

Perioperative Anaphylaxis

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Overall Purpose/Goal: To provide excellent reviews on key aspects of allergic disease to those who research, treat, or manage allergic disease.

Target Audience: Physicians and researchers within the field of allergic disease.

Accreditation/Provider Statements and Credit Designation: The American Academy of Allergy, Asthma & Immunology (AAAAI) is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians. The AAAAI designates these educational activities for a maximum of 1 AMA PRA Category 1 Credit. Physicians should only

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List of Design Committee Members: Joel M. Hartman, MD, and Phillip Lieberman, MD

Activity Objectives

1. To identify medications commonly implicated in perioperative anaphylaxis and appreciate geographical differences in prevalence.
2. To appreciate that the evaluation of a patient with perioperative anaphylaxis is complex and involves an understanding of underlying mechanisms.
3. To understand the role of neuromuscular blocking agents in perioperative anaphylaxis.
4. To know when to consider other entities in the setting of perioperative drug reaction.

Recognition of Commercial Support: This CME has not received external commercial support.

Disclosure of Significant Relationships with Relevant Commercial

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The Difficult Cases Feature is based on the *Difficult Cases Course* presented at the AAAAI Annual Meeting and coordinated by the AAAAI New Allergist-Immunologist Assembly (NAIA). View the entire presentation and obtain CME by visiting the JACI: In Practice homepage www.jaci-inpractice.org.

Key word: Perioperative anaphylaxis

Perioperative anaphylaxis is a rare occurrence. The consequences may include death if not recognized and treated promptly. In general, greater risk is associated with general anesthesia compared with local or spinal anesthesia. The incidence may range from 1:10,000 to 1:20,000 with the variance in estimates related to the difficulty in identifying the total number of medications administered and the challenge in recognizing perianesthetic hypersensitivity reactions.¹⁻⁴ A spectrum of objective findings may be seen, including hemodynamic changes and classic immediate hypersensitivity findings such as urticaria, angioedema, and flushing, although skin manifestations are less common compared with other causes of anaphylaxis. Prompt recognition is challenging given the fact that common side effects

from anesthetic agents may mask or simulate findings seen in anaphylaxis. Though specific IgE may account for as many as 72% of reactions, other mechanisms are implicated in the pathogenesis.^{3,5} Neuromuscular blocking agents remain the most common cause of perioperative anaphylaxis, though prevalence differs depending on geographic location.^{6,7} Identifying the culprit agent is paramount in managing and preventing recurrence with future procedures. Identification of the offending agent is complicated by the fact that few culprit drugs have reliable or standardized testing available.^{4,8,9} Taken together, there are many challenges facing the clinician when evaluating subjects who have suffered from a perianesthetic reaction. In the presentation (found in this article's Online Repository at www.jaci-inpractice.org), we introduce and review 2 cases involving anaphylaxis that occurred during the perioperative setting: a 34-year-old female scheduled to undergo an endovenous laser surgery and varicosectomy¹⁰ and a 52-year-old male with the past history of "shock" during surgery presenting before semielective laminectomy with spinal fusion.

CASE 1

A 34-year-old female patient was scheduled to undergo endovenous laser therapy and varicosectomy. She had no underlying medical disorder and had never undergone any surgery.

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Preoperative evaluation included a normal physical examination, hematologic examination, X-ray, and ECG. During her surgical case, a decline in blood pressure was noted. This occurred in the setting of flushing in the face and chest as well as angioedema around the eyes. Subsequently, the end-tidal CO₂ showed an obstructive pattern and she developed urticaria. A diagnosis of anaphylaxis was made and the patient was treated intravenously with 250 mg hydrocortisone and 3 mg piprinhydrinate. Her vital signs stabilized with resolution of urticaria, erythema, and angioedema. Forty minutes after inducing anesthesia, her vital signs continued to stabilize and the decision was made to proceed with the operation.

CASE 2

A 52-year-old male patient was seen in consultation before semielective laminectomy with spinal fusion. His past history includes “shock” that occurred during lumbar laminectomy 2 years earlier. Additionally, he had a history of gastroesophageal reflux and carried epinephrine due to past allergic reactions to stinging insects. His physical examination at the time of consultation was normal. In reviewing records from his previous surgery, it was found that he developed profound hypotension within 30 minutes of receiving succinylcholine, Rocephin, and versed. He required epinephrine and intravenous fluid resuscitation. Skin testing to each agent used during the procedure was negative. A baseline serum tryptase was 18 ng/mL.

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