Effect of Maternal Egg Consumption on Breast Milk Ovalbumin Concentration

PURPOSE OF THE STUDY. To assess human milk ovalbumin concentrations after daily maternal ingestion of 1 cooked egg for a 3-week period.

STUDY POPULATION. There were 32 mothers of singleton, breastfed, egg-sensitive infants with moderate-to-severe eczema. Egg sensitivity was identified by a positive skin-prick test result. Eczema was evaluated by using a standardized scoring system.

METHODS. Families had an initial home visit by an experienced dietitian, which involved collection of demographic and dietary information. All women and children were asked to follow an egg-free diet from day 1 through the duration of the trial. Adherence to the egg-free diet was assessed via detailed dietary intake records for both mothers and children on days 1 to 3, 10 to 12, and 21 to 23. Mothers were randomly allocated to receive identical-appearing egg-free muffins or muffins containing 1 (55 g) whole egg. Each mother was given a 3-week supply of frozen muffins corresponding to her randomization group and consumed 1 muffin per day on days 3 through 23. Atopic dermatitis assessments were performed for each child at the commencement and completion of the trial. The mothers completed the Infant’s Dermatitis Quality of Life Index 3 times during the trial. On days 3, 12, and 23, the mothers manually expressed 5 mL of breast milk into sterile containers before and 2, 4, and 6 hours after eating the test muffin. Breast milk samples were stored in the home freezer and collected on day 24. The breast milk samples were queued for ovalbumin concentration by using a sandwich enzyme-linked immunosorbent assay method. Breast milk ovalbumin concentrations (nanograms per milliliter) were plotted against time, and the resulting curve was used to determine peak ovalbumin concentrations and total ovalbumin excretions (nanograms per milliliter per hour). Independent-sample $t$ tests, Mann-Whitney $U$ tests, and Pearson’s $\chi^2$ tests were used to investigate differences between the diet groups.

RESULTS. Women in the egg group had higher ovalbumin concentrations in breast milk than did the control group at all time points. Within each dietary group, the frequency of ovalbumin detection, peak ovalbumin concentration, and total ovalbumin excretion did not differ at days 3, 12, and 23. Ovalbumin was not detected in the breast milk of 25% of the women in the egg group. Infant eczema symptom scores were significantly reduced with time for both groups.

CONCLUSIONS. Human milk ovalbumin is related to maternal dietary egg intake. Comparable detection of ovalbumin across time suggests that ovalbumin does not accumulate in human milk. One quarter of the women had no ovalbumin detected in their breast milk on any of the study days, which suggests that some women either do not excrete ovalbumin in their breast milk when challenged with 1 egg or have delayed excretion beyond 6 hours. Maternal dietary avoidance of well-cooked egg may not be necessary for all breastfed infants with egg sensitivity and eczema.
For breastfed infants with food allergy, strict avoidance of the offending food proteins for both mother and child is frequently recommended. Total dietary avoidance of egg is difficult for patients to achieve. Additional study is needed to substantiate or to refute the preliminary observation that regular maternal ingestion of a small quantity of well-cooked egg did not markedly exacerbate eczema symptoms in egg-sensitive infants.

The Natural History of Wheat Allergy

Purpose of the study. Wheat allergy is among the most common of food allergies, affecting ~0.4% of children, but little is known about its natural history. The purpose of this study was to determine at what age wheat allergy is outgrown and to identify clinical and laboratory predictors of tolerance development.

Study population. Participants were from the Johns Hopkins pediatric allergy clinic who had a history of symptomatic reaction (presumed immunoglobulin E [IgE] mediated) to wheat and a positive wheat-specific IgE test result. Inclusion criteria were met by 103 children.

Methods. The study was a retrospective, medical record review. Resolution of allergy was determined by the results of food-challenge testing. Kaplan-Meier survival curves were generated to depict resolution of wheat allergy.

Results. The median initial wheat-specific IgE level was 24 kU/L, and the median peak wheat-specific IgE level was 73 kU/L. Rates of resolution of wheat allergy were 29% by the age of 4 years, 56% by the age of 8 years, 65% by the age of 12 years, and 70% by the age of 14 years. Higher wheat-specific IgE levels were associated with worse outcomes. A total of 63 of 103 participants underwent a food challenge during the study period. The peak wheat-specific IgE level recorded was a useful predictor of persistent allergy, although many children with even the highest levels of wheat IgE outgrew wheat allergy.

Conclusions. The median age of resolution of wheat allergy was 6.5 years in this population. However, 35% of the patients remained allergic into their teenage years.

High Levels of IgG4 Antibodies to Foods During Infancy Are Associated With Tolerance to Corresponding Foods Later in Life

Purpose of the study. To examine the serum and salivary antibody responses to food-elimination diets and to identify immunologic parameters related to oral tolerance.

Study population. Prospective study of 89 children <2 years of age with eczema.

Methods. Children with eczema were examined at 3 time points, that is, at enrollment, after a 6-week treatment period, and at 4.5 years of age. Treatment included topical emollients and/or steroids for all children and a 6-week egg- and/or milk-elimination diet for 60 of the 89 children in the cohort of children who were diagnosed with an allergy to 1 or both foods. Laboratory data...
Effect of Maternal Egg Consumption on Breast Milk Ovalbumin Concentration
Karla L. Davis and Stephen E. Scranton

Pediatrics 2009;124;S120
DOI: 10.1542/peds.2009-1870X

The online version of this article, along with updated information and services, is located on the World Wide Web at:
/content/124/Supplement_2/S120.full.html