A Case Study: Accidental Ingestion of 35% Hydrogen Peroxide

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Patient Overview

Chief Complaint: 35% Hydrogen Peroxide Ingestion

An 84-year-old male presented to the ED after accidental ingestion of 35% hydrogen peroxide. The patient has a current history of leukemia that he treats with colloidal silver and many other herbal medications obtained from health stores and the local Amish community. In place of the colloidal silver, the patient mistakenly grabbed the wrong container and ingested two ounces of non-diluted 35% hydrogen peroxide. The patient had one episode of vomiting shortly after ingestion.

Diagnosis

Patient arrived to the ED approximately 1 hour after ingestion, complaining of severe abdominal pain and nausea. Ondansetron was administered while EKG and labs were obtained. Significant results are as follows.

Vitals: Temp 36.6°C, HR 127, RR 28, BP 151/103, SpO2 87% on RA, pain 10/10.

Respiratory: No respiratory distress. Clear to auscultation bilaterally. No wheezes, rales, or rhonchi.

Cardiac: Tachycardia. No murmurs, rubs, or gallops.

Abdomen: Soft, mildly distended with diffuse tenderness. No rigidity, guarding, or rebound. Good bowel sounds.

Neurological & Psychiatric: Awake, alert, oriented x3. No SI.

EKG: Sinus tachycardia at 127 with L axis deviation. Abnormal QRS with RBBB and L anterior fascicular block. Inferior Q waves and nonspecific ST changes.

Labs: WBC 64.5 k/cumm, RBC 3.75 million/cumm, RDW 15.4% (hx of leukemia), Glucose 168 mg/dL, Abs Neut 10.3 k/cumm, Abs Lymphocyte 52.9 k/cumm, Lipase 991 Units/L, AST 47 Units/L

Per poison control, ingestion of 2 ounces of 35% hydrogen peroxide is capable of producing 6 liters of oxygen in the GI tract and has the potential to cause perforations, severe erosions, and air emboli. NG tube insertion was suggested and performed with minimal obvious gas release. The patient had mild relief with persistent abdominal pain.

One hour after arrival, the patient stated his flatulence had decreased the abdominal pain to 2/10 with decreased nausea. Abdomen was soft and non-distended. Repeat vitals as follows: HR 108, RR 16, BP 138/95, SpO2 95% on 3L.

Abdominal x-ray demonstrated air within the small bowel and bowel dilatation without pathologic air-fluid levels.

Due to his elevated lipase level and persistent pain, a CT was ordered.

CT of the abdomen demonstrated pneumatosis involving the stomach and second portion of the duodenum with several adjacent areas suspicious for free air. Inflammatory changes to the pancreatic head and peripheral air within the left lobe of the liver were seen. Findings suggested ischemia/infarct of the stomach and duodenum. The patient was counseled on findings, potential for surgery, and possible life-threatening
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condition. At this time, the patient complained of 7/10 abdominal pain that was 10/10 with movement. Fentanyl was administered while awaiting lifeline transport.

The patient was transferred to Methodist ICU for endoscopy and possible surgery. Esophagogastroduodenoscopy revealed inflammation of duodenum, severe inflammation of the stomach diffusely, and inflammation of the distal third of the esophagus without evidence of ischemia or infarction. Patient was observed and kept NPO for four days before a liquid diet was administered. Soft food diet was given three days later and well tolerated by the patient. He was discharged to rehabilitation and is scheduled for repeat EGD in 1 month.

Discussion

Hydrogen peroxide is an oxidizing agent that is a colorless liquid at room temperature. Although bitter in taste, hydrogen peroxide is a commonly ingested chemical that is rapidly absorbed in the GI tract. It is commonly found in household cleaning products at concentrations of 3-5%, but can be found in concentrations of 35-90% in industry. Although not based on scientific evidence, diluted 35% hydrogen peroxide has been reported to be an alternative therapy for many conditions including cancer, HIV, diabetes, emphysema, lupus, shingles, and atrial fibrillation.1

In concentrations of 3-5%, ingestion can result in respiratory irritation, vomiting, gastrointestinal (GI) irritation, and gastric distention, but rarely causes severe toxicity. In higher concentrations, additional complications include gastrointestinal rupture, intestinal gangrene, ulcerative colitis, and severe chemical burns to the gastrointestinal tract. Seizures, cerebral infarction, cardiac arrest, hypotension, and death can result from systemic gas embolization. There is no antidote for hydrogen peroxide, and activated charcoal is not warranted due to its tissue specific injury versus systemic toxicity.2 After immediate workup with labs and radiology, endoscopy should be performed to assess tissue damage with ingestion of higher concentrations of hydrogen peroxide.

REFERENCES


2014 INACEP Residency Forum Recap

The 2014 INACEP Residency Forum was held on August 28th. More than twenty Emergency Medicine residents gathered at the Rathskeller restaurant in downtown Indianapolis to meet with community Emergency Medicine Physicians from throughout the state of Indiana and discuss the practice of Emergency Medicine, careers, job opportunities, and life outside of residency.

This event has been held by INACEP for several years as a way to allow residents and community physicians to keep in touch and to answer residents’ questions over dinner and drinks. This was the first year it was held at the Rathskeller downtown, and the event could only be called a success. The residents expressed appreciation as they were allowed to meet and discuss careers in a friendly and informative manner. Similarly, community physicians from across the state enjoyed meeting young physicians with a shared interest in Emergency Medicine. With the goals of this year’s event surpassed, INACEP is looking forward to hosting the forum again in 2015!