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Selected Topics: Toxicology

ENDOSCOPIC REMOVAL OF PHARMACOBEZOAR IN CASE OF INTENTIONAL POTASSIUM OVERDOSE

Albert L. Briggs, MD* and Lisa L. Deal, PHARMD, BCPS*†

*Department of Emergency Medicine, Carilion Roanoke Memorial Hospital, Roanoke, Virginia and †Department of Pharmacy, Carilion Roanoke Memorial Hospital, Roanoke, Virginia

Reprint Address: Lisa L. Deal, PHARMD, BCPS, Departments of Emergency Medicine and Pharmacy, Carilion Clinic, Carilion Roanoke Memorial Hospital, 1906 Belleview Avenue, Roanoke, VA 24014

☐ **Abstract—Background: Hyperkalemia is a potentially life-threatening electrolyte abnormality commonly seen in the emergency department (ED). Intentional overdose of potassium supplements is an uncommon occurrence. Objective: This case illustrates a novel approach to treatment of pharmacobezoar with esophagogastroduodenoscopy (EGD) and demonstrates its effectiveness in the setting of extended-release potassium chloride overdose. Case Report: A 44-year-old female presented to the ED with intentional ingestion of an unknown amount of extended-release potassium chloride (K-Dur®) tablets and alprazolam (Xanax®). The patient's serum potassium was initially 7.3 mmol/L and she was treated with standard treatments, including albuterol, calcium gluconate, insulin, dextrose, and sodium bicarbonate. Radiographic investigation showed a pharmacobezoar in the gastric fundus. Treatment was then augmented with whole bowel irrigation (WBI) using polyethylene glycol solution via nasogastric tube. Patient did not tolerate the nasogastric tube, became combative with increasing alteration in her level of consciousness, and WBI therapy was stopped. After discussion with the gastroenterologist, the patient was treated with EGD to remove the pharmacobezoar. The EGD was successful in the removal of the pharmacobezoar and the patient's potassium normalized without complications. Conclusions: We recommend that in cases of suspected or confirmed potassium drug bezoar in the stomach, physicians consider EGD for removal. This allows for normalization of potassium level while preventing adverse sequelae.** © **2014 Elsevier Inc.**

☐ **Keywords—overdose; potassium chloride; pharmacobezoar; EGD**

INTRODUCTION

Hyperkalemia is a common finding in emergency department (ED) patients. Severe hyperkalemia has the potential to cause life-threatening cardiac dysrhythmias. Intentional overdose of oral potassium supplements infrequently causes hyperkalemia in previously healthy patients with normal renal function (1,2). Hyperkalemia associated with oral potassium supplement use is most commonly seen in individuals with impaired renal function or in patients taking medications that influence potassium metabolism. Pharmacobezoar formation occurs rarely and has not been previously reported in cases of potassium supplement ingestion.

We report the case of a patient with normal renal function who developed severe hyperkalemia due to oral potassium supplement ingestion, complicated by potassium-containing pharmacobezoar treated by endoscopic removal.

CASE REPORT

A 44-year-old female nurse with a history of anxiety disorder presented to the ED at approximately 1:15 pm after ingesting a potassium supplement and alprazolam

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at home. She believed that her potassium was low and was trying to increase her level by taking extra potassium tablets. She stated this was not a suicide attempt. She gave differing accounts to staff and providers about the amount of pills ingested and time of ingestion. The total theoretical amount of potassium ingested would have been 600 mEq (thirty 20-mEq tablets) of potassium chloride extended-release preparation (K-Dur®) and 60 mg (sixty 1-mg tablets) of alprazolam based on prescription refill data provided by the patient's pharmacy.

On arrival to the ED, the patient's blood pressure was 89/59 mm Hg, pulse was 82 beats/min, respirations were 20 breaths/min, temperature was 36.5°C, and oxygen saturation was 100% on room air. Her abdomen was soft and nontender. Skin was warm and dry. On neurologic examination, she was oriented to person, place, and time and conversant with staff.

A 12-lead electrocardiogram demonstrated normal sinus rhythm with normal QRS duration and mildly peaked T-waves (Figure 1). Potassium level was 7.3 mmol/L. Creatinine was 0.69 mg/dL. Plain film of the abdomen revealed a 4-cm oval density in the region of the gastric fundus (Figure 2). Standard toxicological screen was positive for benzodiazepines, but negative for all other agents, including acetaminophen and salicylates. Ethanol level was negative.

Treatment for hyperkalemia was initiated, including 15 mg/h of continuous aerosolized albuterol, 1 g i.v. calcium gluconate, 10 U i.v. regular insulin with 25 g i.v. dextrose, and 50 mEq i.v. sodium bicarbonate. The radiographic finding of the density in the region of the gastric fundus raised suspicion of a pharmacobezoar containing potassium. A nasogastric (NG) tube was placed and whole bowel irrigation (WBI) therapy was initiated with polyethylene glycol-electrolyte solution (PEG-ES).

Thirty minutes after receiving the first liter of bowel irrigant, the patient became combative, pulled out her NG tube, and would not allow re-insertion. Her mental status declined, requiring verbal stimulation to maintain wakefulness. Repeat potassium levels showed improvement with decrease to 6.0 mmol/L 2 h after ED arrival, but subsequently rebounded to 6.7 mmol/L 4 h after presentation. Consultation with the gastroenterology service was made to request esophagogastroduodenoscopy (EGD) for removal of suspected pharmacobezoar.

The patient was taken to the endoscopy suite 6 h after arrival, where she was intubated for the procedure with 100 mg propofol and remained sedated with a propofol infusion titrated to light sedation. During the procedure, a granular slurry of medication was removed with dry suction, followed by rapid irrigation and suction cycles until all visible remnants of drug were removed from the stomach (Figure 3). The scope was passed into the duodenum and no medication was visible (Figure 4). No other abnormal findings were noted. She was transferred to the intensive care unit, where potassium levels normalized after endoscopy, 11 h after ED arrival. She was extubated 12 h after the EGD and discharged to the psychiatry service the following day.

DISCUSSION

Hyperkalemia is frequently seen in ED patients, commonly those suffering from renal failure and in patients

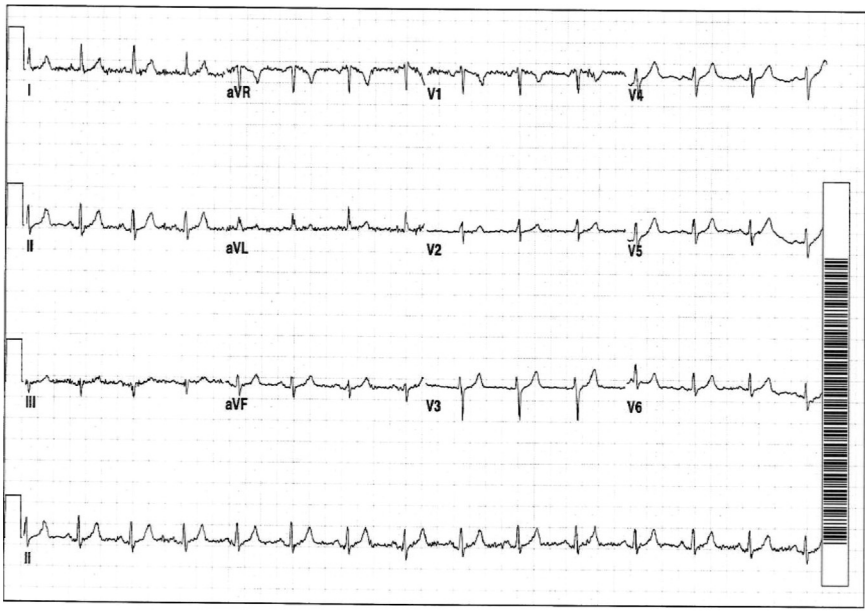

Figure 1. Initial electrocardiogram on arrival to emergency department.