



ToxTalks:

A Bulletin for Healthcare Professionals Who Manage Poisoned Patients

Blue Ridge Poison Center

University of Virginia Health

May 2024



Caustic Ingestions

Case report

A 30-year-old male presents to the Emergency Department (ED) after accidental ingestion of Drano one hour prior to arrival. He is actively vomiting and complaining of severe epigastric pain. He is given antiemetics and an upright chest x-ray does not show evidence of perforation. Gastroenterology takes the patient for an endoscopy and finds extensive tissue damage and ulceration of the gastric and duodenal mucosa. One month later patient presents again due to

difficulty swallowing. Repeat endoscopy shows esophageal stricture.

Overview

Caustic ingestions from household products can pose serious risks to health, and may result in significant tissue damage and long-term complications. Caustic agents are typically classified as either acidic or alkaline. Acidic substances cause coagulative necrosis whereas alkaline substances cause liquefactive necrosis and have a higher potential to cause harm. The extent of tissue damage depends on numerous factors, such as the type of chemical ingested, the amount consumed, the pH of the substance, and the concentration of the product. Some products, such as household bleach (<10% sodium hypochlorite) are dilute and do not lead to significant injury. Others, such as Drano (sodium hydroxide) are very potent and can be dangerous even in small amounts.

Symptoms

Clinical manifestations that can occur after ingestion of a caustic agent include oral pain, erythema, odynophagia, dysphagia, drooling, vomiting, chest and epigastric pain. Aspiration of these agents may occur during ingestion and can result in airway injury. This may manifest as hoarseness, stridor, dyspnea, or respiratory distress.

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BRPC STAFF

Director

Christopher Holstege, MD

Nursing Director

John Gilday, MSN, NREMT-P

Medical Toxicologists

Andy Baer, MD

Nathan Charlton, MD

Aaron Frey, DO

Avery Michienzi, DO

Justin Rizer, MD

Medical Toxicology Fellows

Abigail Kerns, MD

Conner McDonald, MD

David Schaffer, MD

Scott Schmalzried, DO

Epidemiologist

Rita Farah, PharmD, MPH, PhD

Poison Specialists

Andy Anderson, RN

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Michael Brookshire, BSN, CSPI

Jenni Goodwin, BSN, CSPI

Angela Hooe, FNP-C, BSN

Lisa Turner, BSN, CSPI

Public Health Educator

Kristin Wenger, MA, BS

Administrative Specialists

Heather Collier

Debbie Philkil

Management

Decontamination of patients with caustic substances that may have splashed onto eyes, face, skin, or clothes should occur with removal of contaminated clothing and irrigation of eyes and skin. Dilution or neutralization via administering water or other liquid orally is not recommended due to risk of ongoing mucosal damage or perforation. Activated charcoal is absolutely contraindicated because it does not bind caustics, will obscure potential endoscopy, and may potentiate damage, especially if there is a perforation with extravasation.

CT imaging can be used to assess for viscous perforation or ulceration, but the gold standard for assessing degree of injury is endoscopy. Endoscopy is recommended for all intentional symptomatic caustic ingestions. For unintentional ingestions, it should be considered in any patients with stridor, or those that persistently have two or more of the following: pain, vomiting, and drooling. Those that remain asymptomatic and are able to tolerate liquids after a few hours of observation most likely do not require further care, with the exception of several specific chemicals such as hydrofluoric acid and selenious acid. Endoscopy should be performed within 12 to 24 hours of ingestion. Sequelae of caustic ingestions may include such complications as perforation, infection, stricture development, or tracheoesophageal fistula. There is also an increased risk of esophageal carcinoma following significant caustic exposure to the esophagus.

The use of corticosteroids was previously recommended broadly for treatment of caustic ingestions where concern was raised for the potential for esophageal

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stricture. However, more recent evidence has not supported its use and steroid administration is controversial. Steroids are not empirically indicated from our team’s perspective unless the patient has evidence of upper airway edema. Proton pump inhibitors and H2 blockers have been advocated by some, but there is no definite data to prove their benefit. Esophageal stenting or feeding tubes may be required depending on the level of tissue damage.

Common Caustic Agents

Caustic agent	Products	Notes
Sodium hypochlorite (alkali)	Bleach	<ul style="list-style-type: none"> Household products contain <10% and do not lead to significant injury in most ingestions. Industrial products may contain >20% and have higher risk to cause mucosal damage.
Ammonia hydroxide (alkali)	Window cleaners Toilet bowl cleaners	<ul style="list-style-type: none"> Household products contain 3-10% and do not lead to significant injury in most ingestions. Industrial products contain up to >20% and are more likely to cause adverse clinical effects with smaller ingestions.
Sodium hydroxide (alkali)	Drain cleaners	<ul style="list-style-type: none"> Dangerous with any amount of ingestion High risk mucosal damage
Hydrochloric acid (acid)	Toilet bowl cleaners	<ul style="list-style-type: none"> Household products typically contain <10% and can lead to symptoms if ingestions are large enough. Industrial products may contain >20% and are more likely to cause symptoms with smaller ingestions.

Summary

Caustic ingestions from household products can lead to nausea, vomiting, abdominal pain, ulcers, perforation and esophageal strictures. Depending on the product and the amount ingested, patients who ingest a caustic substance will need evaluation in the hospital and may require endoscopy. Awareness of the ingredients found in typical household products as well as recognition of the clinical presentation and management of caustic ingestions is vital in the care of these patients.