The US Peanut and Tree Nut Allergy Registry: Characteristics of Reactions in Schools and Day Care


Purpose of the Study. To describe clinical features of allergic reactions to peanuts and tree nuts occurring in school or day care environments.

Study Population. Participants were from the US National Peanut and Tree Nut Allergy Registry (PAR), which is a voluntary, self-reported, or parental reported registry of individuals who are allergic to peanuts and/or tree nuts. This group of individuals from the database had experienced peanut and/or tree nut allergic reactions in a school or day care setting.

Methods. One hundred subjects were randomly selected from the PAR database and telephone interviews were performed to characterize the number of allergic reactions, causative food, initial symptoms, severity of final reactions, method of food contact, and the treatment rendered/school response.

Results. Of 4586 total database registrants, 750 (16%) reported allergic reactions to peanuts and/or tree nuts while in school or day care. One hundred subjects or parental surrogates described 115 reactions to peanuts and 9 reactions to tree nuts. For 25% of these subjects, a school reaction was the first indication of peanut or tree nut allergy. A total of 32% had 1 prior reaction, 37% had 2, 11% had 3 and 20% had >3 prior reactions. A total of 64% occurred in preschool with the remainder in elementary school or higher. Mode of contact included 60% occurring from ingestion, 24% from skin contact/possible ingestion, and 16% from inhalation/possible skin contact. Peanut butter craft projects accounted for the most common ingestion. Treatment was given in 90% of reactions. Antihistamines were given in 84% and epinephrine in 28%. Epinephrine was administered by teachers, nurses, parents, and others. A nurse was on location for only 23% of reactions. Treatment delays were secondary to delayed recognition of reactions, calling parents, not following emergency plans, and, in 1 case, inability to administer self-injectable epinephrine.

Conclusions. Peanut and tree nut allergic reactions are common in school and day care environments. Both accidental exposures and new onset reactions can occur. School personnel need to be educated to recognize and treat food-allergic reactions.

Reviewers’ Comments. There are 2 weaknesses from this article that stem from the reliance on self-reported information. First, this could represent an overestimation of severity of school peanut and tree nut reactions as described in the article. Second, when nonmedically trained personnel report such events, reliability and historical recall need to be taken into account. However, in the school and day care environment, nonmedically trained personnel will be the first to recognize signs and symptoms of allergic reactions and therefore need to be educated regarding food allergies. Successful management includes prevention, prompt recognition, availability of medications, written emergency plans, and early administration of epinephrine by teachers, nurses, parents, cafeteria workers, and other school and day care personnel.

SCHOOL READINESS FOR CHILDREN WITH FOOD ALLERGIES


Purpose of the Study. The purpose of this study was to identify and characterize the level of knowledge about food allergy and the prevention and treatment policies for food-allergic children in elementary schools.

Study Population. A total of 273 public elementary schools were randomly selected from the 2082 public elementary schools listed by the Michigan State Education Directory.
Methods. A 21-item questionnaire, which assessed food allergy awareness, avoidance measures, and treatment strategies, was mailed to the 273 schools. Multiple-choice questions were derived from suggested school guidelines for anaphylaxis.

Results. A total of 104 responses were received representing 109 schools (40% response rate). A total of 39% characterized their school district as urban, 37% as rural, and 28% as suburban. Based on a school-reported estimate of 66,598 children, there was a 1.7% self-reported prevalence rate of food allergies. A total of 95 schools reported having at least 1 food-allergic student and 55% of those reported 10 or more food-allergic children. The most common food allergies were milk (81%), peanut (62%), tree nuts (32%), shellfish (28%), egg (23%), wheat (22%), and soy (7%). A total of 31 schools reported “other” food allergies including fruit, chocolate, red dye, tomato, fish, orange juice, spices, and cheese. Food-allergic children were identified primarily through official school records, and only 16% of school had written individual emergency plans. For education on food allergies, schools relied mainly on parents (52%) and in-services (47%) conducted most commonly by school nurses or principals. Avoidance measures to aid in preventing accidental ingestions included food substitution and special meal requests, non-sharing food policies, and instruction for food handlers on techniques to prevent cross-contamination. However, only 21% of schools reported instructions on reading food labels for hidden allergens. In the event of a serious allergic reaction or on administration of epinephrine, 94% of the schools reported that they would transport the student to medical facilities. The most common site for storage of epinephrine was the main office or the nurse’s office. Principals, nurses, and teachers were most often trained to administer epinephrine. No training of staff was reported by 10% of the schools.

Conclusions. Schools need to formally educate their personnel on a school-wide basis. Important prevention measures such as reading labels, written treatment plans, immediate accessibility to epinephrine, and staff training on administration of epinephrine are areas that need to be emphasized.

Reviewer’s Comments. This study demonstrates that most schools have at least 1, if not several, food-allergic children. It also revealed a large number of deficiencies in school policies regarding food-allergic children, such as lack of school-wide staff education, lack of avoidance measures (instructions on food labeling for cafeteria workers as well as knowledge on who has food allergies), lack of written emergency plans, lack of accessibility to epinephrine, and lack of personnel who can administer epinephrine. Previous studies have shown that even those who are responsible for administering self-injectable epinephrine often are not familiar with the correct technique for administration. Schools need help from physicians on proper policies and programs to keep food-allergic children safe from harm.

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AN ETIOLOGICAL ROLE FOR AEROALLERGENS AND EOSINOPHILS IN EXPERIMENTAL ESOPHAGITIS


Purpose of Study. An experimental model was established to test the hypothesis that eosinophilic esophagitis is mechanically linked to eosinophilic allergic responses in the lung.

Study Population. Eight- to 10-week-old BALB/c mice, interleukin (IL)-5 gene-targeted mice, and eotaxin-deficient inbred mice were maintained with age- and sex-matched controls.

Methods. Using previously published protocols, mice were exposed to repeated inoculations of Aspergillus fumigatus antigens by oral, intragastric, and intranasal routes. Eosinophils levels in the esophagus were analyzed by anti-major basic protein immunostaining. The tissue distribution of eosinophils after intranasal allergen was examined in the blood, bronchoalveolar lavage fluid, stomach, and small intestine. Pathologic changes were defined using histologic examination of the esophagi and electron microscope analysis of tissue eosinophil morphology. Experimental eosinophilic esophagitis was induced in eotaxin gene-targeted mice and in IL-5 gene-targeted mice.

Results. Allergen-challenged mice developed marked levels of esophageal eosinophils, free eosinophil granules, and epithelial cell hyperplasia, which mimic pathophysiologic changes observed in humans with eosinophilic inflammation of the esophagus. Of note, eosinophil levels in the stomach and small intestine did not significantly increase after allergen challenge. As opposed to the intranasal route, exposure of mice to oral or intragastric allergen does not promote eosinophilic esophagitis, indicating that hypersensitivity in the esophagus occurs with simultaneous development of pulmonary inflammation. In the absence of eotaxin, eosinophil recruitment is attenuated, and furthermore, in the absence of IL-5, eosinophil accumulation and epithelial hyperplasia were ablated.

Conclusions. These results establish a pathophysiologic connection between allergic hypersensitivity responses in the lung and esophagus and demonstrate an etiologic role for inhaled allergens and eosinophils in gastrointestinal inflammation. Moreover, these investigations dissect the cellular and molecular mechanisms involved in eosinophil homing into the esophagus. Aeroallergens may be contributing to the pathogenesis of eosinophilic inflammation in a subset of patients with primary eosinophilic esophagitis and gastroesophageal reflux disorders.

Reviewer’s Comments. Just when you thought you had heard of the last potential trigger for gastroesophageal reflux disorders, this very provocative investigative model of experimental eosinophilic esophagitis was published. These data suggest that eosinophilic esophagitis can be mediated by extrinsic allergens and establish a causal link between the development of allergic hypersensitivity in the respiratory tract and in the esophagus. This model not only implicates a role for aeroallergens in the pathogenesis of eosinophilic esophagitis, but also provides a novel system to evaluate the treatment of eosinophilic esophageal disorders, which include gastroesophageal reflux, allergic eosinophilic esophagitis, eosinophilic gastroenteritis, primary eosinophilic esophagitis, and drug reactions.


ANAPHYLAXIS

CAN EPINEPHRINE INHALATIONS BE SUBSTITUTED FOR EPINEPHRINE INJECTION IN CHILDREN AT RISK FOR SYSTEMIC ANAPHYLAXIS?


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