tively. There was no significant adverse association between exclusive breastfeeding and physician-diagnosed AD in infants with a family history of AD (odds ratio [OR]: 0.92), in those without a family history of AD (OR: 0.97), or in those with itchy rash (OR: 1.2 and 0.92, respectively). In group I, exclusive breastfeeding was protective for AD, compared with feeding with a conventional cow’s milk formula (OR: 0.64). If stratified by family history of AD, there was no difference in effect of breastfeeding on physician-diagnosed AD and itchy rash in group I. The difference in the NI group was not determined because of the small number of participants.

Conclusions. Exclusive breastfeeding for the first 4 months of infancy was not shown to increase the risk of developing AD in infants with or without a family history of AD.

Reviewers’ Comments. A number of studies have shown that breastfeeding could be a risk factor for atopic dermatitis and even suggest a detrimental effect of continuing to breastfeed infants with severe AD and food allergy. The role of breastfeeding in allergic diseases has been controversial, but the weight of the evidence in meta-analyses and in this study support a protective effect in regard to prevention.

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THREE-YEAR OUTCOMES OF DIETARY FATTY ACID MODIFICATION AND HOUSE DUST MITE REDUCTION IN THE CHILDHOOD ASTHMA PREVENTION STUDY


Purpose of the Study. To measure the effects of dietary supplementation with ω-3 fatty acids and house d-e (HDM) allergen avoidance in children with a family history of asthma.

Study Population. Children at high risk for asthma, defined by having at least 1 parent or sibling with current asthma or frequent wheeze.

Methods. A total of 616 children at high risk for asthma were enrolled antenatally, and 526 children remained in the trial when they were 3 years old. HDM allergen avoidance involved the use of both physical and chemical methods for the reduction of allergen concentrations. Dietary intervention included supplementation of the infant’s/child’s diet with tuna fish oil and use by the family of canola-based oils and spreads. Participants were randomized to 1 of the 4 study groups: placebo diet and active HDM controls, active diet supplements and active HDM controls, placebo diet and no HDM controls, and active diet supplements and no HDM controls. The outcomes were symptoms of allergic disease and HDM allergen sensitization at 3 years.

Results. There was a significant 10.0% (95% confidence interval [CI]: 3.7, 16.4) reduction in the prevalence of cough in atopic children in the active-diet group (P = .003; number needed to treat: 10) but a negligible 1.1% (95% CI: −7.1, 9.5) reduction in cough among nonatopic children. There was a 7.2% (95% CI: 10.11, 14.3) reduction in sensitization to HDM in the active allergen-avoidance group (P = .05; number needed to treat: 14). No significant differences in wheeze were found with either intervention.

Conclusions. These results suggest that HDM allergen avoidance and dietary supplementation with foods rich in ω-3 fatty acids may have a role in preventing the development of allergic sensitization and airways disease in early childhood, which offers the prospect of reducing allergic disease in later life.

Reviewers’ Comments. Although the reported risk reduction in the active-intervention groups was modest, this study suggests that a relatively simple intervention may be used in public health to modulate the development of allergic sensitization and airways disease at an early age. Hopefully, a follow-up study will determine the long-term effect of combined dietary ω-3 fatty acid supplementation and environmental HDM allergen avoidance.

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EARLY INFANT MULTIVITAMIN SUPPLEMENTATION IS ASSOCIATED WITH INCREASED RISK FOR FOOD ALLERGY IN ASTHMA


Purpose of the Study. Dietary vitamins have immunomodulating effects in vitro, and individual vitamins have been shown to skew T cells toward either T-helper 1 or T-helper 2 phenotypic classes, suggesting that they may participate in inflammatory or allergic disease. The objective of the study was to determine if early vitamin supplementation during infancy affects the risk for asthma and allergic disease during early childhood.

Study Population. Cohort data were analyzed from the National Center for Health Statistics 1988 National Maternal-Infant Health Survey, which followed pregnant women and their newborns, and the 1991 longitudinal follow-up of the same patients, which measured health and disease outcomes. There were >8000 patients in this study.

Methods. Patients were stratified by race and breastfeeding status. Factors that are known to be associated with alteration of risk for asthma or food allergies were identified by using univariate logistic regression. Those factors were then analyzed in multivariate logistic-regression models. Early vitamin supplementation was defined as vitamin use within the first 6 months.

Results. The overall incidence of asthma was 10.5% and of food allergy was 4.9%. In univariate analysis, being male gender, having a smoker in the household, being in child care, being premature (<37 weeks’ gestation), being black, having no history of breastfeeding, and having lower income and lower education were associated with higher risk for asthma. Being in child care, having higher levels of education and income, and having a history of breastfeeding were associated with a higher risk for food allergies. In multivariate logistic analyses, a history of vitamin use within the first 6 months of life was associated with a higher risk for asthma in black infants (odds ratio [OR]: 1.2; 95% confidence interval [CI]: 1.04, 1.56). Early vitamin use was also associated with a higher risk for food allergies in the exclusively formula-fed population (OR: 1.63; 95% CI: 1.21, 2.20). Vitamin use at 3 years of age was associated with increased risk for food allergies but not asthma in both breastfed (OR: 1.62; 95% CI: 1.19, 2.21) and exclusively formula-fed (OR: 1.39; 95% CI: 1.03, 1.88) infants.

Conclusions. The conclusions of the authors were that early vitamin introduction is related to increased likelihood for asthma in black children and food allergies in exclusively formula-fed children.

Reviewer’s Comments. Although there are some laboratory data to support the potential for some vitamins to
cause naive T cells to differentiate to T-helper 2 phenotypes (allergy promoting), at this time the findings of this study are associational and not causal. There are numerous confounding factors that may have resulted in the observed associations. The authors proposed that there may have been cultural biases in diagnosis. It is also unusual that this association only held for vitamin use at 3 and 6 months of age but not at 3 years of age. It was noted that formula-fed infants who received (but did not need) multivitamins were at higher risk of food allergy than breastfed infants who received multivitamins. The authors could not evaluate the possibility that formula-fed infants were given multivitamins, because they had illnesses (such as atopic dermatitis or food allergy) that may have led to such interventions. The authors also indicated that it is possible that persons inclined to use multivitamins are also persons who are more likely to report their child’s health problems or seek more medical diagnoses for their child’s symptoms. Last, these data were collected ~15 years ago, and since then the rates of asthma and food allergy have apparently increased significantly. It is not clear that the results would be similar today. The numerous potential confounding influences in this study require that the results be confirmed in other studies before any specific recommendations can be made.

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ENDOTOXIN EXPOSURE AND ECZEMA IN THE FIRST YEAR OF LIFE

Purpose of the Study. To examine the relationship between endotoxin exposure early in life and eczema during the first year of life in children with parental history of asthma or allergy.

Study Population. A birth cohort of children in metropolitan Boston, Massachusetts, selected for a history of allergy or asthma in at least 1 parent.

Methods. A total of 505 infants from 499 Boston families were enrolled between September 1994 and August 1996 and followed prospectively. Seven children followed for ≤4 months were excluded from analysis. Adequate analysis of endotoxin was obtained from house dust sampled from 401 living rooms. Endotoxin exposure was categorized into quartiles by concentration of endotoxin units per milligram of house dust (EU/mg). Potential predictors of eczema and confounders were considered for multivariate analysis including socioeconomic data, birth weight, maternal age, season of birth, breastfeeding, ingestion of allergenic foods, family history of atopic diseases, pets in the home, and daily care. Maternal serum was analyzed for allergen-specific IgE to several common allergens. Every 2 months the primary caregiver was asked, “Has a doctor or nurse ever said that your child has eczema?”

Results. Of the 498 children, 140 (28%) had eczema in the first year of life. Exposure to high levels of endotoxin (80.48–713.2 EU/mg) at 2 to 3 months of age were inversely associated with eczema during that time. For every quartile increase in endotoxin measured in living room house dust, there was a decrease in the odds of developing eczema in the first year of life (odds ratio [OR] for each quartile increment: 0.76). Exposure to a dog in the home at 2 to 3 months of life compared with no dog exposure decreased the odds of having eczema in the first year of life by half; however, this association became less significant when adjusted for endotoxin exposure. In the multivariate analyses, paternal history of eczema (OR: 1.91) and maternal sensitization to at least 1 allergen (OR: 1.61) were associated with developing eczema.

Conclusions. In children with parental history of asthma or allergy, exposure to high levels of endotoxin at 2 to 3 months of age may protect against eczema development in the first year of life. Additionally, both paternal history of eczema and maternal sensitization to ≥1 allergen are associated with increased risk of eczema in the first year of life.

Reviewer’s Comments. A great deal of faith has been placed in the “hygiene hypothesis” being correct despite relatively few prospective birth cohort evaluations. Although previous studies have focused on allergic sensitization, cytokine production, and development of asthma, this study makes an association between endotoxin levels in the living rooms (but not bedrooms) of children’s homes and the development of eczema in the first year of life. This lends another facet, and end-organ effect, to support the argument to validate the hygiene hypothesis. Additional data from this and other high-risk birth cohorts will provide additional data to fuel this debate.

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PERTUSSIS VACCINATION IN INFANCY AND ASTHMA OR ALLERGY IN LATER CHILDHOOD: BIRTH COHORT STUDY

Purpose of the Study. To examine the association of pertussis vaccination in infancy to asthma or atopy by the age of 7.5 years.


Methods. Vaccination status for each child from the child health surveillance was obtained. Children were categorized as fully vaccinated (primary course of diphtheria, tetanus, and pertussis vaccines), partially vaccinated (completed primary course of diphtheria and tetanus vaccines but did not receive pertussis vaccine), or nonvaccinated. Wheeze outcomes were parental report of asthma at age 69 to 81 months, wheeze with whistling in the chest at age 69 to 81 months, and asthma diagnosed by a doctor at 91 months. A positive outcome of atopy was defined by any positive allergy skin tests at 7 years old. Multivariable logistic regression was used to evaluate associations between immunization status and asthma and allergy outcomes.

Results. Vaccination history was available for 13,810 children: 13,109 (94.9%) were fully vaccinated, and 1446 did not have pertussis vaccination (340 nonvaccinated; 106 partially vaccinated). Prevalence of reported asthma at age 69 to 81 months was 12.4%, reported wheeze with whistling at 69 to 81 months was 9.8%, and atopy at 7 years was 20.5%. Unadjusted analyses showed significant associations between partial vaccination and asthma at age 69 to 81 months (odds ratio [OR]: 2.84; 95% confidence interval [CI]: 1.24, 6.53) and doctor-diagnosed asthma (OR: 3.03; 95% CI: 1.51, 6.09), but these associations did not remain in multivariate analysis. In multivariate analyses, there were no significant associations between the vaccinated categories and any of the outcomes.

Conclusion. There is lack of an independent association between pertussis vaccination in infancy and inactivated,
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