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%, 88%, 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.


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


PURPOSE OF THE STUDY. To determine the preference for the new epinephrine autoinjector, Audi-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.


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Participants (n = 693) were grouped into adults aged 18 to 65 years (241), caregivers who were parents/guardians aged 18 to 65 years of children aged 5 to 17 years (228), and children aged 11 to 17 years (224), with and without experience using an epinephrine autoinjector.

METHODS. The Auvi-Q and EpiPen were evaluated by each participant in a randomly assigned order. Participants were given a scenario that involved anaphylaxis and were instructed to simulate the use of each device using trainers that did not have a needle or contain epinephrine. Subjects were expected to perform the device test by relying on the labeling and/or voice instruction or intuition to perform the simulated injection correctly. They could not communicate with proctors before or during the test and were not given patient information leaflets. After testing both devices, participants completed a survey to indicate their preference for Auvi-Q versus EpiPen.

RESULTS. Among all participants combined, Auvi-Q was preferred over EpiPen an all study end points (P < .001). For experienced and inexperienced participants in all 3 groups, Auvi-Q was preferred over EpiPen for method of instruction, preference to carry, and device size (all P < .001). The preference for Auvi-Q device shape was not significant among experienced children (P = .10), though it was significant for inexperienced children (P = .04) and for experienced and inexperienced adults and caregivers (P < .001).

CONCLUSIONS. This study found that a majority of patients in all groups, including adults, caregivers, and children, both with and without experience using an epinephrine autoinjector, preferred Auvi-Q over EpiPen.

REVIEWER COMMENTS. Epinephrine is underutilized for anaphylaxis, and patients and caregivers of patients at risk for anaphylaxis do not always carry an epinephrine autoinjector and do not always use it correctly. Given the user preferences noted for this new device, it will be interesting to see in future studies whether the use of Auvi-Q could lead more patients and caregivers to carry epinephrine autoinjectors and to use them correctly when needed in an emergency.

FOOD ALLERGY

Clinical Value of Component-Resolved Diagnostics in Peanut-Allergic Patients

PURPOSE OF THE STUDY. The diagnosis of food allergy can be difficult, and our current tools, including skin and serum-specific immunoglobulin E (IgE) testing, are both limited by their poor positive predictive accuracy. Oral food challenges remain the gold standard for diagnosis, but these carry risk and are time-consuming. Recently, a specific IgE measurement for individual peanut proteins (component-resolved diagnostics [CRD]) has been recognized as an additional tool for the diagnosis of peanut allergy.

STUDY POPULATION. A total of 205 Danish patients with a clinical history of peanut allergy (with reactions described as mild to severe) were studied, including 175 positive and 30 negative oral peanut challenges. The mean age was 5.6 years (range: 1–26 years), and the male:female ratio was 1.7:1.

METHODS. Children ≤ 3 years old underwent open food challenge (n = 165), and those older than 3 years (n = 40) underwent double-blind, placebo-controlled food challenges to peanut. Symptom severity was classified into 5 groups. Sensitization to peanut was determined by using skin prick testing and ImmunoCAP (Phadia, Inc, Uppsala, Sweden) specific IgE testing to whole peanut (II) and peanut components (Ara h 1, Ara h 8, and Ara h 9). Challenge outcomes were retrospectively correlated with levels of specific IgE to peanut and peanut components.

RESULTS. Mean IgE levels for whole peanut and the components Ara h 1, Ara h 2, and Ara h 3 were significantly higher for positive challenges compared with negative challenges. The strongest correlation between clinical reactivity and specific IgE level was found for Ara h 2, for which a cutoff of >1.63 kU/L resulted in a specificity of 1.00 and a sensitivity of 0.70 in predicting oral food challenge results. Optimal cutoff points for predicting positive versus negative challenges were 2.6 kU/L for whole peanut (specificity: 0.80; sensitivity: 0.76) and 1.28 kU/L for Ara h 2 (specificity: 0.97; sensitivity: 0.76). Increasing symptom scores were correlated with higher levels of IgE to whole peanut and the peanut components Ara h 1, Ara h 2, and Ara h 3.

CONCLUSIONS. IgE levels to whole peanut as well as peanut components, especially Ara h 2, can help determine likelihood of reactivity to peanut. In this population, IgE to Ara h 2 would have reduced from 205 to 92 the number of oral challenges needed to clarify diagnosis. Unfortunately, however, the Ara h 2 IgE level that was found to be the most useful cutoff point in this study was higher than that found in other studies, suggesting that decision points need to be addressed in relation to specific populations. In the end, CRD may help to reduce the need for oral food challenges in some patients, but decision points may be population specific.

REVIEWER COMMENTS. Although CRD testing cannot replace oral food challenges, it may be a useful tool for deciding on the appropriateness of challenge to peanut in select
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