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Case Report

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SUICIDAL CORROSIVE INGESTION: A CASE REPORT

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ABSTRACT

Suicidal consumption of corrosives is infrequently reported. Though pesticides are the most common poison consumed to commit suicide, the mortality rate due to corrosives is significantly high. A case of suicidal consumption of sulphuric acid is being reported where a debt ridden worker engaged in polishing metals at a goldsmith had consumed 250-300 ml concentrated sulphuric acid and died following perforation peritonitis. Prognosis of such cases depends upon the amount of acid consumed, concentration of the acid and the rapidity with which the treatment is provided. A multidisciplinary approach involving the emergency medical and the surgical staff is essential to reduce the mortality and morbidity caused by ingestion of corrosive poisons.

KEYWORDS: Sulphuric acid consumption, suicide, corrosion, peritonitis.

INTRODUCTION

Corrosive poisons were formerly common suicidal agents, though they are now relatively rare in Western countries, probably because of the ease of obtaining less painful substances.[1] Though pesticides are the most common poison consumed to commit suicide, the mortality rate due to corrosives is significantly high.[2] A corrosive poison fixes, destroys and erodes the surface with which it comes into contact. They act by extracting water from the tissues, and coagulate cellular proteins and convert haemoglobin into hematin.[3] Sulphuric acid is used in households as a major content of acid drain cleaners and is also obtainable as battery acid. Pickling is a metal surface treatment used to remove impurities, such as stains, inorganic contaminants, rust or scale from ferrous metals, copper, precious metals and aluminium alloys. Sulphuric acid and hydrochloric acid are commonly used by goldsmiths for pickling precious metals of the impurities.[4] We present a case where a debt ridden worker engaged in polishing metals at a goldsmith had consumed 250-300 ml concentrated sulphuric acid and died following perforation peritonitis.

CASE REPORT

A 35 years old male was brought to casualty at Indira Gandhi Government Medical College, Nagpur, India with history of suicidal consumption of sulphuric acid at his workplace. On examination at the casualty, he was in a state of shock with blood pressure 80/50 mm Hg, pulse 160 bpm and respiratory rate 64/min. His abdomen was rigid and tender. He was immediately admitted to intensive care unit where he succumbed to the poison within 6 hours of admission. The dead body was subjected to medicolegal autopsy at the Department of Forensic Medicine.

On external examination, he was moderately built with blood stains present over clothes at places. Brownish black acid stains were noted over the lips. However there was no evidence of any signs of dribbling. Conjunctivae were congested. Cyanosis was present over fingernail beds. Teeth, gums and the tongue were corroded with black discoloration (Figure 1). Two incised looking lacerated wounds were present over forehead, both muscle deep. On internal examination multiple subglottic haemorrhages were present with corrosion and blackish discoloration of laryngeal and tracheal mucosa (Figure 2). Mucosa of the oesophagus was blackened. Multiple haemorrhages were present over the wall of stomach externally. Perforation of size 02 cm x 1.5 cm was present over lower 1/3 the stomach along the greater curvature. The stomach contained brownish black colour dry material adherent to the wall with strong acidic smell (Figure 3). On scrapping out the material from the walls the underlying mucosa was haemorrhagic. Multiple haemorrhages were present over the mesentery and the intestinal walls (Figure 4). There gastric contents had spilled over into the peritoneal cavity resulting into chemical peritonitis. Anterior surfaces of liver and spleen were corroded with brownish black discoloration. Stomach and loop of intestines along with its contents, 1/3 part of liver and ½ of each kidneys were preserved in

rectified spirit for chemical analysis. The chemical analyser's report was positive for sulphuric acid. The opinion as to the cause of death was given as Perforation Peritonitis secondary to sulphuric acid consumption.

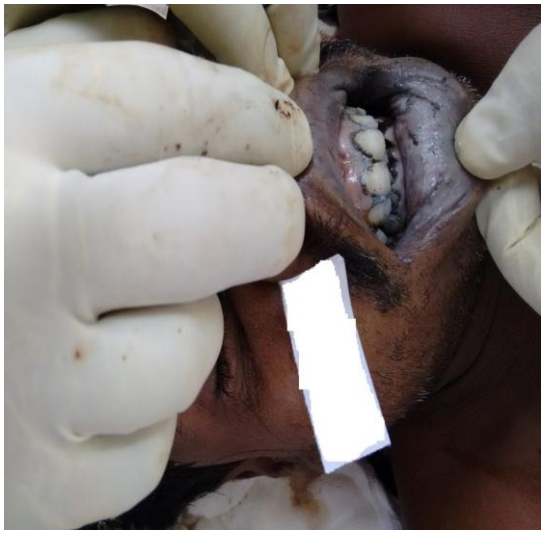

Figure 1 Corroded lips and gums.

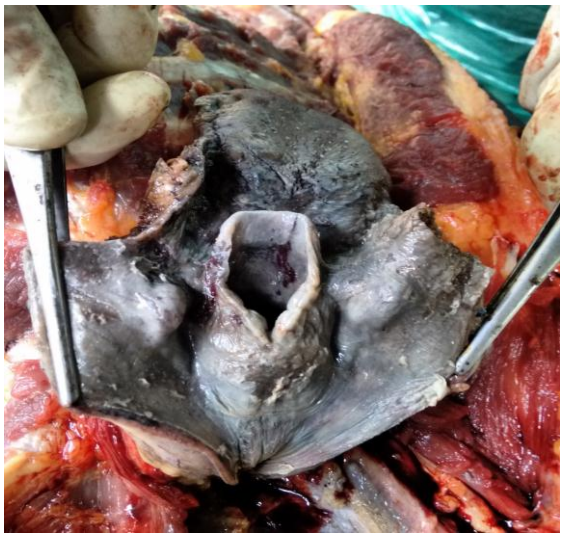

Figure 2 Subglottic haemorrhages and corroded oesophagus laryngeal mucosa.

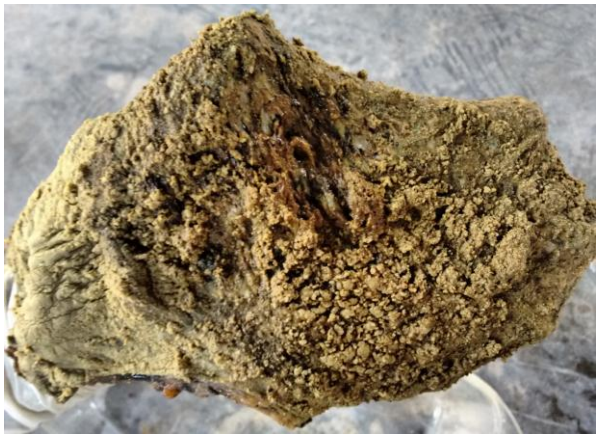

Figure 3 Contents of the stomach adherent to the wall.

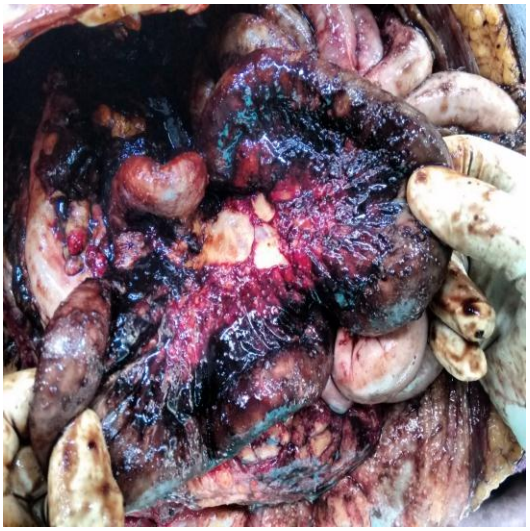

Figure 4 Haemorrhages along the mesentery and intestinal walls.

DISCUSSION

Mineral acids are widely used for commercial as well domestic purposes. Of them use of sulphuric acid is more common. It readily decomposes proteins and lipids through amide hydrolysis and ester hydrolysis upon contact with living tissues. The strong oxidising property may also extend its corrosiveness on the tissues. When people intend to poison themselves, they generally use the household available products for the purpose.[5] The problem of corrosive ingestion is more serious in adults because its intent is often suicidal rather than accidental. Mortality rates are generally reported to be 10-20% but they can be as high as 78% if the intake is purposely for suicide.[6]

The case fatality rate for paediatric patients is significantly less than of adolescents and adults because of the accidental nature of the ingestion in former.[7] The deceased in the present case was working at a goldsmiths and was engaged in polishing activities. He had run up substantial financial debts. His suicidal ingestion of sulphuric acid cab be attributed to the fact that sulphuric acid is commonly used for pickling metals by goldsmiths.[4] Incidence of suicidal acid consumption has reduced in the western world however it appears to be more common in countries like India where hydrochloric acid and sulphuric acid are easily accessible.[8]

Acids can be highly irritative with unpleasant taste, which can lead to choking and gagging after ingestion. Chocking and gagging leads to the acid coming into contact with glottic structures and chemical epiglottitis with airway compromise can result.[9] Multiple subglottic haemorrhages in the present case may be the result of chemical glottitis. The deceased must have collapsed due to the excruciating pain following acid ingestion and have sustained the injuries over the forehead.

The extent and severity of injury depends on the strength of the acid, duration of contact, and condition of the

stomach, i.e., full or empty.[10] When the stomach is empty, caustic acids will affect the gastric mucosa along the lesser curvature to the antrum and when the stomach is full the acidic agents cause diffuse injury.[11] The amount of food in the stomach at the time of the acid intake is important. A small quantity of acid in an empty stomach may cause extensive necrosis and scarring.[12] Less severe gastric corrosion in the present case is probably because the stomach was full while he ingested the acid. Also the perforation resulted along the greater curvature near the pylorus. The gastric contents were corroded and were adherent to the walls. Spillage of the acid into the peritoneal cavity following perforation of stomach resulted in chemical peritonitis and death of the person.

The mortality and morbidity of acute corrosive gastric injuries are high and dependent on the severity of initial damage caused by the corrosive agent with a significant portion of patients succumbing to their injuries either before reaching tertiary care or soon thereafter.[13] Prognosis depends upon the amount of acid consumed, concentration of the acid and the rapidity with which the treatment is provided. A multidisciplinary approach involving the emergency medical and the surgical staff is essential to reduce the mortality and morbidity caused by ingestion of corrosive poisons.

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