

A Rare Diagnosis in Emergency Department: Morphine Related Anaphylactoid Reaction

Acil serviste nadir bir tanı: Morfine bağlı anaflaktoid reaksiyon

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SUMMARY

Pain constitutes an important presenting complaint for emergency department visits. Non steroidal anti inflammatory medications or simple analgesics may not be enough to control the pain. Some patients may need opioid analgesics for pain control. However, opioids may cause serious side effects. In the present case report, we discussed a rare side effect of morphine; anaphylaxis.

Key words: Anaphylaxis; emergency department; morphine.

ÖZET

Ağrı önemli bir acil servise başvuru nedenidir. Non steroid antiinflamatuar ilaçlar ya da basit analjezikler hastaların ağrısını her zaman geçirmemekte ve bu durumda opioid analjezik uygulaması yapılmaktadır. Bununla beraber opioidlerin çeşitli ciddi yan etkileri vardır. Bu olgu sunumunda, opioidlerin nadir görülen bir yan etkisi olan anaflaksi tartışıldı.

Anahtar sözcükler: Anaflaksi; acil servis; morfin.

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Introduction

Opioid analgesics are commonly used in emergency departments for pain relief. Opioids accepted as a safe and effective agents for his purpose. Hypotension due to histamine release is a well known side effect of morphine; however morphine-related anaphylaxis is rare.

The aim of this case report is to discuss anaphylaxis developed after morphine administration in 27 year-old patients.

Case Report

A 27 year-old male presented to the emergency department with back pain. His pain started two days ago without a history of trauma. He used various analgesics for pain control which failed to subside. There was no allergic reaction in his past medical history. His vital signs and neurological examination found to be within normal limits. The ultimate diagnosis was made as mechanical back pain, and 0.5 mg/kg (a total dose of 4 mg) of morphine HCl was ordered to be injected slowly via intravenous route for pain control.

After injection of 3 mg of morphine (Morphine CHL®), the shortness of breath and wheezing occurred. It was followed by agitation and confusion. His oxygen saturation decreased to 60% and supplemental oxygen was administered via facemask. The patient was monitored and his blood pressure decreased to 80/50 mmHg and his pulse was increased to 120 beats/min. Anaphylactic reaction due to morphine was suspected. Adrenalin, diphenhydramine, methyl prednisolone and normal saline were consequently administered. Despite the supplemental oxygen, oxygen saturation did not increase, shortness of breath worsened, and the patient was intubated and mechanically ventilated. After 3 hours of intubation, his vital signs and arterial blood gases returned to normal range and he regained consciousness. The patient was extubated. During the observation period his clinical condition improved to normal levels. For a possible rebound allergic reaction, he was admitted to allergy and immunology ward.

Discussion

A considerably high number of allergic reactions secondary to medications is encountered in emergency departments. Penicillins are drugs known to cause the most allergic reactions. The incidence of penicillin related allergic events is reported to be 8%.^[1] Parenteral administration of medications may cause anaphylaxis in 0.001%.^[2,3]

Because of stronger and faster analgesic effects, morphine has been used widely in emergency practice. Opioids can cause allergic reactions, but anaphylaxis is rare. Morphine, like other opioids, can cause histamine release. Related to this effect, urticaria, contact dermatitis and skin eruptions can be seen after injection of morphine. Histamine release can also cause adverse effects like flushing, nausea and vomiting, sweating, dizziness, tremor and hypotension.^[4,5] However, morphine-related anaphylaxis is rare.^[6-8] The incidence of anaphylaxis increases with parenteral use of morphine.^[9]

In general terms, anaphylaxis is defined as the concurrent presence of life-threatening shortness of breath and hypotension.^[10] Immune response-related anaphylaxis can be seen as a result of Ig E mediated reactions or as a result of Ig G and Ig M formation as seen in blood transfusions.^[5]

Some patients have non-allergic (non immune) anaphylaxis. The definitive cause of non-allergic anaphylaxis is not known, however possible pathophysiologic mechanism that leads to clinical picture is activation of complement-mediated proteolytic cascade.^[11-13] Non allergic anaphylaxis is also known as anaphylactoid reaction.^[14] According to the literature, we do not currently have enough information whether opioid-related anaphylaxis is allergic or non allergic. Nasser et al. said that skin tests are not useful in clinical practice to predict opioid allergy.^[15]

In our case, the patient visited his primary physician for back pain and his doctor prescribed pain killers other than opioids. He had no previous history of allergic reaction but an immediate hypotension and shortness of breath developed during morphine HCl injection. These findings support the conclusion that this patient may have a non-allergic anaphylaxis.

In emergency situations, correct approach to allergic or non-allergic situations is critical. If appropriate interventions are performed, life threatening hypotension, airway compromise and shortness of breath can recover without complications. Even patients with anaphylaxis admitted to the hospital for new rebound anaphylaxis can respond well to the initial treatment.

Summary

Anaphylactoid reaction is a rarely seen side effect of morphine. Emergency physicians should be aware of morphine related anaphylactoid reactions, especially after in-

travenous bolus injection. Morphine related anaphylactoid reaction should be treated with adrenalin, antihistaminics, steroids, and early airway protection measurements such as endotracheal intubation.

References

1. Hess DA, Rieder MJ. The role of reactive drug metabolites in immune-mediated adverse drug reactions. *Ann Pharmacother* 1997;31(11):1378-87.
2. Lee CE, Zembower TR, Fotis MA, Postelnick MJ, Greenberger PA, Peterson LR, et al. The incidence of antimicrobial allergies in hospitalized patients: implications regarding prescribing patterns and emerging bacterial resistance. *Arch Intern Med* 2000;160(18):2819-22.
3. Weiss ME, Adkinson NF. Immediate hypersensitivity reactions to penicillin and related antibiotics. *Clin Allergy* 1988;18(6):515-40.
4. Barke KE, Hough LB. Opiates, mast cells and histamine release. *Life Sci* 1993;53(18):1391-9.
5. Chacko T, Ledford D. Peri-anesthetic anaphylaxis. *Immunol Allergy Clin North Am* 2007;27(2):213-30, vi.
6. Baldo BA, Pham NH, Zhao Z. Chemistry of drug allergenicity. *Curr Opin Allergy Clin Immunol* 2001;1(4):327-35.
7. Fisher MM, Harle DG, Baldo BA. Anaphylactoid reactions to narcotic analgesics. *Clin Rev Allergy* 1991;9(3-4):309-18.
8. Cromwell TA, Zsigmond EK. Hypersensitivity to intravenous morphine sulfate. *Plast Reconstr Surg* 1974;54(2):224-7.
9. Stafford CT. Life-threatening allergic reactions. Anticipating and preparing are the best defenses. *Postgrad Med* 1989;86(1):235-42, 245.
10. Ewan PW. Anaphylaxis. *BMJ* 1998;316(7142):1442-5.
11. Genovese A, Stellato C, Marsella CV, Adt M, Marone G. Role of mast cells, basophils and their mediators in adverse reactions to general anesthetics and radiocontrast media. *Int Arch Allergy Immunol* 1996;110(1):13-22.
12. Complement and contact activation. In: Levy J, editor. Anaphylactic reactions in anesthesia and intensive care. Boston: Butterworth-Heinemann; 1992. p. 51.
13. Tannenbaum H, Ruddy S, Schur PH. Acute anaphylaxis associated with serum complement depletion. *J Allergy Clin Immunol* 1975;56(3):226-34.
14. Kemp SF, Lockey RF. Anaphylaxis: a review of causes and mechanisms. *J Allergy Clin Immunol* 2002;110(3):341-8.
15. Nasser SM, Ewan PW. Opiate-sensitivity: clinical characteristics and the role of skin prick testing. *Clin Exp Allergy* 2001;31(7):1014-20.