

ANTIBIOTIC SKIN TESTING FOR CHILDREN LABELED WITH TYPE 1 HYPERSENSITIVITY: A USEFUL CLINICAL TOOL

Submitted by Fotini D. Kavadas

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INTRODUCTION: Children are often unnecessarily labeled as being allergic to antibiotics that may potentially be life saving. Aside from penicillin, good diagnostic testing has not been available in pediatrics to differentiate between type 1 hypersensitivity and other causes of adverse reactions to antibiotics.

OBJECTIVE: We sought to determine the safety of antibiotic skin testing of children and to describe its potential clinical impact.

METHODS: A retrospective chart review was performed of patients between 0 and 18 years of age who were seen in our clinic over a 2-year period with a history of a possible immunoglobulin E-mediated reaction to various antibiotics other than penicillin. We included patients with either extremely limited antibiotic options or complex medical issues that require antibiotics. We did not perform testing if there was a history of a convincing immunoglobulin E-mediated or serum sickness-like reaction. Skin testing was performed by using nonirritating concentrations of the antibiotic in question that have been used in adults. If skin-prick testing results were negative, we performed intradermal testing. A provocative challenge was offered if all skin-testing results were negative.

RESULTS: of 28 visits, 23 met our inclusion criteria; 4 (17%) of 23 could not be skin-tested. Of those who were skin-prick-tested, all 19 (100%) had a negative result, and 17 (89%) of 19 also had a negative intradermal test. Of those 17 (88%), 15 patients agreed to undergo provocative challenge, 14 (93%) of whom were then unlabeled as allergic to the respective antibiotic.

CONCLUSIONS: Skin-prick testing is a novel tool in pediatrics that may have an important clinical impact in the accurate diagnosis of antibiotic allergies by guiding provocative challenges.

MILK-SPECIFIC IMMUNOGLOBULIN E/TOTAL IMMUNOGLOBULIN E RATIO AS A PREDICTOR OF POSITIVE ORAL FOOD CHALLENGES IN CHILDREN WITH ALLERGY TO COW'S MILK

Submitted by George Konstantinou

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INTRODUCTION: Skin-prick test wheal size and serum-specific immunoglobulin E (IgE) levels are able to predict, to an extent, the presence of allergy to certain foods. Nevertheless, the predictive value of these markers is not enough to substitute for oral food challenges, which suggests the need for improvement.

OBJECTIVE: The goal was to determine the prognostic value of specific IgE/total IgE (tIgE) ratio in patients with allergy to cow's milk by using receiver operating characteristic (ROC) analysis.

METHODS: Thirty-four open challenges were performed in children with a mean age of 18.4 months (range: 10.3–69.2 months) who had a previously diagnosed IgE-mediated allergy to cow's milk to reintroduce milk into their diet. Specific IgE levels, assessed by ImmunoCAP fluorescence enzyme immunoassay (Pharmacia Corp, Bridgewater, NJ), were obtained, and skin-prick tests were performed just before the challenge. The specific IgE (f2)/tIgE ratio was evaluated as a potential predictor of a positive challenge and compared with f2 alone by using ROC analysis.

RESULTS: Of 34 challenges, 6 (17.6%) results were positive. Prechallenge milk-specific IgE levels and the f2/tIgE ratio were significant predictors ($P_{f2} = .007$; $P_{ratio} = .008$) of a positive challenge outcome. After ROC analysis, f2 provided a discrimination (between positive and negative provocations) of 0.8601 (ROC area under the curve); however, the f2/tIgE ratio provided a significantly greater discrimination of 0.9464. Values of the f2/tIgE ratio that are >0.1121 provide a 100% diagnostic accuracy (probability of a positive provocation result).

CONCLUSIONS: The f2/tIgE ratio may be a novel, promising predictor of positive oral food-challenge results and should be evaluated prospectively in a larger sample.

BREASTFEEDING AND ATOPIC DISEASE IN CHILDHOOD: THE GENESIS STUDY

Submitted by Yannis Manios

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INTRODUCTION: The prevalence of asthma and atopic disease in childhood is increasing yearly. A pro-

tective connection between breastfeeding and development of atopy has been suggested in several studies.

OBJECTIVE: Our goal was to investigate the correlation between breastfeeding and atopy.

METHODS: We screened 1525 children aged 2 to 5 years. Information on the outcome variables “ever wheezing,” “recurrent wheezing,” “diagnosed asthma,” “itchy rash,” “recurrent rash,” and “diagnosed atopic dermatitis” was obtained. Multiple logistic regression analysis was used to estimate the association of outcome variables with the independent variable (breastfeeding) after adjustment for gender and parental history of allergy.

RESULTS: Median duration of exclusive breastfeeding was 1 month (range: 0–2 months). Children who were breastfed exclusively for >3 months had 28% (95% confidence interval [CI]: 0.53%–0.98%) and 29% (95% CI: 0.51%–1.00%) lower likelihood of ever developing wheezing and recurrent wheezing, respectively. Partial breastfeeding seemed to place the children at significantly greater risk for ever and recurrent wheezing when compared with exclusive breastfeeding. There was no significant difference between exclusive breastfeeding versus formula feeding. Of the ever-breastfed children, 15.2% developed itchy rash versus 10.9% of those who never breastfed. Girls had a significant lower odds ratio (OR) for ever wheezing (OR: 0.76 [95% CI: 0.62–0.94]) and “diagnosed asthma” (OR: 0.60 [95% CI: 0.43–0.85]). Of the children studied, 3.7% had a positive parental background for allergy. Parental history of allergy comprised a significant factor that indicated a greater OR for all outcome variables apart from “diagnosed asthma.”

CONCLUSIONS: Breastfeeding seems to have a significant protective effect against the development of wheezing and asthma but not toward the development of skin atopy. A prospective randomized, controlled trial with longer follow-up time is required to confirm our findings.

ESSENTIAL FATTY ACID STATUS IN CORD-BLOOD ERYTHROCYTES AND POSSIBLE FETAL PRIMING OF ATOPY

Submitted by Georgia Skouli

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INTRODUCTION: Environmental factors, diet among them, that act during gestation may play an important role in determining subsequent atopy development. Studies conducted on adults and children have suggested that an imbalance of essential fatty acid (EFA) intake may predispose one to atopic diseases. Few data are available on the possible relation between EFAs and fetal priming of atopy.

OBJECTIVE: We sought to investigate the hypothesis that EFAs may play a role in the regulation of the fetal immune response.

METHODS: We collected umbilical cord-blood samples from 236 neonates with a gestational age of >34 weeks. Serum immunoglobulin E (IgE) levels and fatty acid composition of the erythrocyte membrane were determined by enzyme-linked immunosorbent assay and gas chromatography, respectively. Neonates were separated into 2 groups according to IgE value: the infants in group A had IgE levels of >0.35 IU/mL, and those in group B had IgE levels of ≤0.35 IU/mL.

RESULTS: Group A consisted of 30 neonates with increased IgE levels. Analysis of fatty acid composition revealed higher percentages of arachidic acid (20:0) (mean: 0.22 vs 0.19; $P < .05$) and docosahexaenoic acid (22:6n-3) (mean: 1.36 vs 1.04; $P < .05$) in the infants in group B.

CONCLUSIONS: Important differences were detected in cord-blood fatty acid composition in neonates with increased IgE levels. These differences suggest that EFAs may play a role in the development of atopy predisposition in utero life.

Cardiology

CLINICAL SIGNIFICANCE OF LINEAR SHADOWS INSIDE CORONARY ARTERIAL LESIONS ON TWO-DIMENSIONAL ECHOCARDIOGRAPHY IN PATIENTS WITH KAWASAKI DISEASE

Submitted by Akiko Hamaoka

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INTRODUCTION: In Kawasaki disease, we have detected linear shadows inside large- or moderate-sized coronary arterial lesions (CALs) on high-resolution two-dimensional echocardiography (2DE).

OBJECTIVE: For this study, we wanted to investigate the origin and clinical significance of these linear shad-

**BREASTFEEDING AND ATOPIC DISEASE IN CHILDHOOD: THE
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Pediatrics 2008;121;S92

DOI: 10.1542/peds.2007-2022K

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