one. In large part, patients (and parents) are looking for any conceivable excuse to keep their pets. In practical terms, if a child is already allergic to pet and nonpet allergens, there is no benefit in keeping their pets. If a child is allergic to nonpet allergens but not pets, there is no help in acquiring a pet, but it’s not necessary to eliminate an existing pet. If a child has asthma and is pet-allergic, the pet should be removed from the home. If a newborn is joining a household with a pet(s), then and only then will dog or multiple pet exposure provide potential benefit. If a child does develop pet allergies or nonpet allergies before age 7, the above recommendations then prevail.

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EFFECT OF CAT AND DOG OWNERSHIP ON SENSITIZATION AND DEVELOPMENT OF ASTHMA AMONG PRETEENAGE CHILDREN

Perzanowski, MS, Ronmark E, Platts-Mills TAE, Lundback B. Am J Respir Crit Care Med. 2002;166:696–702

Purpose of the Study. To determine what effect living with a cat or a dog has on the development of allergy and asthma.

Methods. This study was conducted in 3 towns close to the Arctic circle in Sweden. In 1996, first and second grade students (ages 7–8 years) were invited to participate. The number of participants was 3431. Families were asked questions modeled after the International Study of Asthma and Allergies in Childhood (ISAAC) in which the definition of asthma was based on responses to the questions of “ever having asthma,” “physician-diagnosed asthma,” or “wheezing in the past 12 months.” A family history of asthma indicated that either the parents or a sibling had asthma. There were 3 categories of pet ownership—“current,” “previous,” and “ever” (a combination of past and current ownership) during the study period. The questionnaires were used over the next 3 years. Type I allergic responses were determined by skin testing. Eighty-eight percent of the participating children were prick skin-tested to a variety of common allergens. In 1 of the 3 participating towns, blood samples were taken for determination of specific immunoglobulin E (IgE) and for immunoglobulin G (IgG) and IgG4 antibodies to cat.

Results. Over 3 years, in children 7 to 8 years at entry to 10 to 11 years at the end of the study period, the cumulative incidence of “ever having asthma” = 4.1%, “physician-diagnosed asthma” = 2.4% and “wheezing in the past 12 months” = 8.3%. Incidence rates of asthma were similar for each of the 3 years of the study. For each asthma category, type I allergy (relative risk: 4.9) and a family history of asthma (relative risk: 2.83) were the greatest risk factors for the incidence of asthma. Cat ownership was inversely associated with the incidence of “physician-diagnosed” asthma with an odds ratio of 0.56 (P = .047). For dog ownership, there was also a negative association; however, this was not significant, (odds ratio: 0.79; P = .36). Also, a significant inverse relationship was found between ever living in a house with a cat and having a positive skin test to a cat (risk ratio: 0.62). The association was not significant for dog (risk ratio: 0.79). This inverse relation was stronger in the children who had a family history of allergy. It was also found that having a cat was associated with a decreased prevalence of having a positive skin test to birch tree pollen or to dog (P < .001). In 1996, the baseline year for the study, there were significant inverse relationships between ever having a cat at home and the prevalence of “ever having asthma” (risk ratio: 0.50), “physician-diagnosed asthma” (risk ratio: 0.54) and “wheezing in the past 12 months” (risk ratio: 0.71). Similar, but less striking inverse correlations were found with dog (relative risk ratios: 0.69, 0.75, and 0.82). Asthma prevalence was highest in children with a family history of asthma. The inverse relationship of cat ownership and allergy was only significant in those children who had a family history of asthma. Looking at the 3-year cumulative data for children with a family history of asthma, owning a cat had a significant protective effect against developing asthma in cases of “physician-diagnosed asthma” and “ever having asthma.” Dog ownership did show a similar protective effect; however, the relationship was not significant. Serum analysis was performed in only a smaller subset of the population. Serum on 117 children who lived with a cat showed only 6.8% with measurable specific IgE to cat and 48.7% had IgG to the major cat allergy without any IgE response. In 586 who never lived with a cat, significantly more (15.4%) had IgE and only 9.2% had IgG without IgE. Twenty-five percent of children with IgE to cat reported a physician diagnosis of asthma at some time during the study. Only 8.1% of children who had IgG but not IgE to cat and only 6.1% of children with no antibody response at all to cat reported “physician-diagnosed” asthma.

Conclusions. In a community where sensitization to cat was strongly associated with asthma, owning a cat provided protection against both prevalent and incident asthma. Weaker protective effects were observed with dog.

Reviewer’s Comments. For years it has been recommended that children at risk of developing allergy avoid specific allergens, cats being one of those more potent and potentially avoidable allergens. This study has shaken the foundation of that age old recommendation. The findings here are that ownership of a cat is protective against the development of asthma and allergy. However thought-provoking this is, we need to consider the findings in the context of the population that was evaluated. This study was performed in Sweden in an area where dust mites and cockroach allergy are rare. It will be important to see if the findings here hold true for different populations of children with asthma. I also look forward to further understanding of the pathophysiology of this response and how it could relate to other allergens.

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PLACEBO-CONTROLLED TRIAL OF HOUSE DUST MITE-IMPERMEABLE MATTRESS COVERS: EFFECT ON SYMPTOMS IN EARLY CHILDHOOD


Purpose of the Study. To look at the effect of using house dust mite impermeable mattress covers on the development of respiratory symptoms, atopic eczema, and mite sensitization in children born to mothers with allergy.

Methods. This study is a report from the Prevention and Incidence of Asthma and Mite Allergy (PIAMA) study which has been conducted in a number of European centers. There were a total of 1282 pregnant women who participated. These women were randomized to the intervention study ([IIS]; n = 810) or the natural history study ([NHS]; n = 472). The IS group was further divided into active treatment (n = 416) or placebo treatment (n = 394). Active treatment consisted of the use of polyester-cotton allergen impermeable covers for the mattress and pillows of the mother during the third trimester of pregnancy. The infant’s mattresses were also covered. The placebo group
was given cotton covers only. Both the parents and the investigators were blinded as to group assignment. Absolutely no intervention occurred in the NHS. This group served as a second control group. Questionnaires were used during pregnancy and when the child was 3 months old, 1 year old, and 2 years old. Questions were asked of allergy symptoms occurring in the children. The respiratory questions were adapted from the International Study of Asthma and Allergies in Childhood (ISAAC). Questions specific to house dust mites, cat, dog, and food allergens were determined. Dust samples were taken during the third trimester of pregnancy and at 3 months of life.

Results. There were a few differences between the 3 study groups. Children in the IS group more frequently had a mother who was allergic to house dust mites and there was a tendency to be born in nonwinter months. The active treatment IS had fewer boys. The treatment group also had more pet ownership and tended to be exclusively formula-fed. House dust mite allergen was measured during the third trimester on both the parent’s and the infant’s beds. House dust mite allergens were found on 58% of the children’s mattresses at the 3-month evaluation. In the active treatment group, there was reduction in the amount of house dust mite allergen on the parent’s bed at 3 months. These data were not presented in the study and will be the topic of a subsequent article. The authors did want to mention that there was allergen reduction with the use of the mattress covers. The primary outcome of the study is the effect of house dust mite avoidance on symptoms. There was no statistically significant difference in the prevalence of respiratory symptoms between the 3 groups. There was a statistically significant increase of recurrent wheezing in the first year of life in the treatment group as compared with the placebo group. There was also no difference in the occurrence of atopic dermatitis between the groups. Further evaluation of the data via logistic regression analysis showed that the children in the active treatment group were less likely to develop night cough without a cold in the second year of life compared with children in the placebo group. Unfortunately, those in the NHS were also less likely to develop the same symptoms. There were no other differences found between the groups with the regression analysis. Asthma medications had been prescribed in 6.6% of the children in the active treatment group, in 8.3% of the children in the placebo group, and 7.3% of the children in the natural history group. There was no difference in symptom severity between the groups. Specific IgE and specific IgG were looked at only in the IS groups, and there was no difference in any of these factors at 1 year of age. Of note, specific IgE to house dust mites was found in only 4 children. There were 10 children who had IgE to cat and 8 with IgE to dog. Fourteen percent of the children had a positive specific IgE to at least 1 allergen. The most common allergens were egg and milk. Finally, the relationship between house dust mite allergen exposure and the development of allergic symptoms was looked at. Atopic dermatitis in the first year of life was less prevalent in children who were exposed to house dust mites. Mite exposure was associated with wheezing at least once during the first year of life and a trend was observed for wheezing in the second year of life. All other associations between house dust mite exposure and the development of respiratory symptoms were not significant. There was also no dust mite dose-response relationship to the development of allergy symptoms.

Conclusions. The use of house dust mite allergen impermeable mattress covers led only to a reduction of night-time cough. The use of these covers made no difference in the occurrence of other allergic symptoms of the respiratory tract or skin.

Reviewer’s Comments. The literature suggests that sensitization to house dust mites is a strong risk factor for the development of allergic disease. However, this is controversial, and the results of other studies have provided mixed results. This study shows that mite avoidance measures do not make any difference in the prevalence or severity of allergy symptoms at least in the first 2 years of life. Perhaps the reason why there was no difference was the fact that sensitization was not high in the study population during the first 2 years of life. A positive radioallergosorbent test (RAST) to house dust mites was found in only 4 (0.3%) of 1282 children at age 1 year. RAST-determined sensitivity to house dust mites was very rare at this age. Sensitization to aeroallergens takes time to develop. This appears to be a long-term study. I think it will be important to follow these children over time to see if the measures of mite avoidance performed at this early age will make a difference when the children are older.

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LACK OF ASSOCIATION BETWEEN ANTIBIOTIC USE IN THE FIRST YEAR OF LIFE AND ASTHMA, ALLERGIC RHINITIS, OR ECZEMA AT AGE 5 YEARS

Celedon JC, Litonjua AA, Ryan L, Weiss ST, Gold DR. Am J Respir Crit Care Med. 2002;166:72–75

Purpose of the Study. To examine the association between the frequency of use of antibiotics in the first year of life and the occurrence of asthma, allergic rhinitis, and eczema at 5 years. This was a prospective study that examined the association of antibiotic use and the development of allergic disease.

Methods. The study reports on 498 infants who had a history of allergy or asthma in at least 1 parent. At 2 months of life and subsequently every 2 months until age 2, a questionnaire was given to the primary caregiver. After the second year of life, the questions were asked every 6 months. Every 2 months questions were asked about the use of antibiotics. The multivariate analysis included a large number of variables including the child’s race, household income, and daycare attendance in the first year of life. Parental and familial factors included in utero cigarette smoke exposure, number of months of breast-feeding, parents’ history of asthma, allergic rhinitis, or eczema, number of siblings in the household, and the average number of cigarettes smoked by adults in the household. At 5 years of age, asthma was defined as a physician diagnosis and 1 or more episodes of wheezing in the previous 12 months. Similarly, allergic rhinitis was defined as a physician diagnosis of allergic rhinitis and a history of nasal symptoms in the past 12 months, and eczema had to be physician-diagnosed with the presence of a pruritic rash at least 6 months in the past year. Beginning with the second year of life, the primary caregiver was asked about the number of attacks of wheezing in the past 12 months. The children were categorized as having transient, late-onset, or persistent wheezing. Transient wheezing was defined as 1 or more episodes of wheezing before the age of 3 years but none between the ages 4 and 5. Late-onset wheezing was the occurrence of wheezing between the ages of 4 and 5 years, and persistent wheezing was the occurrence of wheezing before and after age 3 years.
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Pediatrics 2003;112;455

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