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 day 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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