Allergy

PREVENTION AND RISK FACTORS

Lack of Evidence for a Protective Effect of Prolonged Breastfeeding on Childhood Eczema: Lessons from the International Study of Asthma and Allergies in Childhood (ISAAC) Phase Two


PURPOSE OF THE STUDY. To determine if exclusive breastfeeding protects against childhood eczema.

STUDY POPULATION. There were 51,119 randomly selected 8- to 12-year-olds from 21 different countries who participated in the International Study of Asthma and Allergies in Childhood (ISAAC) Phase Two.

METHODS. Parental questionnaires were used to collect information on eczema and breastfeeding. Children were examined for eczema and skin-prick testing for common allergens. At each study center, an odds ratio (OR) was calculated. ORs were also pooled across study populations.

RESULTS. There was a small positive association between parent-reported eczema ever with breastfeeding ever (pooled adjusted OR 1.11, 95% confidence interval [CI] 1.00–1.22) and breastfeeding <6 months (pooled adjusted OR 1.10, 95% CI 1.02–1.20). There was no significant association between parent-reported eczema ever and breastfeeding >6 months (pooled adjusted OR 1.09, 95% CI 0.94–1.26). There was little difference in risk estimate for exclusive breastfeeding (<2, 2–4, and >4 months) and for eczema symptoms in the past year and eczema on skin examination. Breastfeeding was associated with a negative association with sleep-disturbed eczema (pooled adjusted OR 0.71, 95% CI 0.53–0.96), but this was lost in children who had been exclusively breastfed for >4 months (pooled adjusted OR 1.02, 95% CI 0.67–1.54). History of maternal allergy and the child’s sensitization to Aeroallergens did not modify these associations.

CONCLUSIONS. Although the authors did not demonstrate that breastfeeding exclusively for >4 months protects against eczema, they did demonstrate a protective effect of ever having been breastfed on sleep-disturbed eczema.

REVIEWER COMMENTS. This is a significant study, as it is the largest data set exploring the association between breastfeeding and eczema in affluent and nonaffluent countries. Although these findings are consistent with recent systemic reviews of prospective studies, they contrast with a previous American Association of Pediatrics policy statement suggesting that breastfeeding for ≤4 months, compared with feeding cow milk protein formula, may prevent or delay the development of eczema.

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An Explorative Study of Low Levels of Allergen-Specific IgE and Clinical Allergy Symptoms During Early Childhood


PURPOSE OF THE STUDY. To evaluate the relation between early presence of low levels of specific immunoglobulin E (s-IgE) sensitization to food and inhalant allergens and the development of allergic diseases during childhood.

STUDY POPULATION. Study subjects included 268 children born between 1997 and 2000 who were part of a prospective study cohort. All children were born term and healthy. One-third of the children had 2 parents with allergy, one-third had mothers with allergy, and one-third had parents with no allergy, suggested by history and confirmed by results of skin prick testing.

METHODS. The children were followed up prospectively from birth to 5 years and had clinical evaluations at 6, 12, 18, and 24 months and 5 years for the development of eczema, wheezing or asthma, and rhinoconjunctivitis. s-IgE against hen’s egg white, cow’s milk, codfish, peanut, soybean, cat, dog, Dermatophagoides farinae, birch pollen, and timothy pollen was assessed at each visit by using the ImmunoCAP System (Phadia AB, Uppsala, Sweden). Low levels of allergen s-IgE included concentrations between 0.1 and 0.7 kU/L.

RESULTS. The most common s-IgE sensitizations at all ages were to egg and milk, and the presence of s-IgE to all allergens increased with increasing age. Low levels of s-IgE to milk and egg were related to eczema and further allergic sensitization at the age of 5 years. No relations between low levels of s-IgE at 6 and 12 months and respiratory symptoms at 5 years were found.

CONCLUSIONS. Children with low levels of s-IgE sensitization to food allergens had an increased risk of developing eczema by 24 months. Early-onset low levels of s-IgE can be related to further IgE sensitization during childhood.

REVIEWER COMMENTS. With improved testing technology, it is now possible to accurately measure s-IgE concentrations as low as 0.1 kU/L. This study describes the importance of low levels of s-IgE in relation to symptoms being most pronounced at young ages. However, further investigation is
needed to determine the clinical implication of low-level s-IgE sensitization as a diagnostic and predictive measure for atopic disease in childhood. The interpretation and clinical implication of early testing of s-IgE concentrations is challenging because the presence of s-IgE sensitizations often do not correlate with clinical symptoms. Due to this complexity, suspicion of atopic disease in children should lead to further evaluation by an allergy specialist.


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Vitamin D Deficiency as a Strong Predictor of Asthma in Children

PURPOSE OF THE STUDY. Epidemiologic studies suggest a link between vitamin D deficiency in early life and the development of asthma later in life. The purpose of this study was to measure serum vitamin D levels in children with asthma and compare these children with healthy, nonasthmatic controls.

STUDY POPULATION. Asthmatic (n = 483) and healthy control (n = 483) children were recruited from the Pediatric Allergy-Immunology Clinics of Hamad General Hospital and the Primary Health Care Clinics in Qatar from October 2009 to July 2010. All children were aged <16 years, and asthma was diagnosed by a physician.

METHODS. Parents of all children completed extensive questionnaires documenting demographic characteristics, child’s feeding practice, and vitamin D intake. Serum 25-hydroxyvitamin D, calcium, phosphorus, alkaline phosphatase, magnesium, creatinine, and parathyroid hormone assays were performed. Overall, subjects with vitamin D levels <20 ng/mL were deemed deficient, levels of 10 to 19 ng/mL moderately deficient, and levels <10 ng/mL were considered severely deficient.

RESULTS. Overall, 68.1% of the children with asthma and 36.1% of the control children were vitamin D deficient. Asthmatic children had significantly higher degrees of moderate (41.8% vs 25.1%) and severe (26.3% vs 11.0%) vitamin D deficiency compared with healthy controls (P < .001). Positive familial history of vitamin D deficiency (35.6%; P = .005) and asthma (36.4%; P = .009) were significantly higher in children who had asthma. Along with vitamin D deficiency, asthmatic children also had reduced phosphorus (P < .001) and magnesium (P = .001) levels but elevated serum alkaline phosphatase (P < .001) and immunoglobulin E (P < .001) levels. The majority of children who had asthma had less exposure to sunlight (66.7%; P = .006) and less physical activity (71.3%; P < .001). Vitamin D deficiency was the strongest predictor of asthma in this population (odds ratio: 4.82 [95% confidence interval: 2.41–8.63]; P < .001).

CONCLUSIONS. The current study revealed that the majority of children who had asthma had a vitamin D deficiency compared with control children. Vitamin D deficiency was the major predictor of asthma in Qatari children.

REVIEWER COMMENTS. Vitamin D deficiency has been linked to an increased incidence of asthma and increased severity of asthma in children. This study provides additional epidemiological support for the association between vitamin D deficiency and asthma. Further studies examining the potential mechanisms of vitamin D in asthma pathophysiology and intervention studies aimed at improving vitamin D status in children who have asthma are needed to elucidate the nature of this association.


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The Introduction of Allergenic Foods and the Development of Reported Wheezing and Eczema in Childhood: The Generation R Study

PURPOSE OF THE STUDY. To examine whether the timing of introduction of allergenic foods is associated with eczema and wheezing in children ≤4 years of age.

STUDY POPULATION. The study included 6905 preschool-aged children participating in the Generation R study, a population-based prospective cohort study in Rotterdam, Netherlands.

METHODS. Consent for postnatal follow-up was provided by a total of 7893 mothers with a delivery date between April 2002 and January 2006. Timing of introduction of cow’s milk, hen’s egg, peanuts, tree nuts, soy, and gluten was collected by using questionnaires at 6 and 12 months of age. When children were aged 2, 3, and 4 years, information on wheezing and eczema outcomes was obtained via the age-adapted version of the International Study of Asthma and Allergies in Childhood core questionnaire and parental report of physician-diagnosed eczema. Questionnaire response rates were 69%, 64%, and 63% at the ages of 2, 3, and 4 years, respectively.

RESULTS. Of 6905 children, wheezing was reported in 31% at age 2 years and in 14% at ages 3 and 4 years. Eczema was reported in 38%, 20%, and 18% of children at the
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