studied retrospectively. Response was defined as <5 eosinophils per hpf on repeat EMB. Characteristics of responders and nonresponders were analyzed.

RESULTS. Of 326 patients diagnosed with SEE over a 7-year period, 43 (mean age: 8.5 years; male: 67%) met inclusion criteria. After PPI therapy, 17 patients (40%) were responders. There were no significant differences in demographic features, presenting symptoms, endoscopic findings, or histologic findings between responders and nonresponders. Among patients with 15 to 20 eosinophils per hpf on EMB, 50% were responders; among patients with >20 eosinophils per hpf on EMB, 29% were responders. Seven (41%) of 17 patients with abnormal pH monitoring and 5 (45%) of 11 patients with normal monitoring were responders.

CONCLUSIONS. Forty percent of patients with SEE demonstrated histologic response to PPI therapy. None of the clinical characteristics evaluated predicted response, and response was not dependent on pH study results. The role of PPI therapy in treating SEE warrants further prospective investigation.

REVIEWER COMMENTS. Esophageal eosinophilia has become an increasing clinical concern in the pediatric population. These investigators set out to determine predictors of histologic response to PPI therapy among children with SEE. They correctly identified significant limitations in their retrospective study. For example, the treatment and evaluation of these patients were not standardized at their institution. In addition, not all patients were treated with PPI, doses were not uniform, and not all patients treated with PPI underwent repeat endoscopy. A selection bias cannot be excluded with this study design. Prospective controlled investigations examining the role of PPI, as well as other therapies (eg, enteral corticosteroid therapy), in patients with SEE are definitely needed.

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John M. James, MD
Fort Collins, CO

Food Protein-Induced Enterocolitis Syndrome: 16-Year Experience

Mehr S, Kakakios A, Frith K, Kemp AS. *Pediatrics.* 2009;123(3). Available at: www.pediatrics.org/cgi/content/full/123/3/e459

PURPOSE OF THE STUDY. To investigate possible patterns in demographic features, causative foods, clinical features, treatments at presentation, and outcomes in children diagnosed with food protein-induced enterocolitis syndrome (FPIES).

STUDY POPULATION. Retrospective chart review of 35 children who presented with acute FPIES at a tertiary medical center in New South Wales, Australia, between 1992 and 2007.

METHODS. Diagnosis was made by pediatric allergists after referral to the allergy clinic (74%) or from the emergency department (ED) (26%), using previously published criteria. Cases were identified by codes signifying allergic and dietetic gastroenteritis and colitis or by searching for key words in letters written by allergists.

RESULTS. Thirty-two children fulfilled all criteria, and 3 presented with 1 typical episode and no other causal explanation. Sixty-six episodes were recorded, with a mean presenting age of 5.5 months and a median of 2.2 episodes before diagnosis (range: 1–4 episodes). Most children reacted to 1 food, and 6 children reacted to 2 foods. Causative foods included rice ($n = 14$), soy ($n = 12$), cow's milk ($n = 7$), oat ($n = 2$), sweet potato ($n = 2$), banana ($n = 1$), fish ($n = 1$), chicken ($n = 1$), and lamb ($n = 1$). The mean time from ingestion to reaction was 1.8 hours. Symptoms included vomiting (100%), lethargy (85%), pallor (67%), and diarrhea (24%). Information regarding evaluation of 64 episodes included admission from the ED (25 of 39 visits), abdominal imaging (34%), septic evaluation (28%), and surgical consultation (22%). A decreased body temperature of <36°C was noted in 6 (24%) of 25 episodes. Thrombocytosis not accounted for by hemoconcentration was noted in 15 (63%) of 24 blood counts performed. Only 2 of 19 initial cases presenting to the ED were correctly diagnosed. Other initial diagnoses included food allergy (26%), viral infection/sepsis (21%), gastroenteritis (21%), resolved intussusception (11%), or no diagnosis (11%). Treatments at presentation included intravenous fluid resuscitation ($n = 19$), antibiotics ($n = 8$), oxygen ($n = 6$), air or barium enema ($n = 4$), parenteral epinephrine treatment ($n = 2$), and laparotomy ($n = 1$). Tolerance was demonstrated by 3 years of age in 5 of 6 undergoing soy challenges and 4 of 5 undergoing rice challenges.

CONCLUSIONS. Delayed diagnosis and misdiagnosis is common in FPIES, leading to incorrect and/or invasive treatment. Thrombocytosis, in addition to previously recognized leukocytosis, may be a laboratory clue upon initial presentation. Diarrhea and body temperature of <36°C were associated with more-severe episodes. Foods commonly considered hypoallergenic (ie, rice) may cause FPIES. The prognosis of developing tolerance by age 3 years is favorable.

REVIEWERS COMMENTS. Currently, FPIES is a clinical diagnosis. The authors attempted to identify subjective criteria that may be used to diagnose FPIES; however, thrombocytosis and decreased body temperature are factors that will continue to lead to other common diagnoses, such as sepsis or gastroenteritis. The authors argue that, although cases increased in incidence during the 16

years, the number of episodes before diagnosis remained the same, indicating continued misdiagnosis. This, along with the inappropriate and sometimes risky treatments used in error, points out the need for greater awareness of the symptom pattern and triggers, especially rice, milk, and soy.

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Stephanie A. Leonard, MD
Scott H. Sicherer, MD, FAAP
New York, NY

Prospective Follow-up Oral Food Challenge in Food Protein-Induced Enterocolitis Syndrome

Hwang JB, Sohn SM, Kim AS. *Arch Dis Child.* 2009; 94(6):425–428

PURPOSE OF THE STUDY. To determine tolerance rates to cow's milk and soy for infants affected by food protein-induced enterocolitis syndrome (FPIES).

STUDY POPULATION. Twenty-three patients (7 female and 16 male) with infantile FPIES were prospectively followed.

METHODS. Infants with a diagnosis of FPIES were diagnosed by positive oral food challenges for milk or soy formula at 36 days of age (SD: 14 days; range: 13–58 days). These infants were prospectively followed until >2 years of age. They underwent ≥2 follow-up oral challenges. The first follow-up oral challenges were performed at 6 months of age, and patients were randomly allocated to either milk ($N = 11$) or soy ($N = 12$). Second and third follow-up oral challenges were performed at 2-month intervals, in a crossed and switched-over manner. The challenge consisted of a single open oral feeding of 0.03 to 0.05 mg of cow's milk protein or soy protein per kg of body weight.

RESULTS. Seventy-two oral food challenges with cow's milk or soy were performed in 23 patients with FPIES. There were 27 positive challenges (37.5%). For all positive challenges, projectile vomiting and lethargy were noted at ~1 to 4.5 hours. Symptoms less commonly seen were cyanosis in 6 challenges (22.2%) and hypotension in 3 challenges (11.1%). No false-negative challenges were seen among the 45 negative challenges. Tolerance rates for milk at 6, 8, and 10 months of age were 27.3%, 41.7%, and 63.6%, respectively. Tolerance rates for soy at 6, 8, and 10 months of age were 75.0%, 90.9%, and 91.7%, respectively. Mean ages for outgrowing reactivity to cow's milk and soy among the 23 patients were 12.0 months (SD: 4.4 months; range: 6–20 months) and 7.8 months (SD: 2.1 months; range: 6–14 months), respectively. Solid-food FPIES was observed in 2 of the patients (rice, beef, and egg in 1 child >11 months of age and fish and shellfish in 1 child >12 months of age). These 2 children became tolerant to these foods after 2 years of age.

CONCLUSIONS. The study reveals that infants with FPIES lose intolerance to soy protein at an earlier age, compared with cow's milk. The authors suggest that soy oral challenge should be performed at 6 to 8 months of age and that milk oral challenge should be conducted when the child is >1 year of age. Challenge should be conducted under close medical supervision. The authors also found that a smaller than previously published challenge dose (0.03 to 0.05 mg of cow's milk or soy protein per kg of body weight) was adequate in inducing symptoms.

REVIEWER COMMENTS. Performing oral challenges in infants affected by FPIES is not a light undertaking, as evidenced by the number of children who had a positive oral challenge, cyanosis, and hypotension. This article gives insight to clinicians regarding when and how to perform oral challenges for infants affected by milk and/or soy protein-induced enterocolitis syndrome.

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Mary V. Lasley, MD
Seattle, WA

Rice: A Common and Severe Cause of Food Protein-Induced Enterocolitis Syndrome

Mehr SS, Kakakios AM, Kemp AS. *Arch Dis Child.* 2009;94(3):220–223

PURPOSE OF THE STUDY. To examine the characteristics of children presenting with food protein-induced enterocolitis syndrome (FPIES) attributable to rice and to determine whether there were any differences from those presenting with cow's milk and/or soy FPIES.

STUDY POPULATION. Retrospective study of 31 children presenting with FPIES (14 with rice and 17 with milk/soy) to the Children's Hospital at Westmead, Australia, during a 16-year period (1992–2007).

METHODS. Possible cases of FPIES were identified from the hospital medical record database and from electronically stored departmental letters written by allergists/immunologists. Previously published criteria were used for the diagnosis of FPIES, and cases were differentiated into typical and atypical presentations. The Mann-Whitney U test or Student's t test was used for comparisons between nonparametric and parametric continuous variables. $P <$ .05 was considered significant.

RESULTS. There were 14 children with 26 episodes of rice FPIES, compared with 17 children with 30 episodes of cow's milk ($n = 10$) and soy ($n = 7$) FPIES. Children with rice FPIES were more likely to have FPIES caused by another food (36%) than were children with FPIES caused by cow's milk/soy (0%). Rice triggered more severe reactions, resulting in higher rates of intravenous

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Stephanie A. Leonard and Scott H. Sicherer

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