Miles Inc., Hollister-Stier Div., New Haven, Conn.) were chosen on the basis of the prevalent allergens in the region.

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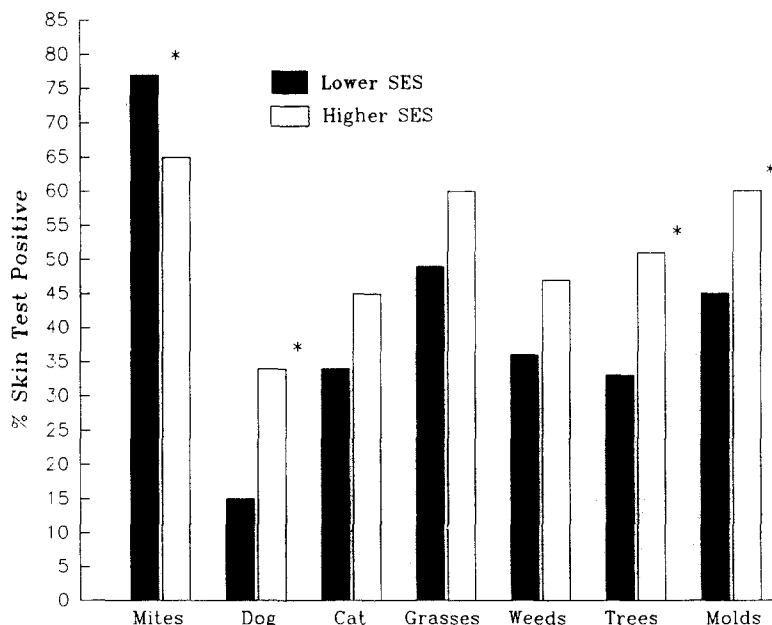


FIG. 1. Percentage of children in lower and higher SES groups who had positive skin test results for one or both species of house dust mite, animal danders, pollens, and molds. (* $p < 0.05$).

For this study, a positive skin test result to either *Dermatophagoides pteronyssinus*, *D. farinae*, or both was considered a positive test result for house dust mite. A positive test result for one or more of the grass, tree, weed, or mold mixes was considered positive for the whole group.

RESULTS

There were 158 children in the lower SES group with a mean age of 8.6 years, and 65% were male. Fifty-eight percent were Hispanic, 19% were white, 19% were black, and 4% were members of other ethnic groups. In the higher SES group there were 157 children with a mean age of 7.98 years, and 69% were male. Twenty-five percent were Hispanic, 66% were white, 2% were black, and 7% were members of other ethnic groups.

Results are shown in Fig. 1. Positive skin test results to one or both species of house dust mite were found in 122 of 158 (77%) children in the lower SES group compared with 102 of 157 (65%) children in the higher SES ($p = 0.023$ by chi square analysis). Reactions to animal danders, pollens, and molds were more frequent in children in the higher SES group.

DISCUSSION

Children with asthma in urban San Diego from families of lower SES have an increased incidence of mite allergy and a decreased incidence of

reactivity to other allergens such as pollens and danders. This probably reflects differences in levels of exposure to these allergens. Children in lower SES groups are more likely to sleep on older mattresses and bedding, have older carpet in their rooms, and live in older houses and apartments. All of these factors increase their chance of exposure to mites. In addition, they are less likely to own pets, and there are fewer trees and grassy areas in their neighborhoods.

Hospitalization rates for children with asthma are 150% higher for black children than white children, and death rates are three to five times greater.¹ This difference appears to be due to economic factors rather than culture or race, because when SES is controlled, these differences disappear.² The higher morbidity and mortality rates among poor children may be in part due to increased sensitivity to mites in areas where mites are prevalent. Call et al.,³ recently reported significantly higher levels of exposure and sensitivity to mites in inner city black children with asthma compared with nonasthmatic control subjects.

Mite avoidance measures have been shown to decrease asthma symptoms in mite-allergic children.⁴ Avoidance measures include washing the bedding in hot water, removing stuffed toys from the child's bed, and encasing the child's mattress and pillow in plastic. Avoidance measures may be expected to decrease asthma symptoms even more in children from lower SES groups, because they

are more sensitive to mites but less allergic to other aeroantigens. However, plastic pillow casings cost from \$7 to \$15 dollars and mattress covers cost \$30 to \$50. These expenses can represent a substantial burden to poor families because they are usually not covered by indigent health care programs. We have found that poor families are as compliant with inexpensive mite control measures as middle-income families but are significantly less likely to purchase mattress and pillow covers because of the cost.⁵

Access to free or low-cost plastic mattress and pillow covers may improve asthma care for poor children in areas where mites are prevalent. Supplying these plastic covers may be cost-effective if hospitalizations and emergency room visits decrease for these children.

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