Case Report

Allergic Reaction to Intravenous Atropine in a Patient with Organophosphate Poisoning

Shiva Samsamshariat[1], Navid Honarjoo[2], Farzad Gheshlaghi[1], Gholamali Dorvashy[1], Nastaran Eizadi-Mood[1]

[1]Department of Clinical Toxicology, Isfahan Clinical Toxicology Research Center, Isfahan University of Medical Sciences, Isfahan, Iran

[2]Clinical Toxicology Department, Isfahan University of Medical Sciences, Isfahan, Iran

Received: October 2018.
Accepted: January 2019.

ABSTRACT

Atropine is a drug of choice for muscarinic effects in organophosphate (OP) poisoning. Allergic reaction to atropine is rare. Here, we report a case of a 17-year-old male who was admitted with clinical manifestations of acute OP poisoning. After intravenous atropine injection, cutaneous signs of hypersensitivity including erythema and urticarial were observed on his body. Atropine injection was stopped, and antihistamines and hydrocortisone were administered. His condition was improved, and he discharged with a good condition after 2 days hospitalization. Adverse allergic reaction to atropine should be in mind when managing OP poisoning cases.

KEYWORDS: *Allergic reaction, Atropine, organophosphate poisoning, urticaria*

INTRODUCTION

Atropine is a drug of choice for organophosphate (OP) poisoning. It is used for patients with organophosphate poisoning when muscarinic signs and symptoms are present. Allergic reaction to atropine is rare.this article is about a patient with severe allergic reaction to intravenous (IV) Atropine.

CASE REPORT

A 17-year-old male (weight 62 kg) was admitted in our referral poisoning emergency hospital because of acute organophosphate (OP) poisoning. He had ingested about 50 mL of poison in a suicidal attempt. The patient had nausea and vomiting 10 min after ingestion and his brother brought him to the hospital. At the time of hospitalization, he had a low level of consciousness. He had no history of previous suicide, psychological problems, hypertension, diabetes mellitus, and cardiac or respiratory disease. In the patient's family, his mother had diabetes mellitus, and his father had a history of benign prostatic hypertrophy. There was no history of any noteworthy disease in patient's siblings. There was also no identified genetic disease in the patient's family. On admission, his vital signs revealed a pulse rate of 137/min, blood pressure of 110/70 mmHg, respiratory rate of 18/min, afebrile, and O_2 saturation of 93%. Neurological examination revealed Glasgow Coma Scale of 12/15. He had cold and wet skin, sialorrhea, and myotic pupils. He had poison odor in his breath. Auscultation of the lungs was normal. Gastric evacuation and administration of activated charcoal via nasogastric tube were performed. Laboratory studies include complete blood count, blood urea nitrogen and creatinine, liver enzymes, blood sugar, coagulation tests, venous blood gas, electrocardiogram, and chest X-ray, which were normal on admission. Fluid therapy was started, and because of central nervous system depression and muscarinic manifestations, atropine therapy was administered. After intravenous (IV) injection of 2 mg atropine, cutaneous signs of hypersensitivity to atropine were observed on his body. The patient had erythema and urticaria with temperature elevation. He did not have pulse rate elevation, hypotension, or respiratory distress. Atropine injection was stopped at once and IV hydrocortisone 100 mg and IV ranitidine 50 mg and chlorpheniramine 10 mg were given. The general condition of the patient was improved. Oral cetirizine was also administered to him after he was conscious. To improve the clinical manifestations of OP poisoning, pralidoxime infusion was started for the patient. After 2 days of hospitalization, he discharged from the hospital with stable and good condition.

Address for correspondence:
Dr. Navid Honarjoo, E-mail: navidhn72@gmail.com

Access this article online

Quick Response Code:

Website: www.jrpp.net

DOI: 10.4103/jrpp.JRPP_18_83

How to cite this article: Samsamshariat S, Honarjoo N, Gheshlaghi F, Dorvashy G, Eizadi-Mood N. Allergic reaction to intravenous atropine in a patient with organophosphate poisoning. J Res Pharm Pract 2019;8:33-4.

Discussion

In our patient with acute OP poisoning, hypersensitivity reaction appeared after IV atropine injection. Allergic reaction to atropine is due to type I (immediate) hypersensitivity which is immunoglobulin E mediated.[1] There are few reports of adverse reactions after IV atropine administration.[2-6] Local manifestations of the allergic reaction to atropine are more common than systemic ones such as anaphylaxis. Allergic reaction in our patient did not have any systemic effects on him. Cutaneous manifestations such as erythema and rashes are the result of histamine-provoked capillary dilation and would disappear in few hours to few days after administration of antihistamines and corticosteroids.[7] Tachycardia, hypotension, and bronchospasm are the first signs of systemic reaction and anaphylaxis. Cardiovascular collapse can occur if anaphylaxis remains untreated. There are some reports of allergic reactions to atropine ophthalmic solution.[8] Prompt initial treatment is essential in an anaphylactic episode because of a high probability of mortality and morbidity.[3] There are many tests for diagnosis of an allergy to atropine. Prick/puncture test and intradermal test are different types of skin tests for allergy. Leukocyte migration inhibition test and lymphoblast transformation test are examples of *in vivo* tests. These tests are usually used in severe and systemic reactions.[5]

The limitation of our study was that we did not perform skin prick test and intradermal test to atropine. Our patient discharged with good condition showing in a case with atropine hypersensitivity; oxime infusion could improve the symptoms and sins of patients present with mild OP toxicity.

Since the consent could not be obtained because the patient cannot be traced, we tried our best to make all types of identifying details of the patient anonymous. This case report has been written considering CARE guideline.

Adverse allergic reaction to atropine should be in mind when managing OP poisoning cases. Adequate equipment and appropriate medications for managing allergic reactions should be available. Atropine injection should be stopped immediately after observation of any signs or symptoms of an allergic reaction to prevent further adverse events.

Authors' Contribution

All authors had contributions to the design of the artilce; drafting, revising it critically for important intellectual content; in final approval of the version to be published; and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work.

Acknowledgments

The authors would like to thank all nurses of Clinical Toxicology Department of Noor University Hospital for their valuable collaboration in the patient's management.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Gell PG, Coombs RR. Clinical Aspects of Immunology.Oxford: Blackwell Scientific Publication Ltd.; 1963.
2. Aguilera L, Martinez-Bourio R, Cid C, Arino JJ, Saez de Eguilaz JL, Arizaga A, *et al.* Anaphylactic reaction after atropine. Anaesthesia 1988;43:955-7.
3. Choi J, Kim H, Jeon YS, Hong DM. Anaphylaxis following atropine administration during general anesthesia: A case report. Korean J Anesthesiol 2015;68:496-500.
4. Hague JD, Derr JJ. Military implications of atropine hypersensitivity. Mil Med 2004;169:389-91.
5. Hiremath D. Anaphylaxis to IV atropine: A case report. Indian J Clin Pract 2013;23:799-800.
6. Tom NR, Varghese GH, Alexander H, Swethalekshmi V, Kumar TA, Sivakumar T. A case report on atropine-induced psychosis. Int J Pharm Sci Res 2016;7:387.
7. Moudgil G. Anaesthesia and allergic drug reactions. Can Anaesth Soc J 1986;33:400-14.
8. Cabrera-Freitag P, Gastaminza G, Goikoetxea MJ, Lafuente A, de la Borbolla JM, Sanz ML, *et al.* Immediate allergic reaction to atropine in ophthalmic solution confirmed by basophil activation test. Allergy 2009;64:1388-9.