

Case Report

Fatal Chemical Peritonitis due to Sulphuric Acid Ingestion

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ABSTRACT

Sulphuric acid is a strong corrosive and is widely used in laboratories, industries, and even in households. In addition to incidents of accidental poisoning, its easy availability has seen it being employed not uncommonly as a suicidal and homicidal agent.

A case is presented wherein sulphuric acid was consumed to commit suicide, which ended in fatality, even though immediate and adequate medical treatment was provided.

Key Words: Sulphuric acid; Suicide

Introduction

Corrosives are chemicals which mainly produce a local destructive effect on contact with skin or mucous membrane, with features of generalized shock. They act by extracting water from tissues, coagulating proteins, and converting haemoglobin to haematin.¹ Acids are potent desiccants with ability to produce coagulation necrosis and eschar formation of injured tissues.² Sulphuric acid is a powerful corrosive, and ingestion of large quantities may be fatal consequent on perforation of the walls of the gastrointestinal tract, or from glottic oedema consequent on acid entry into the larynx. Delayed death may result due to stricture formation in the gastrointestinal tract.³

Cases of accidental poisoning due to sulphuric acid ingestion are quite common due to its resemblance with common household agents like glycerine, liquid paraffin,

and castor oil.² One case has been reported where-in sulphuric acid was accidentally administered as enema.⁴ Aside from the infamous "acid bath murder case" reported from Great Britain in the 1940s in which sulphuric acid was used to dissolve dead bodies, instances of homicidal poisoning with sulphuric acid, as well as vitriolage are fairly commonly reported even today from mainly northern parts of India.⁴ Due to its easy availability, even suicidal attempts with sulphuric acid are not uncommon. One case is reported in medical literature, where-in severe digestive system burns were caused by simultaneous oral and rectal self-administration of sulphuric acid, resulting in oesophagitis and ulcerative inflammation of intestine and colon.⁵

A case is being presented here of a young male who committed suicide by consuming sulphuric acid, death occurring in spite of best possible medical attention.

The Case

A 31-year-old male consumed sulphuric acid and was hospitalized immediately, but died within 6 hours of the incident.

The case was subjected to a medicolegal autopsy. External examination revealed a superficial burn injury, measuring 4 cm x 1 cm, starting from the middle of the lower lip and extending up to the point of the chin, while another superficial burn injury, measuring 6 cm x 1 cm, extended from the left angle of the mouth up to the left angle of the mandible (**Fig 1**). No other external injuries were present on the body.

Internally, brain and lungs were congested and oedematous. Pleural cavities contained 300 ml of fluid bilaterally. There was evidence of laryngeal congestion and oedema, while the spleen and kidneys were congested. Peritoneal cavity contained blackish semi-solid material mixed with 500 ml of blackish fluid (**Fig 2**). Oesophageal mucosa was shredded and charred, while the lips were ulcerated and eroded. The tongue was dry and discoloured, and teeth appeared chalky white. The stomach and small intestine contained black coloured semi-solid material. Both were perforated. Gastric and intestinal mucosa was swollen, softened and charred.

Litmus test confirmed the presence of acid in the peritoneal cavity and the stomach. The chemical examiner's report was positive for the presence of sulphuric acid in the stomach and intestines. The cause of death was therefore opined as chemical peritonitis consequent to gastric perforation, secondary to consumption of sulphuric acid.



Fig. 1



Fig. 2

Discussion

Of all the mineral acids, it is well known that sulphuric acid is most commonly used commercially as well as in households. Cases of accidental ingestion are frequently reported in children.³ Suicidal attempts are relatively common in adults even in the present day and age in India.^{4,6-8} The usual fatal dose is said to range from 20-30 ml of concentrated sulphuric acid.^{2,4} 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.⁹ Death may occur due to perforation of stomach and/or intestine, or from suffocation due to inhalation of vapours.¹⁰ If the patients survives, then long-term sequelae in the form of oesophageal, gastric, or intestinal strictures may follow.¹¹ According to older concept, gastric mucosa was considered more susceptible to acid damage as compared to oesophagus, but recent studies show that acid damage can be seen with the same severity in any part of the gastrointestinal tract.^{9,12}

In the case being presented, the deceased was a steel industry worker by occupation, and had run up substantial financial debts. He consumed sulphuric acid in order to commit suicide. Absence of splashing and restraint injuries on the body ruled out homicide. Presence of label on the bottle, and large quantity of acid in the stomach ruled out accidental ingestion. Diagnosis was confirmed on the basis of classical features of sulphuric acid ingestion at autopsy, and the retrieval of a partially filled, labelled bottle of sulphuric acid next to the victim's body at the scene of the incident.

The prognosis of sulphuric acid poisoning is unpredictable, with outcome depending on the quantity ingested, and rapidity with which adequate treatment is provided. In the present case, although hospital support was provided at the earliest, the case still ended in fatality.

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