Case Report

Suicidal ingestion of potassium permanganate

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BACKGROUND: Potassium permanganate is used clinically as an antiseptic and antifungal agent. Ingestion of potassium permanganate may result in damage to the upper gastrointestinal tract. Burns and ulceration of the mouth, esophagus and stomach occur due to its action. Emergency endoscopy is useful to assess the severity of damage and also to guide management.

METHODS: We reported a patient presenting to the emergency department after suicidal ingestion of potassium permanganate.

RESULTS: After treatment, the patient was discharged home on the 7th day after admission.

CONCLUSION: Early emergency endoscopy should be considered to determine the extent of upper gastrointestinal damage in the emergency department.

KEY WORDS: Emergency endoscopy; Gastric damage; Suicide; Potassium permanganate

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INTRODUCTION

Potassium permanganate is a powerful oxidizing agent. It is odorless, crystalline substance available in powder or tablet form and is readily accessible without prescription. It is used clinically as an antiseptic and antifungal agent.^[1,2] Potassium permanganate poisoning is not common. Symptoms of potassium permanganate ingestion are gastrointestinal (such as dysphagia, odynophagia, nausea, and vomiting, which are a result of gastrointestinal edema, burns, and ulcerations), respiratory and circulatory.^[3] Complications due to ingestion of potassium permanganate include hepatic-renal damage, upper air-way obstruction, bleeding tendency and methemoglobinemia. Major causes of deaths for severe potassium permanganate poisoning are cardiovascular depression and collapse, upper airway obstruction, hemorrhagic shock owing to massive gastrointestinal bleeding.^[2,4,5] Gastric damage due to potassium permanganate has been rarely reported previously. Herein we describe a case of suicidal ingestion of potassium permanganate.

Case Report

A 22-year-old woman with severe epigastria pain and nausea was admitted to the emergency department. She had taken 10 tablets of potassium permanganate (totally 2.5 g) to commit suicide approximately 2 hours ago. No other drugs were ingested. On arrival, she was alert and orientated. On physical examination, her blood pressure was 110/70 mmHg, pulse rate was 80 beats/minute and axillary temperature was 36.5 °C. Physical examination showed marked epigastria tenderness. Her oropharynx, tongue and lips were normal. Her airway was patent and no stridor was present. Her laboratory values were as follows: Hb 12.1 g/dL, Hct 34.5 %, WBC 6000/μL, PLT 241000/μL, ESR 2 mm/h, prothrombin time 8 seconds, and INR 0.9. Her renal and hepatic function parameters were normal as well.

Upper endoscopy was performed to assess the effects on the upper gastrointestinal tract. Esophagoscopy showed normal esophageal mucosa. There was a foreign material stuck at the posterior wall of the gastric corpus which is supposed to be potassium permanganate. It

could not be removed by irrigation. Bleeding occurred during the removal with forceps. Subsequently, the bleeding was controlled by argon plasma coagulation. Because of the wide necrotic area and increased risk of perforation, further debridement was not performed. Then the patient was admitted to the gastroenterology intensive care unit. In the following days, neither complications nor symptoms occurred. The patient was discharged on the 7th day after admission.

DISCUSSION

Ingestion of potassium permanganate may result in damage to the upper gastrointestinal tract. Also it may cause systemic toxic effects such as adult respiratory distress syndrome, coagulopathy, hepatic-renal failure, pancreatitis and even death in severe cases. The systemic toxicity is believed to be due to oxidative injury.^[2,3] Manifestations of the gastrointestinal symptoms of potassium permanganate include nausea and vomiting. Ingestion of potassium permanganate can cause gastrointestinal complications too, similar to acid and alkali ingestion. Effect of potassium permanganate on the gastrointestinal tract is alkaline. Burns and ulceration of the mouth, esophagus and stomach are due to the action of potassium permanganate.^[5] Necrotic ulcers may lead to perforation. Esophageal stricture and pyloric stenosis are late complications that reported in the literature.^[6] The reported lethal adult dose of potassium permanganate is 10 g.^[5] The dose which was taken by our patient was lower (2.5 g potassium permanganate) than the toxic dose. Only local effects were observed in our patient and no systemic toxic effects occurred. The treatment of ingesting potassium permanganate is supportive care. Emetic and acidic agents are contraindicated.^[7] Induced vomiting, nasogastric application or giving of neutralizing agent should be avoided.^[8] The effectiveness of activated charcoal is not known in potassium permanganate poisoning, thus its administration is controversial.^[9,10] For these reasons, nasogastric application and activated charcoal were not used in our patient. Emergency endoscopy is useful to assess the severity of damage and also to guide management.^[3] Suicidal ingestions of potassium

permanganate were rarely reported. Gastrointestinal damage due to ingestion of potassium permanganate is an uncommon situation. In our case, corrosive damage was seen only in the stomach.

Early endoscopy should be considered to determine the extent of upper gastrointestinal damage in patients with suspected injury to the gastrointestinal tract.

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Ethical approval: This study was approved by the Ethical Committee of Duzce Public Hospital, Gastroenterology Clinic, Duzce, Turkey.

Conflicts of interest: There is no conflict of interest in this study.

Contributors: Korkut E proposed the study, and wrote the first draft. All authors read and approved the final version.

REFERENCES

- 1 Ellenhorn M. Potassium permanganate. In: Ellenhorn M, Schonwald S, Ordog G, et al, eds. *Ellenhorn's Medical Toxicology: Diagnosis and Treatment of Human Poisoning*. Baltimore: Williams & Wilkins; 1997: 1606–1607.
- 2 Young RJ, Critchley JA, Young KK, Freebairn RC, Reynolds AP, Lolin YI. Fatal acute hepatorenal failure following potassium permanganate ingestion. *Hum Exp Toxicol* 1996; 15: 259–261.
- 3 Johnson TB, Cassidy DD. Unintentional ingestion of potassium permanganate. *Pediatr Emerg Care* 2004; 20: 185–187.
- 4 Hershkovitz E, Weizman Z. Potassium permanganate poisoning in infancy. *Harefuah* 1991; 120: 512–513.
- 5 Ong K, Tan T, Cheung W. Potassium permanganate poisoning; a rare cause of fatal self-poisoning. *J Accid Emerg Med* 1997; 14: 43–45.
- 6 Kochhar R, Das K, Mehta SK. Potassium permanganate induced oesophageal stricture. *Hum Toxicol* 1986; 5: 393–394.
- 7 Rumack B, Burrington J. Caustic ingestions: a rational look at diluents. *Clin Toxicol* 1977; 11: 27–34.
- 8 Waters DS, Waters D, Sewalls T. Poisoning. Stone CK, Humphries RL, editors. *Current Emergency Diagnosis & Treatment*. 5 edition: 963–1011.
- 9 Christian A, Tomaszewski. Caustics. In: Tintinalli JE, Kelen GD, Stapczynski JS, editors *Emergency Medicine. A comprehensive study guide*. New-York: McGraw-Hill; 2004: 530–532.
- 10 Southwood T, Lamb CM, Freeman J. Ingestion of potassium permanganate crystals by a three year old boy. *Med J* 1987; 146: 639–640.

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