observed in Westernized societies where processed and sterile infant food is available.

URL: www.pediatrics.org/cgi/doi/10.1542/peds.2014-1817G

James C. Thompson, MD
William K. Dolen, MD
Augusta, GA

Association of Maternal Anti-HLA Class II Antibodies With Protection From Allergy in Offspring

PURPOSE OF THE STUDY. The goal of this study was to determine if maternal production of anti-HLA antibodies arising from mismatch between mother and fetus is associated with allergic outcomes at 8 years of age. Previous studies have suggested that the prevalence of atopy is lower in children of higher birth order. Higher numbers of pregnancies are associated with increased antibodies against paternal HLA antigens and maternal interferon-γ production (Th1) in response to fetal cells. The authors postulated that the raised levels of interferon-γ secondary to HLA mismatch may be another factor associated with lower risk of allergic disease.

STUDY POPULATION. A total of 269 maternal blood samples from the Asthma in Ashford Study (Ashford, Kent, UK) were analyzed for anti-HLA antibodies. Retrospective anti-HLA antibody analysis was restricted to mothers who had no additional births in the 4-year interval between birth of the child and collection of the blood sample. Parity at the time of birth of the index child ranged from 0 to >4.

METHODS. Maternal sera were tested for antibodies to HLA class I and II molecules. Associations between the presence or absence of maternal anti-HLA antibodies and allergic outcomes at age 8 years were made by using χ² tests. Logistic regression was used to investigate the association between maternal HLA antibodies and birth order with the child’s allergic status. Skin prick testing to pollen mixture, Dermatophagoides pteronyssinus, and cat fur were conducted on the mothers during pregnancy and on children at age 8 years. Allergic outcomes in children were measured by using questionnaires and results of skin prick testing.

RESULTS. The detection of maternal anti-HLA class II antibodies was associated with less positivity to allergens on skin prick testing and less seasonal rhinitis in children at age 8 years. Nonatopic children had a higher birth order and increased presence of maternal anti-HLA class II antibodies. Atopic children did not have a statistically significant difference in maternal HLA antibodies when analyzed for birth order.

CONCLUSIONS. Maternal anti-HLA class II antibodies are associated with birth order and increased protection from allergy in offspring in nonatopic children. Increasing parity-related Th1 cytokine maternal immune responses may contribute to the birth order effect regardless of maternal atopic status.

REVIEWER COMMENTS. This study suggests another mechanism for decreased allergy prevalence in children who have older siblings. This difference has been attributed to the predominance of Th1 cytokines over Th2 cytokines secondary to higher exposure to infections in younger children in many previous studies. The authors of this study offer an alternative explanation based on the presence of anti-HLA antibodies in women with multiple pregnancies. This interesting alternative explanation for decreased allergy in younger siblings has no practical implications at this point.


Nisha Shah, MD
Ricardo Sorensen, MD
New Orleans, LA

Prevalence of Allergic Disease in Foreign-Born American Children

PURPOSE OF THE STUDY. The goal of this study was to determine whether the prevalence of allergic diseases is lower in foreign-born Americans and if prevalence increases with prolonged residence in the United States.

STUDY POPULATION. Data were collected for 91 642 children ages 0 to 17 years in the 2007–2008 National Survey of Children’s Health. A total of 79 667 participants were analyzed.

METHODS. Random telephone numbers were selected for administration of the questionnaire, which was conducted in English, Spanish, and 4 Asian languages (Korean, Mandarin, Cantonese, and Vietnamese).

RESULTS. Children born outside the United States compared with those born within the United States had significantly lower prevalence of allergic disorders (20.3% vs 34.5%; logistic regression odds ratio [OR]: 0.48 [95% confidence interval (CI): 0.38–0.61]; P < .001). Among children born outside the United States, children with foreign-born parents had significantly lower odds of atopic disease than those with US-born parents (18.2% vs 33.4%; logistic regression OR: 0.45 [95% CI: 0.25–0.78]; P = .005). Furthermore, there was an additive effect in which children of 2 foreign-born parents had a lower prevalence of allergic disease than those with 1 foreign-born parent. Among foreign-born children, children who lived in the United States for >10 years, compared with those who resided in the United States for only 0 to 2 years, had significantly higher odds of severe allergy-related health care use (13.8% vs 10.3%; P = .01).
Primary Prevention of Food Allergy in Children and Adults: Systematic Review


PURPOSE OF THE STUDY. The goal of this study was to systematically review the literature on how to prevent the development of food allergy.

METHODS. A systematic review was performed on articles published through September 2012. Meta-analyses, randomized controlled trials, and prospective cohort studies designed to prevent food sensitization and/or the development of food allergy were identified from Medline, Embase, Cochrane, CINAHL, Web of Science, TRIP Database, and ClinicalTrials.gov and were assessed for systematic bias. Because the studies varied in terms of design, target populations, and interventions, a meta-analysis was not performed.

RESULTS. Seventy-four studies were included in this systematic review. For infants at high risk for developing food allergy (defined by the authors as children with a family history of allergic disease), there was evidence to support avoiding cow’s milk and using extensively or partially hydrolyzed whey or casein formulas for the first 4 months of life to prevent the development of food allergy. In contrast, the evidence was conflicting for other primary prevention techniques, including maternal restriction of common food allergens during pregnancy or while breastfeeding, the use of probiotics during infancy, breastfeeding during infancy, or delaying the introduction of solid foods beyond 4 months.

CONCLUSIONS. The findings from this large, prospective, US population–based study suggest that either infections or certain microbial exposures in early childhood may confer protection against atopic disorders. However, because the odds of developing allergic disease dramatically increase after a decade of living in the United States, protective effects may not be lifelong.

REVIEWER COMMENTS. These findings further support the role of environmental factors in the development of allergic disease. Limitations of this study, however, include self-report of allergic disease without clinical verification. The majority of the participants currently reside in a metropolitan area, and it is unknown what proportion of foreign-born families moved from a developing country (compared with an industrialized country) to the United States. Country of origin was not ascertained, although race/ethnicity data were collected as a proxy. Other potential confounding factors not evaluated include diet, allergic exposures, use of antibiotics, use of antibacterial cleaning products, and history of helminthic infections.


Jennifer S. Kim, MD
Chicago, IL

Prenatal Food Allergen Exposures and Odds of Childhood Peanut, Tree Nut, or Sesame Seed Sensitization


PURPOSE OF THE STUDY. The goal of this study was to examine whether prenatal exposure to peanut or sesame seed oil as a vehicle for progesterone injection increases the child’s odds of peanut (PN), tree nut (TN), or sesame seed (SS) allergy.

STUDY POPULATION. A total of 1272 food-allergic children were evaluated at Boston Children’s Hospital. Control subjects were children allergic to foods including dairy or eggs but not PN, TNs, or SS. Case subjects included those allergic to PN, TNs, and/or SS.

METHODS. Parents completed a questionnaire addressing demographic characteristics, family history, child’s history of allergies, use of assisted reproduction, and prenatal exposure to food allergens. The child’s skin prick and specific immunoglobulin E test results were reviewed. Two samples of progesterone suspended in SS oil were assayed for SS protein content during the study.

RESULTS. A total of 1272 questionnaires were analyzed. There were no statistical differences between case subjects and control subjects in demographic characteristics, parental atopy, or birth history. History of parental infertility, in vitro fertilization treatment, progesterone support, and
Prevalence of Allergic Disease in Foreign-Born American Children
Jennifer S. Kim
*Pediatrics* 2014;134;S137
DOI: 10.1542/peds.2014-1817I

The online version of this article, along with updated information and services, is located on the World Wide Web at:
http://pediatrics.aappublications.org/content/134/Supplement_3/S137.2