

# Case Report: Anti-Cholinergic Syndrome Induced by Papaver Rhoeas Plant and Its Management

Salih Denis Şimşek<sup>1</sup>, Ökkeş Zortuk<sup>2</sup>, Faris Arda Dönmez<sup>1</sup>, Sergen Bağdad<sup>1</sup>, Mustafa Polat<sup>1</sup>

<sup>1</sup>Hatay Mustafa Kemal University Tayfur Ata Sökmen Faculty of Medicine, Department of Emergency Medicine, Hatay, Türkiye

<sup>2</sup>Defne State Hospital, Clinic of Emergency Medicine, Hatay, Türkiye

## Abstract

Anti-cholinergic toxic states are a group of pathological conditions commonly observed in emergency departments (EDs) and are rarely fatal. The plant *Papaver rhoeas* (commonly known as red corn poppy or common poppy) is used in traditional medicine and as a food source in regions of Türkiye and Iran. The toxic effects of this agent can result from incorrect or excessive use. A 61-year-old female patient with a history of chronic obstructive pulmonary disease presented to the ED after consuming a dish made with *Papaver rhoeas*. On arrival, the patient presented with hypertension symptoms, altered consciousness, and muscle fasciculations. On monitoring, she was found to be tachycardic with a heart rate of 130 beats per minute and hyperthermic with a temperature of 37.8 °C. Blood pressure measurements showed a systolic pressure of 180 mmHg and a diastolic pressure of 110 mmHg. Supportive therapy was administered and diazepam was used following the development of seizures. The patient was given physostigmine, and after intensive observation, her symptoms improved and she was safely discharged. Anticholinergic toxidrome are common in ED presentations. Allergic reactions, convulsions, and hepatotoxicity may also occur after exposure to *Papaver rhoeas*. Although these conditions are generally not fatal, appropriate ED management can prevent morbidity and mortality.

**Keywords:** Papaver rhoeas, anti-cholinergic, emergency medicine

## Introduction

Poisoning from environmental factors is a significant issue in emergency medicine. This phenomenon is primarily driven by the consumption of incorrect or toxic plants, leading to poisoning. In emergency medicine practice, mushroom poisoning is frequently noted [1]. However, other types of poisonings are related to the food culture of the region. An example of this in Türkiye is the traditional beverage made from *Papaver rhoeas*, commonly known as “gelincik otu sherbeti” (Figure 1). Consuming this sherbet or other forms of *Papaver rhoea* can lead to toxicological effects. This plant is part of the Old world flora and is used in various ways across different cultures [2].

The dried form of the plant, which is used in certain medicinal products and wine, is processed through various methods to

create sherbet (gelincik şerbeti) [2]. The plant, known to contain alkaloid-based structures, includes compounds like rhodic acid, papaverin acid, and rhouegenine. In traditional Iranian medicine, these substances are used to treat inflammation, diarrhea, sleep disorders, and opioid addiction [3]. Low doses of these substances can lead to mucus secretion and sedation [4]. Additionally, anti-dopaminergic and anti-cholinergic effects were observed [5]. This case report discusses the symptoms observed and management after ingesting *papaver rhoeas*.

## Case Report

A 61-year-old female patient presented to the emergency department (ED) approximately 2 hours after consuming a meal made with the *Papaver rhoeas* plant, commonly known as red corn poppy. She reported symptoms that began an hour



**Address for Correspondence:** Ökkeş Zortuk, Defne State Hospital, Clinic of Emergency Medicine, Hatay, Türkiye

**E-mail:** o.zortuk@gmail.com **ORCID-ID:** orcid.org/0000-0001-6776-2702

**Received:** 09.07.2024 **Accepted:** 27.08.2024

**Cite this article as:** Şimşek SD, Zortuk Ö, Dönmez FA, Bağdad S, Polat M. Case report: anti-cholinergic syndrome induced by papaver rhoeas plant and its management. Glob Emerg Crit Care.



Copyright© 2024 The Author. Published by Galenos Publishing House on behalf of the Turkish Emergency Medicine Foundation. This is an open access article under the Creative Commons AttributionNonCommercial 4.0 International (CC BY-NC 4.0) License.



**Figure 1.** *Papaver rhoëas* plant

earlier, including altered consciousness, flushing, and muscle problems (fasciculations). Her history of chronic obstructive pulmonary disease was managed with daily montelukast and an inhaler. No other chronic conditions, medication changes, smoking, alcohol, or allergies. At ED arrival, her vitals were BP 180/110 mmHg, pulse 130 bpm, respiratory rate, 20 bpm; and temperature, 37.8 °C.

Her physical examination revealed altered consciousness with a Glasgow Coma scale score of E3M4V3. There was no neck stiffness (no signs of meningeal irritation). The patient was agitated. The lung sounds were normal, and the abdominal examination was unremarkable. Cardiac auscultation revealed normal S1-S2 sounds without murmurs. Palpation revealed hyperthermic and dry skin. During her evaluation, the patient underwent electrocardiography, which revealed tachycardia (127 beats per minute), with benign ST-segment depression likely due to hypertension, ruling out acute coronary syndrome. Blood tests, including biochemical analysis, complete blood count, and cardiac biomarkers, revealed no significant abnormalities. Brain computed tomography revealed no major pathology.

After evaluation, the patient was diagnosed with anti-cholinergic syndrome, and supportive therapy was initiated for her safety. During monitoring, the patient developed seizures and was administered 10 mg of intravenous diazepam. A second myoclonic seizure occurred 10 minutes later; therefore, an additional 10 mg of intravenous diazepam was administered, thereby achieving seizure control. Hydration was provided, and physostigmine was administered to address muscle movements, hypertension, and neurological symptoms; 0.5

mg of intravenous physostigmine was administered). The patient was then transferred to the intensive care unit (ICU) for further monitoring. After 3 days of observation in the ICU, her symptoms improved and her consciousness returned to normal. She was discharged with full recovery.

## Discussions

Anti-cholinergic toxidrome are a common cause of ED visits and are rarely fatal [6]. These situations often occur due to an overdose of certain medications, especially those containing atropine, hyoscyamine, and scopolamine, or their synthetic derivatives. This approach is particularly common in geriatric patients who use these medications for chronic disease management [7]. Various toxicological cases involving *Papaver rhoëas* have been documented in the literature. In a case report by Gunaydin et al. [8], 5 cases with different symptoms resulting from exposure to *Papaver rhoëas* were reported. Despite their severity, these cases were not fatal and resulted in patient discharge after appropriate management. In a case reported by Gonullu et al. [9], hepatotoxic effects were observed, leading to the need for transplantation. A report by Kocak et al. [10] described three cases in which seizures were the main symptom, with no fatal outcomes occurred. As the literature shows, *Papaver rhoëas* (red poppy) is a plant used in traditional medicine and nutrition in Türkiye that rarely results in fatal outcomes. The central nervous system is a key site of its effects. Preventive measures and the use of physostigmine are among the recommended methods for protective treatment to avoid fatal outcomes. As demonstrated in our case, patients can be managed without fatal or morbid outcomes if appropriate treatment is administered.

## Conclusion

The key to managing toxidrome in EDs is early recognition, beginning with general resuscitation measures, and combining these with specific antidote treatments targeting the underlying cause.

**Informed Consent:** Written consent was obtained from the patient, and this text was created within the framework of his permission.

## Footnote

### Authorship Contributions

Surgical and Medical Practices: S.D.Ş., F.A.D., Concept: S.D.Ş., S.B., Design: M.P., Ö.Z., Literature Search: Ö.Z., F.A.D., Writing: Ö.Z., M.P.

**Conflict of Interest:** No conflict of interest was declared by the authors.

**Financial Disclosure:** The authors declared that this study received no financial support.

## References

1. Tran HH, Juergens AL. Mushroom toxicity. StatPearls Treasure Island (FL): 2024.
2. Stace CA. New flora of the British isles. Suffolk, U.K: C & M Floristics; 2019.
3. Pourmotabbed A, Rostamian B, Manouchehri G, Pirzadeh-Jahromi G, Sahraei H, Ghoshooni H, et al. Effects of Papaver rhoëas extract on the expression and development of morphine-dependence in mice. *J Ethnopharmacol.* 2004;95:431-5.
4. Zargari A. Medicinal plants: Tehran University of Medical Sciences; 1997.
5. Saeed-Abadi S, Ranjbaran M, Jafari F, Najafi-Abedi A, Rahmani B, Esfandiari B, et al. Effects of papaver rhoëas (L.) extract on formalin-induced pain and inflammation in mice. *Pak J Biol Sci.* 2012;15:1041-4.
6. Mowry JB, Spyker DA, Brooks DE, Zimmerman A, Schauben JL. 2015 Annual report of the American association of poison control centers' national poison data system (NPDS): 33rd annual report. *Clin Toxicol (Phila).* 2016;54:924-1109.
7. Feinberg M. The problems of anticholinergic adverse effects in older patients. *Drugs Aging.* 1993;3:335-48.
8. Gunaydin YK, Dundar ZD, Cekmen B, Akilli NB, Koçlu R, Cander B. Intoxication due to papaver rhoëas (corn poppy): five case reports. *Case Rep Med.* 2015;2015:321360.
9. Gonullu H, Karadas S, Dulger AC, Ebinc S. Hepatotoxicity associated with the ingestion of Papaver Rhoëase. *J Pak Med Assoc.* 2014;64:1189-90.
10. Kocak S, Karabulut K, Ertekin B, Nak H, Cander B. RRed poppy (papaver rhoëas) poisoning: a report of three cases. *Cyprus J Med Sci.* 2016;1:11-3.