

Allergic Reaction Versus Anaphylaxis

A 34-year-old woman presented to ED with complaints of an allergic reaction, the onset of which began approximately 1 hour prior. The patient did not know what might have caused her symptoms. She complained of hives and itching all over; she denied difficulty swallowing, wheezing, and shortness of breath. Her medical history was unremarkable. She was on no medications, and she denied any alcohol or tobacco use. She had no known medication or food allergies.

lergic reaction and discharged home with a prescription for diphenhydramine and a methylprednisolone dose pack.

Approximately 6 hours later, the patient returned to the same ED with complaints of worsening hives, itching, shortness of breath, dizziness, swelling of the eyelids and lips, and nausea and vomiting. On examination, the patient had an elevated heart rate of 108 beats/minute, and had mild periorbital swelling bilaterally; otherwise, there was no change from her initial

presentation. She was given another dose of diphenhydramine and methylprednisolone sodium succinate IV, and observed for 3 hours in the ED. The patient stated she felt improved, and the itching and hives had decreased. She was discharged home and told to take the previously prescribed medications as directed.

The following day, the patient collapsed at home and emergency medical services was called. Unfortunately, the patient could not be resuscitated and was pronounced dead at the scene. An autopsy revealed the patient had died from anaphylaxis and laryngeal edema, with an extremely elevated tryptase level of 200 ng/mL (normal, <11.5 ng/mL).

The patient's family sued the EP for failure to diagnose and treat anaphylaxis, failure to treat with epinephrine, and failure to admit the patient to the hospital. The defense claimed the patient did not present with anaphylaxis, but rather simply a worsening of the hives and angioedema, and that the treatment provided was appropriate. The jury found in favor of the defendants.

Discussion

It does not appear the patient presented with anaphylaxis on the first visit, but may have had it on the second visit. In 2004, the National Institutes of Allergy and In-



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Physical examination revealed a woman in mild discomfort, secondary to generalized itching. Her vital signs, including pulse oximetry, were normal. There was no swelling of the face, lips, or oropharynx. The lungs were clear to auscultation bilaterally. The heart and abdominal examinations were normal. Examination of the skin revealed diffuse urticaria without petechiae or purpura.

The emergency physician (EP) ordered 125 mg of methylprednisolone sodium succinate and 25 mg of diphenhydramine intravenously (IV). After approximately 1 hour, the hives and itching decreased and the patient felt improved. She was diagnosed with an al-

fectious Disease (NIAID) panel and the Food Allergy and Anaphylaxis Network (FAAN) developed criteria for the diagnosis of anaphylaxis.¹ According to the criteria, anaphylaxis is likely when any one of the following three criteria are present: (1) acute onset of symptoms involving the skin or mucosa (eg, pruritus, hives, angioedema), and either respiratory compromise (eg, dyspnea, wheezing, stridor, hypoxia) or hypotension/end-organ dysfunction (eg, syncope, incontinence); (2) two or more symptoms (eg, respiratory compromise, hypotension/end-organ dysfunction, persistent gastrointestinal [GI] symptoms such as vomiting, diarrhea, or crampy abdominal pain) that occur rapidly after exposure involving the skin or mucosa; or (3) hypotension from a known allergen to the patient. The accuracy of these criteria has been retrospectively evaluated in an ED study, and found to have a 97% sensitivity and an 82% specificity.² The negative predictive value was good at 98%, but the positive predictive value was only 69%.²

When a patient presents with minimal or subtle symptoms, anaphylaxis can be a very difficult diagnosis to make in the ED early on in the process. While no EP will miss the diagnosis in a patient with hives, hypotension, and wheezing, it can be easy to miss when the predominant symptoms are GI, such as nausea, vomiting, or diarrhea. In addition, the differential diagnosis for the presentation of anaphylaxis in the ED can be extremely broad and include vasovagal reaction, asthma attack, myocardial infarction, gastroenteritis, panic attack, or airway obstruction.

Due to the nature of emergency medicine, EPs must consider multiple etiologies before determining an evaluation and management plan. While recognizing there are limitations to the NIAID/FAAN criteria, EPs should be aware of them. We are very good at treating these types of symptoms with antihistamines and steroids; however, we frequently fail to give epinephrine when indicated. It is important to remember that epinephrine is the first-line treatment for anaphylaxis—not corticosteroids or antihistamines.³

Reasons for not administering epinephrine are multiple. First, as discussed above, if the diagnosis of anaphylaxis is not considered, the EP is not going to administer the drug of choice. Secondly, EPs have been taught to have a healthy respect for epinephrine and its effects, especially in older patients. Due to this cautious approach, epinephrine is frequently not given to patients with mild symptoms or to those who present early in the course of disease.

Emergency physicians have experience giving epinephrine subcutaneously, but not nearly as much with the intramuscular (IM) route. This is important, because an IM injection in the anterolateral thigh is the recommended location for the treatment of anaphylaxis. The dose should be weight based (0.01 mg/kg) to a maximum of 0.5 mg. This dose can be given every 5 to 15 minutes as necessary to control symptoms.³ The dosing is important to remember, since many EDs stock only autoinjectable epinephrine devices for use in anaphylaxis. These autoinjectors only contain 0.3 mg of epinephrine, so some patients may be underdosed if used.

In the management of allergic reactions and anaphylaxis, EPs frequently administer antihistamines and corticosteroids. While there is no direct evidence to support their use in the management of anaphylaxis, theoretical benefits do exist.³ This, combined with the excellent medication safety profile and lack of serious side effects, make these two medication classes appropriate for use in the ED.

References

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