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Review of Controversial Areas in Anaphylaxis for the Nurse Practitioner

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ABSTRACT

Anaphylaxis is a systemic, potentially fatal allergic reaction that can occur without warning after exposure to allergens including food, drugs, and insect venom. This article focuses on controversial issues in anaphylaxis management for the nurse practitioner in primary care. In instances in which clinical recommendations may not be available, a best practice approach based on reported evidence, case experience, and clinical logic should be used to guide decision making.

Keywords: allergic reaction, anaphylaxis, anti-histamine, dyspnea, epinephrine, hypotension, urticaria

Anaphylaxis is on the rise. Of 56,212 emergency department visits between 2005 and 2014 (median age = 36 years [range, 17-52 years], 58% female), most cases were caused by undetermined triggers (57%, usually an undocumented food allergen), food (27%), drugs (12%), and insect venom (4%).[1] Although anaphylaxis rates increased across age groups in this study, the most significant increases were with food-related anaphylaxis in patients aged 5 to 17 years (285% increase, $P < .001$ for trend) and 18 to 34 years (150% increase, $P < .001$ for trend).[1] The highest increase in drug-related anaphylaxis occurred in patients aged 65 years and older,[1] and drug-induced anaphylaxis may be underrecognized and undertreated.[2] Issues reported at the time of or after hospital discharge include the lack of an epinephrine autoinjector (EAI), orders for allergy follow-up, and adherence with EAI prescriptions (30% go unfilled).[3,4] Improvements in these areas are necessary to decrease the risk of anaphylaxis.

As these trends grow, awareness of controversial areas becomes increasingly important. The 2015 practice parameter update published by the American College of Allergy, Asthma and Immunology and the American Academy of Allergy, Asthma and Immunology offers evidence-based guidance on recognition, diagnosis, and treatment of anaphylaxis.[5] In this update, there are 8 controversial areas for which evidence-based guidance is lacking. This review aims to discuss these issues and provide insights that may guide decision making in practice. Nurse practitioners (NPs) play a vital role in the assessment, diagnosis, and management of anaphylaxis. Therefore, a review of core management axioms as well as controversial issues in anaphylaxis is warranted.

OVERVIEW OF ANAPHYLAXIS

Anaphylaxis is "a serious allergic reaction that is rapid in onset and may cause death."[6] Criteria for a diagnosis of anaphylaxis have been previously reported (Box 1).[6] Cutaneous symptoms, including angioedema and urticaria, are reported in about 60% to 90% of cases.[5] Respiratory symptoms such as wheezing, dyspnea, and upper airway angioedema are observed in about half of patients, and one third experience hypotension, dizziness, syncope, or diaphoresis. Approximately one third of patients report abdominal symptoms, which may include diarrhea, nausea, vomiting, or abdominal pain. Lesser seen symptoms include headache or seizure. However, cardiovascular collapse and shock can progress quickly without cutaneous symptoms.

Factors That Increase Anaphylaxis Severity or Complicate Treatment

Age (adolescents and the elderly are at greater risk), atopy (eg, asthma), and cardiac or lung disease

Box 1. National Institute of Allergy and Infectious Diseases/Food Allergy and Anaphylaxis Network (Now Food Allergy Research & Education) Clinical Criteria for a Diagnosis of Anaphylaxis[6]

Anaphylaxis is highly likely when any 1 of the following 3 criteria are fulfilled:

1. Acute onset of an illness (minutes to several hours) with involvement of the skin, mucosal tissue, or both (eg, generalized hives; pruritus or flushing; and swollen lips, tongue, or uvula)

and at least 1 of the following

a. Respiratory compromise (eg, dyspnea, wheeze [bronchospasm], stridor, reduced PEF, and hypoxemia)
b. Reduced BP or associated symptoms of end-organ dysfunction (eg, hypotonia [collapse], syncope, and incontinence)

or

2. 2 or more of the following that occur rapidly after exposure to a likely allergen for that patient (minutes to several hours):

a. Involvement of the skin-mucosal tissue (eg, generalized hives; itch/flush; and swollen lips, tongue, or uvula)
b. Respiratory compromise (eg, dyspnea, wheeze [bronchospasm], stridor, reduced PEF, and hypoxemia)
c. Reduced BP or associated symptoms (eg, hypotonia [collapse], syncope, and incontinence)
d. Persistent gastrointestinal symptoms (eg, crampy abdominal pain and vomiting)

or

3. Reduced BP after exposure to known allergen for that patient (minutes to several hours)

a. Infants and children: low systolic BP (age specific) or greater than 30% decrease in systolic BP[a]
b. Adults: systolic BP of less than 90 mm Hg or greater than 30% decrease from that person's baseline

BP = blood pressure; PEF = peak expiratory flow.

[a]Low systolic BP for children is defined as less than 70 mm Hg from 1 month to 1 year, less than (70 mm Hg + [2 × age]) from 1 to 10 years, and less than 90 mm Hg from 11 to 17 years.

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increase the risk for severe anaphylaxis.[7,8] Systemic mastocytosis is a risk factor for amplified severity of allergic reactions and mortality, in particular in patients with venom allergy.[9] Drugs commonly prescribed in primary care/internal medicine settings may aggravate anaphylaxis or interfere with the effectiveness of epinephrine (eg, beta-blockers). However, regardless of concurrent conditions or medication use, epinephrine should always be given for anaphylaxis.

Recognition and Treatment of Anaphylaxis

Epinephrine by autoinjector is indicated for allergic emergencies in patients with a diagnosis of anaphylaxis (Table 1). Patients should use their EAI immediately without delay if exposed to a known allergen that previously caused an allergic emergency. Otherwise, when considering the use of an EAI, and an allergic trigger is suspected but unknown, the 2-system rule should be followed (eg, cutaneous and respiratory).[5,6] If a 2-system event is present, patients should use their EAI. Patients/caregivers should call emergency medical services after injection with epinephrine for anaphylaxis.[5]

8 CASES: HOW WOULD YOU RESPOND?

Case 1: A 58-year-old woman whose entire arm swells up after a wasp stings her hand requests a prescription for an EAI. How do you advise the patient?

A 58-year-old woman visits her provider for follow-up after being stung by a wasp in her garden. She was stung on her right hand and experienced swelling in her hand and lower arm. It is now 3 days later, and some redness, itching, and swelling persists.

At present, there are no data to support a definitive answer on whether or not this patient should be