

Indoor allergen exposure is a risk factor for sensitization during the first three years of life

Ulrich Wahn , Susanne Lau , Renate Bergmann , Michael Kulig , Johannes Forster , Karl Bergmann , Carl-Peter Bauer and Irene Guggenmoos-Holzmann

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Abstract

Background: The purpose of the study was to investigate the influence of environmental allergen exposure on allergic sensitization in infancy and early childhood. **Methods:** A cohort of 1314 newborns was recruited and followed up prospectively at the ages 12, 24, and 36 months. The levels of major mite (Der p 1 and Der f 1) and cat (Fel d 1) allergens were determined from domestic carpet dust samples by sandwich ELISA. Specific serum IgE antibodies to mite and cat allergens were determined by CAP fluoroimmunoassay (Pharmacia). Logistic regression was used to assess the effects of allergen exposure, age, family history, and cord blood IgE simultaneously on the risk of sensitization. **Results:** Children, who had been found to be sensitized at least once during the first 3 years of life, were found to be exposed to significantly higher house dust mite (median, 868 ng/gm vs 210 ng/gm; $p = 0.001$) and cat (median, 150 ng/gm vs 64 ng/gm; $p = 0.011$) allergen concentrations in domestic carpet dust compared with the group without sensitization. In homes with low (= 25th percentile) dust concentrations, the risk of sensitization to mite (1.6%) and cat (2.0%) is low, compared with 6.5% for mite and 6.3% for cat if the domestic exposure is above the 75th percentile. The dose-response relationships between allergen levels and sensitization indicate that the increase in sensitization risk at low allergen levels is more pronounced in cat allergy ($p = 0.002$) than in mite allergy ($p = 0.026$). In the group with a positive family history, lower mite and cat allergen concentrations are needed to achieve specific sensitization compared with the group with a negative family history. **Conclusion:** Our data indicate that avoidance measures in the domestic environment aimed at the primary prevention of allergen-driven sensitization should be introduced at the earliest possible stage, if possible during infancy. (J Allergy Clin Immunol 1997;99:763-9.)