Epinephrine Auto-Injector Use in Adolescents at Risk of Anaphylaxis: A Qualitative Study in Scotland, UK


PURPOSE OF THE STUDY. Adolescents with allergies are at high risk of fatal anaphylactic reactions. The current study explores barriers to epinephrine auto-injector use among at-risk adolescents in Scotland and investigates strategies to improve anaphylaxis management.

STUDY POPULATION. Twenty-six adolescents aged 13 to 19 years and 28 of their parents participated in this qualitative study. Participants were recruited through school nurses, primary care physicians, allergy specialists, and a patient support group and via a press release. Forty-five adolescents were identified as potential participants, 29 met inclusion criteria, and 3 declined to participate. Inclusion criteria included anaphylaxis within the past 5 years, an earlier reaction, and/or testing indicating high risk.

METHODS. This qualitative study involved in-depth, semistructured interviews that explored adolescents’ accounts of anaphylactic reactions and issues related to epinephrine use. Interview topics included accounts of reactions, emergency management, and what might improve management. Eight adolescents and 10 parents participated in subsequent focus groups.

RESULTS. The majority of adolescents had neither self-administered nor been given epinephrine, despite reactions that warranted this medication. Eighteen adolescents reported anaphylactic reactions during which epinephrine was available; 11 of those reported not using their autoinjector. Barriers to epinephrine use included failure to recognize anaphylaxis, uncertainty about technique and when to administer epinephrine, and fear. Most adolescents reported carrying autoinjectors some of the time. Several participants found it inconvenient to carry autoinjectors. One reported not using an autoinjector because it was not carried.

CONCLUSIONS. Adolescents and parents reported underuse of epinephrine autoinjectors. Barriers to epinephrine use are complex and include inadequate training, motivation and self-discipline to carry the medication, ability to identify a reaction, knowledge of when to use the device, and preparation for managing the challenging emotions that accompany emergencies.

REVIEWER COMMENTS. Previous studies have identified sub-optimal use of epinephrine autoinjectors in the adolescent population. Delayed recognition and treatment of anaphylaxis can be fatal. This study explores multiple barriers to epinephrine use and explores potential interventions. Suggested interventions include education regarding recognition of anaphylaxis, aggressive use of autoinjectors, and training on proper autoinjector technique. Other future strategies may include improved autoinjector design and alternative epinephrine administration routes. The current study underscores the importance of education and training regarding anaphylaxis management for providers, patients, and families.

Anaphylaxis as an Adverse Event Following Immunisation in the UK and Ireland


PURPOSE OF THE STUDY. To estimate the incidence and clinical presentation of anaphylaxis as an adverse event after immunization through prospective active surveillance.

STUDY POPULATION. Children under age 16 years in the United Kingdom and Ireland with suspected anaphylaxis as an adverse event after immunization were reported to the British Pediatric Surveillance Unit (BPSU) over a 13-month period.

METHODS. Pediatricians in the United Kingdom and Ireland were sent monthly cards inquiring about rare disorders including cases of children who may have had anaphylaxis after receiving an immunization. The cards were sent to BPSU. For those who did report a possible case, the physicians were asked to complete a more complete questionnaire (online or paper) about the presentation, diagnosis, management, and outcome of the case.

RESULTS. Overall, return rates for the monthly cards inquiring about rare disorders were 93.2% in the United Kingdom and 91.8% in Ireland. In all, 15 reports of possible anaphylaxis were made to the BPSU. Seven cases met the criteria for anaphylaxis as an adverse event after immunization. For 3 cases, the onset of symptoms occurred within 15 minutes of immunization; whereas 4 cases occurred 30 minutes or longer post immunization, with 1 case occurring 120 minutes later. The majority of
children required treatment with intramuscular adrenaline and oral antihistamines. Two cases were associated with single-component measles vaccine with an incidence of 12.0 cases per 100,000 doses. Three cases were associated with human papillomavirus vaccine with an incidence of 1.4 cases per 1 million doses. Several of the children who had adverse reactions to human papillomavirus had underlying food allergy or idiopathic anaphylaxis. No anaphylactic events were reported due to routine infant and preschool immunizations despite 5.5 million vaccines being administered over the 13-month period.

CONCLUSIONS. Anaphylaxis due to immunization is a very rare adverse event. No cases of anaphylaxis after routine vaccination of infants and preschool children were reported over the 13-month period in which more than 5.5 million vaccines were administered. When anaphylaxis does occur, it may be delayed for some children, especially those who have concurrent allergic disease.

REVIEWER COMMENTS. This study is a valuable addition to the existing evidence concerning vaccine safety. It provides reassurance for both health care professionals and families that an adverse event such as anaphylaxis is quite rare.

EVALUATION OF A NATIONAL INSTITUTE OF ALLERGY AND INFECTIOUS DISEASE/FOOD ALLERGY AND ANAPHYLAXIS NETWORK CRITERIA FOR THE DIAGNOSIS OF ANAPHYLAXIS IN EMERGENCY DEPARTMENT PATIENTS


PURPOSE OF THE STUDY. To retrospectively assess the diagnostic accuracy of the National Institute of Allergy and Infectious Disease/Food Allergy and Anaphylaxis Network Criteria (NIAID/FAAN) criteria for the diagnosis of anaphylaxis in the emergency department (ED).

STUDY POPULATION. ED patients (20% children overall) who were diagnosed with an allergic reaction or anaphylaxis by the emergency care provider. A subset of patients with related diagnoses was also included.

METHODS. This was a retrospective cohort study of patients presenting to Saint Mary’s Hospital ED in Minnesota, through April 2008 and October 2008. Electronic medical records were reviewed and data were collected on inciting allergen, timing of symptoms onset, presenting signs and symptoms, and allergic history. Individual records were reviewed by 2 experienced board-certified allergists who were blind to the results regarding NIAID/FAAN criteria. The final consensus diagnosis by the 2 allergists was considered the reference standard for the diagnosis of anaphylaxis.

RESULTS. Two hundred fourteen patients participated in the study with a median age of 36 years (~25% were <18 years old). About 40% of patients met NIAID/FAAN criteria for anaphylaxis. Emergency physicians diagnosed anaphylaxis in about 26%, of whom 27% were not considered to have anaphylaxis by the allergists. Compared to diagnosis by allergists, the sensitivity of the criteria was 96.7% (95% confidence interval [CI], 88.8%–99.1%), the specificity was 82.4% (95% CI, 75.5%–87.6%), positive predictive value was 68.6% (95% CI, 58.2%–77.4%), and negative predictive value was 98.4% (95% CI, 94.5%–99.6%). Other diagnoses made in those not meeting criteria were indeterminate reaction, NSAID drug reaction, other medication reaction, allergic reaction, asthma exacerbation, anxiety, carcinoid syndrome, post-viral syndrome, oral allergy syndrome.

CONCLUSIONS. This study demonstrated that by using expert diagnosis as the reference standard, the NIAID/FAAN criteria for making a diagnosis of anaphylaxis in the ED is highly sensitive but less specific.

REVIEWER COMMENTS. Underdiagnosis of anaphylaxis in the ED is becoming less of a problem with more education and better-defined criteria. However, this study demonstrated that emergency physicians continued to miss over a third of cases that would have been considered anaphylaxis by an allergist. The NIAID/FAAN criteria are highly sensitive and have a high negative predictive value that might makes it useful in preventing underdiagnosis, although a substantial rate of false-positive results continue. The limitation here was that the standard reference was expert opinion, and interrater agreement among allergists was not ideal (κ = .77). Further prospective studies in other populations are needed to validate this study.

SKIN DISEASE


PURPOSE OF THE STUDY. To study fear of topical corticosteroid use among patients with atopic dermatitis (AD) by looking at adherence to treatment regimens and the association with beliefs and attitudes.
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Mary V. Lasley
Pediatrics 2012;130;S20
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