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 on 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.


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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 1–3, 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
cases. Results of this study demonstrated significantly higher levels of Ara h 2 at decision points than previously published. These findings underscore the need for additional research among different patient groups before applying published cutoff points, given likely population-specific variations in interpretation of IgE results.


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Predicting Positive Food Challenges in Children Sensitized to Peanut/Tree Nuts

PURPOSE OF THE STUDY. To identify risk factors for reactions to peanuts (PN) and tree nuts (TN) on first known ingestion among sensitized children.

STUDY POPULATION. Children ages 3 to 16 years who were sensitized to PN and/or TN undergoing an oral food challenge to PN and/or TN.

METHODS. Investigators conducted a retrospective case study of sensitized children undergoing PN and/or TN challenge without a history of consumption of the challenge food. Factors relating to food challenge outcome were analyzed.

RESULTS. Ninety-eight food challenges (47 PN and 51 TN) were performed. The challenge outcomes were 29 positive, 67 negative, and 2 equivocal. A positive maternal history of atopy (odds ratio: 3.73 [95% confidence interval: 1.31–10.59]) and specific immunoglobulin E (IgE) >5 kU/L (odds ratio: 3.35 [95% confidence interval: 1.23–9.11]) were associated with increased risk of positive food challenge. Atopic history in other immediate family members was not predictive of challenge outcome. In addition, there was no association between type of TN, other food allergies, other atopic conditions, severity of previous food reactions to other foods, or history of positive food challenges to other foods.

CONCLUSIONS. The authors concluded that the presence of maternal atopic history and specific IgE >5 kU/L were significantly predictive of oral food challenge outcome among children with no history of consumption of the challenge food.

REVIEWER COMMENTS. This study addresses an important clinical scenario presenting to primary and subspecialty health care providers. Children with suspected or known food allergy to other foods often present with positive results on testing (skin or serum IgE) to PN and TN without a history of ingestion, and the clinician must advise patients regarding the risks of introducing these food allergens. Although further prospective studies in larger and more diverse patient populations are needed to better refine risk factors in this patient population, the current study identifies 2 important factors that may aid the clinician’s decision to conduct oral food challenges to PN and/or TN among sensitized children.

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The Epidemiology of Milk Allergy in US Children

PURPOSE OF THE STUDY. This study sought to gain a more complete understanding of the current pediatric milk allergy distribution and diagnosis trends in the United States.

STUDY POPULATION. Data were collected on 38 480 children using a randomized cross-sectional survey of a representative sample of US households, which identified 657 children who were reported by parents to have a milk allergy.

METHODS. Primary outcome measures were prevalence and severity of milk allergy defined as a convincing or confirmed allergy to any form of milk. Data were also collected on age of onset, development of tolerance, severity of reaction, and coexistence of other food allergies.

RESULTS. Eight percent (n = 3218 children) of the analytic sample had food allergies. Milk allergy was present in 19.9% and was second only to peanut allergy at 24.8%. The highest percentage of milk-allergic children (23.8%) fell within the 6- to 10-year age group, and the lowest percentage (15.0%) was in the 11- to 15-year age group; however, it was significantly more prevalent in children <2 years of age. Of the reported milk allergies, 55.5% occurred in white children, 19.8% in Hispanic children, 16.6% in African American children, and 4.7% in Asian children. First reaction occurred at a mean age of 2 years. Severe reactions occurred in 31.3% compared with 47.2% with other food allergies. Vomiting and diarrhea were the most common symptoms, closely followed by hives and eczema. The most common severe symptoms were wheezing and shortness of breath. The mean age at which tolerance was reported to have occurred was 4 years; odds ratio compared with other food allergies was 2.1. The most common comorbid food allergen was shellfish. Seventy-five percent of milk allergies were physician-diagnosed, but only 43.5% of those had diagnostic testing.
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