ANAPHYLAXIS

Galactose-α-1,3-galactose and Delayed Anaphylaxis, Angioedema, and Urticaria in Children

PURPOSE OF THE STUDY. To determine whether immunoglobulin E (IgE) antibody to galactose-α-1,3-galactose (α-Gal) is present in the sera of pediatric patients who report idiopathic anaphylaxis or urticaria 3 to 6 hours after eating beef, pork, or lamb.

STUDY POPULATION. Children aged 4 to 17 years with a history suggestive of delayed anaphylaxis, urticaria, or angioedema (N = 51) were enrolled in an institutional review board–approved protocol at the University of Virginia and private practice offices in Lynchburg, Virginia.

METHODS. Sera were obtained and analyzed by using ImmunoCAP (Phadia, Inc, Uppsala, Sweden) for total IgE and specific IgE to α-Gal, beef, pork, cat epithelium and dander, Fel d 1, dog dander, and milk.

RESULTS. A total of 45 children were identified who had both clinical histories supporting delayed anaphylaxis or urticaria to mammalian meat and IgE antibodies specific for α-Gal. Most of these children also had a history within the last year of tick bites that itched and persisted.

CONCLUSIONS. A new form of anaphylaxis and urticaria that occurs 3 to 6 hours after eating mammalian meat is not uncommon among children in the Virginia area. The diagnosis should be suspected in children with a suggestive history living in the area in which the Lone Star tick is common, and the diagnosis should be confirmed by specific serologic testing.

REVIEWER COMMENT. IgE response to α-Gal leading to delayed anaphylaxis or urticaria after eating meat is unlike any other known IgE-mediated food allergy, in which symptoms are typically immediate, often within seconds to minutes after ingestion. Most commonly, α-Gal responses occur after ingestion of beef, pork, or lamb but can occur even after milk ingestion. The authors point out that the history in a given patient is not always consistent, and they speculate that this finding is likely due to several factors, including amount of meat ingested, inconsistencies in the digestive process, and how the meat has been treated (eg, mechanical, thermal, freezing). Of interest, 90% of α-Gal patients with this syndrome report tick bites in the year before their first delayed meat reaction. Affected patients report marked pruritus at the site of bite(s) that often persists for weeks. This finding seems to suggest that tick bites may cause initial sensitization to α-Gal.

Clinical Features of Children With Venom Allergy and Risk Factors for Severe Systemic Reactions

PURPOSE OF THE STUDY. The authors sought to analyze the clinical features and identify the risk factors associated with children who developed severe systemic reactions to insect sting venom.

STUDY POPULATION. A total of 76 Turkish children (57 boys, mean age 9.8 ± 3.4 years) with systemic reactions to Hymenoptera (honeybee or wasp) stings were recruited from a pediatric allergy outpatient center.

METHODS. Sting victims and their parents identified the insect through wasp and bee picture cards. The extent and severity of the allergic reaction, treatment intervention, and demographic data were documented. Immunoglobulin E (IgE)-mediated venom allergy was identified via allergy skin testing and/or specific IgE testing. Additional evaluation included atopic disease (asthma and/or allergic rhinitis) assessment, aeroallergen skin-prick testing, total IgE level, and eosinophil counts performed at least 2 weeks after the sting reaction.

RESULTS. Overall, 58 (76%) children reacted to Vespula (wasp) stings and 18 (24%) reacted to Apis mellifera (bee) stings. Severe systemic reactions occurred in 45 (59.2%) patients; 20 (26.3%) had aeroallergen sensitization and 25 (32.9%) had atopic disease (allergic rhinitis and/or asthma); 65.8% had experienced previous stings; 95% were admitted to the emergency department; and epinephrine was used in only 46%. The upper limb was the most frequent area stung (43.4%). Cutaneous reaction occurred in 98.9%, but respiratory (74.7%), gastrointestinal (41.3%), and cardiovascular (40.0%) symptoms also occurred. Specific IgE to wasp and bee venom was positive in 87% and 45% of children, respectively, and skin testing to wasp and bee venom was positive in 89% and 37%, respectively. No statistically significant correlations were found between severity of reaction and either testing method. Eosinophilia (>5% eosinophils), female gender, and associated atopic disorder were significant risk factors for severe systemic reactions.
**CONCLUSIONS.** There was a high frequency of hypersensitivity to wasp venom, and severe systemic reactions to Hymenoptera stings are associated with eosinophilia, female gender, and concomitant atopic disease.

**REVIEWER COMMENTS.** At least 40 people in the United States die each year as a result of insect sting anaphylaxis. Approximately 0.34% to 6.5% of children stung by insects experience a systemic reaction. Although not incredibly common, stinging insect anaphylaxis can be an unpredictable and frightening event. This article helps physicians recognize potential risk factors to identify and educate patients on stinging insect avoidance. A potentially disturbing finding that the authors noted was the low usage of epinephrine in the emergency department for treating systemic allergic reactions. Many more lives can potentially be saved with swift intervention of epinephrine, and emergency personnel (emergency medical technicians, nurses, and physicians) need to be aware that, at the proper dosage, the benefits of epinephrine far outweigh its risks in the treatment of severe anaphylaxis.

**URL:** www.pediatrics.org/cgi/doi/10.1542/peds.2013–2294U

Joann H. Lin, MD
McKinney, TX

**Anaphylaxis in an Emergency Setting—Elicitors, Therapy and Incidence of Severe Allergic Reactions**


**PURPOSE OF THE STUDY.** To assess the incidence of anaphylactic reactions in the Berlin area, as well as elicitors, symptoms, and emergency treatment.

**STUDY POPULATION.** Emergency physicians throughout the Berlin area (an urban area of ~4 million people) were asked to complete questionnaires.

**METHODS.** A questionnaire was used to gather the following information on anaphylaxis cases: gender, age, symptoms, reaction site, outcome, eliciting factors, and applied drugs. Forms were completed prospectively by emergency physicians. Eighteen emergency bases called via the 112 emergency line in the Berlin area were included. Cases reported between January 2008 to December 2010 were analyzed. Severity classification was designated as follows: severe respiratory (level 1), severe cardiovascular (level 2), or combined (level 3).

**RESULTS.** From January 2008 to December 2010, 295 cases of anaphylaxis were reported. Ninety-one percent were adults (mean age 51), and 9% were children (mean age 9). Level 1, 2, and 3 reactions accounted for 14%, 25%, and 61%, respectively. Among the 179 level 3 reactions, 11 had cardiac arrest, with 2 being fatal. Foods were the most common triggers in children (46%), followed by drugs and venom (8% each). In adults, both drugs and foods were frequent elicitors (each 31%). The most common food was tree nuts. Insect venom accounted for 20% of adult reactions and 8% of pediatric reactions. Ninety-eight percent of drug reactions occurred in adults. Seven adults and 7 children reported reactions in the context of specific immunotherapy. Hypotension occurred in 49% of adults and 29% of children. For treatment, glucocorticoids, antihistamines, and epinephrine were administered in 97%, 82%, and 23% of cases, respectively. Among level 3 reactions, only 30% were administered epinephrine. The estimated annual incidence ranged from 1.6 per 100 000 in 2009 to 4.5 per 100 000 in 2008.

**CONCLUSIONS.** The most common trigger of anaphylaxis is foods, followed by drugs and insect venom. Epinephrine is used in only 23% of cases. Of the 295 cases reported, 11 experienced cardiac arrest, with 2 being fatal.

**REVIEWER COMMENTS.** The incidence of anaphylaxis in this study may be underestimated because cases that were not phoned in to the emergency line may not be accounted for. However, severe cases require immediate medical attention and would be represented well. This study finds the causes of anaphylaxis to be somewhat different from previous reports derived from a Central European Registry reported by allergists, which documented venom as most common (50%), followed by foods and drugs at 24% and 17%, respectively. Allergists may be more aware of reactions that occur in patients with venom allergy treated with immunotherapy. Emergency physicians in the current study may have attributed reactions to foods that could in fact be due to other causes. Another notable finding of this study is that epinephrine was profoundly underutilized even in the most severe reactions. Because delay in epinephrine administration may lead to fatality, this study calls attention to the need for increased education regarding the appropriate treatment of anaphylaxis.

**URL:** www.pediatrics.org/cgi/doi/10.1542/peds.2013–2294V

Luke A. Wall, MD
Ricardo U. Sorensen, MD
New Orleans, LA

**Auvi-Q Versus EpiPen: Preferences of Adults, Caregivers, and Children**


**PURPOSE OF THE STUDY.** To determine the preference for the new epinephrine autoinjector, Auvi-Q, or the EpiPen with regard to method of instruction, preference to carry, device size, and device shape.

**STUDY POPULATION.** Subjects were recruited from 12 office-setting research facilities throughout the United States.
Clinical Features of Children With Venom Allergy and Risk Factors for Severe Systemic Reactions

Joann H. Lin

*Pediatrics* 2013;132;S14

DOI: 10.1542/peds.2013-2294U

Updated Information & Services

Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at:

/site/misc/Permissions.xhtml

Permissions & Licensing

including high resolution figures, can be found at:

/content/132/Supplement_1/S14.3.full.html

Reprints

Information about ordering reprints can be found online:

/site/misc/reprints.xhtml
Clinical Features of Children With Venom Allergy and Risk Factors for Severe Systemic Reactions

Joann H. Lin
Pediatrics 2013;132;S14
DOI: 10.1542/peds.2013-2294U

The online version of this article, along with updated information and services, is located on the World Wide Web at:
/content/132/Supplement_1/S14.3.full.html