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Use of Naloxone in Hydromorphone-induced Anaphylactoid Reaction

To the Editor: Multiple agents are known to cause anaphylactic reactions after surgical or interventional procedures. Opioids are known to cause histamine release and anaphylactic reactions. The mechanisms of these reactions could be either IgE-dependent or IgE independent.^{1,2} We describe a case of anaphylactoid reaction to hydromorphone responding to IV naloxone treatment.

A 75-year-old female was admitted to the hospital with fever and left knee swelling. The patient had a left total knee arthroplasty in the past for severe left knee osteoarthritis. Arthrocentesis of the left knee was performed revealing a methicillin-resistant *Staphylococcus aureus* (MRSA) infection of the prosthesis. The patient was treated with intravenous (IV) vancomycin and was taken to the operating room for the left knee prosthesis removal and insertion of antibiotic spacer. Her past medical history was significant for coronary artery disease and congestive heart failure. She was a lifelong non-smoker. The patient had no known drug or food allergies. She was on several medications, including furosemide, an angiotensin-converting enzyme inhibitor, a statin, and aspirin.

Postoperatively, the patient was clinically

stable. The physical examination showed a temperature of 37.6°C, blood pressure of 142/84 mm Hg, heart rate of 72 beats/min, and respiratory rate of 16 breaths/min. Oxygen saturation while breathing room air was 96%. Chest examination revealed mildly decreased breath sounds at the bases. Cardiac and abdominal examinations were unremarkable. There was no lower extremity or sacral pitting edema. The jugular venous pulse was not elevated. The patient was calm, oriented, and neurologically intact after general anesthesia. Morphine 2 mg IV every 4 hours was ordered for post-operative pain management. In the first 8 hours after surgery, the patient's pain was poorly controlled with IV morphine. IV hydromorphone 1 mg every four hours as needed was ordered. After receiving the first dose of hydromorphone, the patient immediately developed dyspnea. Physical examination revealed mild bilateral expiratory wheezing. Her symptoms resolved completely after treatment with nebulized albuterol 2.5 mg and ipratropium 0.5 mg. Re-evaluation of the patient revealed resolution of expiratory wheezing. A chest x-ray showed no evidence of pulmonary congestion or edema. Four hours later, the patient received a second dose of hydromorphone 1 mg and immediately experienced respiratory distress. Vital signs at that time were blood pressure of 100/55 mm Hg, heart rate of 98 breaths/min, respiratory rate of 18 breaths/min, and oxygen saturation of 100% on a 100% non-rebreather mask. Pulmonary auscultation revealed poor air movement with stridor and inspiratory and expiratory wheezing. Anaphylactic reaction was suspected. She was treated with IV epinephrine, IV methylprednisolone, IV diphenhydramine, and IV famotidine 20 mg. At this time she reported minor symptomatic improvement, however there was no change in her physical exam. Racemic epinephrine nebulizers were then given with minimal symptomatic and clinical improvement. The patient remained in respiratory distress. IV naloxone 0.4 mg was given with immediate improvement in the patient's symptoms.

After several minutes, physical examination confirmed complete resolution of stridor and wheezing.

Successful reversal of opioid-induced anaphylactoid reaction with IV naloxone has been reported once in the literature. Panos et al described a patient who developed a moderate facial edema and a generalized urticarial rash after taking hydrocodone. The patient's symptoms improved immediately after administration of IV naloxone 0.8 mg.³ The authors suggested that the use of naloxone may be beneficial in management of opioid-induced anaphylactoid reactions. Amir⁴ showed that treatment with naloxone can reverse the hypoactivity associated with systemic anaphylaxis in mice.

Whether hydromorphone-induced anaphylactoid reaction was caused by IgE-mediation or not, naloxone rapidly reversed the symptoms in our patient. Naloxone can potentially inhibit the release of histamine from mast cells and can be used in opioid-induced anaphylactoid reactions.

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References

1. Casale TB, Bowman S, Kaliner M. Induction of human mast cell degranulation by opiates and endogenous opioid peptides: evidence for opiate and non-opiate receptor participation. *J Allergy Clin Immunol* 1984;73:755-781.
2. Dybendal T, Guttormsen AB, Elsayed S, et al. Screening for mast cell tryptase and serum IgE antibodies in 18 patients with anaphylactic shock during general anaesthesia. *Acta Anaesthesiol Scand* 2003;47:1211-1218.
3. Panos MZ, Burnett S, Gazzard BG. Use of naloxone in opioid-induced anaphylactoid reaction. *Br J Anaesth* 1988;61:371.
4. Amir S. Opiate antagonists reverse the hypoactivity associated with systemic anaphylaxis in mice. *Pharmacol Biochem Behav* 1984;20:483-485.

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