study groups. The breastfed group had significantly higher atopic risk based on family history, higher level of parental education, less maternal postnatal smoking and lower prevalence of pets in the home. At 1 year, 9.5% of the breastfed group and 14.8 of the CMF group had AD ($P = .015$). Age at first introduction of solids or diversity of foods given in the first 24 weeks did not seem to affect the incidence of AD. There was no difference between groups for milk or egg sensitization; however, infants with AD were more likely to be sensitized (4 times for milk and 8 times for egg) than those without AD. Risk factors for AD included increased number of close family members with AD, double atopic risk (both parents) and cord blood IgE levels above detection (0.35 kU/L). Participants with pets in the home had a significantly lower incidence of AD than those without pets.

Conclusions. Despite higher atopic risk, the incidence of atopic dermatitis was significantly lower in infants exclusively breastfed during the first 16 weeks of life as compared with infants receiving CMF during this same time period. Neither the age at first introduction of solids nor the diversity of solids fed during the first 16 weeks seemed to influence the incidence of AD.

Reviewers’ Comments. Breastfeeding is widely accepted as the ideal source of nutrition for newborn infants, and the current study provides evidence that exclusive breastfeeding for the first 4 months of life may reduce the risk of AD in individuals with high atopic risk. As observed in this study, mothers of infants with a history of atopy were more likely to breastfeed exclusively, creating a significant difference between groups at baseline. Therefore, the protective effect of exclusive breastfeeding may not be applicable to the general population. Delay of the introduction of solids did not affect the incidence of AD in the current study. All participants received detailed information regarding the benefits of delayed solid food avoidance and avoidance of highly allergenic foods; therefore, the percentage of infants fed solids and diversity of foods received during the study period was low in both groups. Significant differences may have been observed between groups in both the incidence of AD and sensitization to milk and egg if the percentage of infants receiving solids was higher or more allergenic foods were introduced. Future prospective studies should be conducted to evaluate the long-term preventive effects of breastfeeding beyond 4 months of life, particularly in atopic populations.

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LONG-TERM RELATION BETWEEN BREASTFEEDING AND DEVELOPMENT OF ATOPY AND ASTHMA IN CHILDREN AND YOUNG ADULTS: A LONGITUDINAL STUDY


Purpose of the Study. To assess the relationship between breastfeeding and the long-term outcomes of atopy and asthma.

Study Population. One thousand thirty-seven children from a cohort of 1661 born in Dunedin, New Zealand, between April 1972 and March 1973 and residing in the Otago province of New Zealand at 3 years of age.

Methods. Breastfeeding history was obtained independently via interviews when the children were 3 years old. Participants were assessed within 1 month of their birth day at ages 3, 5, 7, 9, 11, 13, 15, 18, 21, and 26 years. In addition to interviews and respiratory questionnaires, every 2 to 5 years from ages 9 to 26 years, participants had pulmonary function, bronchial challenge, and allergy skin tests performed.

Results. Five hundred four (49%) children were breastfed for 4 weeks or longer and 533 (51%) children were not breastfed. More children who were breastfed were atopic to cats, house dust mites, and grass pollen from ages 13 to 21 years than those who were not breastfed. More children who were breastfed reported current asthma at assessments from 9 to 26 years than those who were not breastfed. The effects of breastfeeding were not affected by parental history of allergic rhinitis or asthma, socioeconomic status, parental smoking, birth order, or the use of sheepskin bedding during infancy.

Conclusions. Breastfeeding is not protective against atopy and asthma in the long-term.

Reviewers’ Comments. Previous studies have yielded conflicting results regarding the effects of breastfeeding on the development of atopy and asthma. Although many studies have shown effects in the first 2 to 3 years of life, fewer have demonstrated any long-term benefit. This suggests that these effects, if any, are transient and serve more to delay than to truly prevent the development of allergy or asthma.

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EXPOSURE TO DOGS AND CATS IN THE FIRST YEAR OF LIFE AND RISK OF ALLERGIC SENSITIZATION AT 6 TO 7 YEARS OF AGE

Ownby DR, Johnson CC, Peterson EL. *JAMA*. 2002;288: 963–972

Purpose of the Study. To determine if there is an association between pet exposure in the first year of life and allergy sensitization at age 6 to 7 years.

Study Population. A prospective birth cohort enrolled from a health maintenance organization in suburban Detroit. Enrolled infants were born between 1987–1989, and followed yearly through age 7 years. Of the 835 enrolled infants, 474 completed the protocol.

Methods. After enrollment, families were interviewed for allergic histories. At age 1, the parents were contacted, and the number and type of pet(s) in the home in the first year was determined. That number of cats and dogs was used as the reference for the study. At ages 2 and 4 a home visit for dust mite and cat dust samples was performed. Phone visits were done at ages 3, 5, and 6. At 6 to 7 years skin tests for allergens, serum immunoglobulin E (IgE), radioallergosorbent testing (RAST), asthma histories and medication use, pulmonary function, and methacholine challenges were done. The results were tested to determine if any of three levels of pet exposure affected any allergic and/or asthmatic condition: 0 pets, 1 dog or cats, 2 or more dogs or cats.

Results. Using either skin test or RAST as a measure of atopy, there was a protective effect for developing atopy at age 6 to 7 years as the level of exposure of dogs increased (≥2 dogs more protective than 1 dog). Asthma development was not attenuated by dog exposure. As the number of dogs and cats increased, the development of atopy to indoor and/or outdoor allergens decreased; however, asthma did not decrease. The exposure to pets at age 6 or 7 had no influence on the findings.

Reviewer’s Comments. Few studies have raised as many questions from both patients and physicians as has this.
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 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 < 0.001). 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 IgG 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 (IS; 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...
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Russell Hopp
Pediatrics 2003;112:454

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