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Case Report

An autopsy based study of corrosive acid poisoning and its medico-legal aspects – A case report

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ABSTRACT

The study is of ingestion of corrosive substances and its medico-legal aspects. Corrosive refers to any chemicals (strong acids and alkalis) that dissolve and destroy the structure of an object. Corrosives corrode and damage the tissue on contact. In dilute form it acts as an irritant. Strong acid reacts violently with water and generates heat and fire. In our study, corrosive acid ingestion and its deteriorating & devastating effects ranging from signs, symptoms and internal damage leading to death have been analyzed. Here we discuss a case of an adolescent girl who ingested a corrosive substance at home, was rushed to hospital in a gasping stage where resuscitated treated and finally succumbed to death. Correlating the autopsy findings, medical treatment records and the scene of incidence was crucial to determine medico-legal aspects.

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1. Introduction

Oral poisoning with a corrosive agent is commonly found by ingestion of acids. The most commonly abused acid is hydrochloric acid which is easily available.¹ Many household bathroom cleaners contain Hydrochloric Acid or Sulphuric Acid. They are easily available in the market under different trade names. Other corrosives such as household bleaches (5% of Na hydrochloride), etc. may also be used.² In contact with acids, tissue proteins are transformed into acid proteins & hemoglobin into hematin. The final outcome is coagulation necrosis. Acute corrosive poisoning is considered a serious problem worldwide and is one of the most important causes of admission in casualty and poison control centre knowing the epidemiological characteristics is very important for successful prevention measures and has great importance in the prognosis of the outcome of the poisoning and can be decreased by

early diagnosis and treatment. Once the corrosive comes in contact with body tissue like the mouth eyes skin, GIT, or respiratory system they cause immense destruction leading to penetration and liquefactive necrosis. The degrees of corrosive injuries depend on the time of contact, type, concentration, or amount of the corrosive ingested.³ Corrosive exposure leads to dermal manifestation as intense pain, and blistering with ulceration in tissue that comes in contact and by inhalation may cause inflammation in the throat, cough, chest capitations and other respiratory systems. Ingestion result in intense pain, burns in the mouth, pharynx and GI tract, vomiting, dysphagia, in severe cases esophageal or gastric perforation may occur resulting in shock and death. Generally, the treatment of corrosive is conservative in case of minor complications while cases with life-threatening complications need surgical treatment. The decision needs multiple specialists depending upon the severity of corrosive injuries, complications and the patient's condition. Unfortunately, studies and research about this topic are few. Poisoning with household

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materials including corrosive materials is widespread and its consequences are severe. We present a case of a young adolescent girl of corrosive ingestion and discuss the effects of it and its medico-legal aspects.

2. Case Report

A 16years old Hindu female was brought to the mortuary of the Department of Forensic Medicine & Toxicology, P.M.C.H., Patna with an alleged history as per inquest as “She became ill after consuming some poisonous substance and died during the treatment.” Information sourced from parents & Investigating officer of Police revealed that the victim consumed some corrosive acid & was brought to casualty in an altered sensorium & shock with frothy discharge from nostrils & mouth along with vomiting & later succumbed to death.

On perusal of the inquest papers, visiting the scene of the incident and inquiry from relatives and the neighborhood it revealed that the deceased was upset due to her failure in love. She was frustrated, she was regularly mentally harassed by family members to forget the issues which she was not able to cope with. In utter desperation and guilt, she resorted to corrosive acid ingestion which was kept in the washroom as she did not feel like living anymore. Upon discovery of the fact that she has ingested corrosive poison, the family members initially tried some home remedial measures for treatment. On the deteriorating condition of the deceased with no improvement, she was rushed to P.M.C.H, Patna for treatment & management. On receipt of the deceased being in altered sensorium, respiratory distress, low pulse, falling BP, and vomiting in an emergency she was immediately resuscitated, treated and managed. After admission, the condition of the patient did not improve, deteriorated and finally she died after about 7 hours of admission. An autopsy was conducted after receiving the inquest paper.

2.1. External findings

Blackish discoloration of both lips with frothy discharge yellowish in color, blood-tinged trickling to both sides of cheeks from the mouth (Figure 1).

2.2. Internal findings

There were features of acid burning on the mucus membrane of lips to the upper digestive tract with grayish-white erosion associated with swelling, inflammation and edema. The stomach was converted into a dark reddish brown to black soft spongy mass with hemorrhage and clots with a perforation covering the whole lower portion of the stomach. There were massive fluid blood & blood clots inside the abdominal cavity. The amount was about 1.5 to 2 liters (Figures 2 and 3). There was a feature of corrosive burns of the abdominal viscera which was brownish black



Fig. 1: Blackish discoloration of both lips

in colour and soft & spongy in consistency. Edema of the larynx and trachea were also noted.

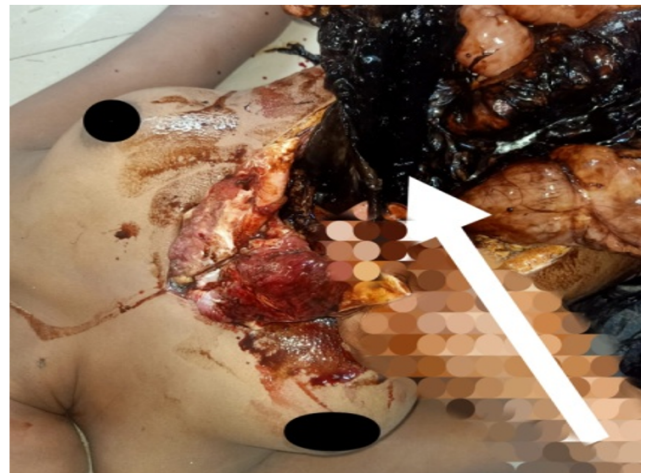


Fig. 2: Hemorrhage & clots in stomach with perforation

2.3. Opinion

After considering history, hospital treatment papers, the available container of toilet cleaner, and the viscera report the final cause of death was given as “Died due to ingestion of Hydrochloric acid.” The manner of death was suicidal in nature.

3. Discussion

Corrosive poisoning remains a common problem in developing countries & may cause serious injuries to the mouth, upper GI tract & even result in death. They are



Fig. 3: Massive blood & clots in abdominal cavity

mostly accidental in nature and accordingly less fatal. Suicide by corrosive acid poisoning is very common.⁴ In one Western Literature it was mentioned that acid ingestion as a mode of suicide is common among children and psychotics.⁵ Further, it was also mentioned that the suicidal intention was recognized as one of the commonest causes for sulphuric acid ingestion.⁶ Stomach perforation is comparatively uncommon with hydrochloric acid. In one study it was reported that of a perforation of lower portion of esophagus and upper portion of stomach.⁷ It poses a major problem in clinical toxicology since the most affected population are the young especially those with psychotic disorders, suicidal tendencies and alcohol addiction. Management is focused on initial resuscitation, evaluation of the grade of injury, and treatment of early and late complications.

4. Conclusion

Stringent legislation is necessary to curtail the sale of corrosives in unlabeled containers and limit unrestricted access to all too dangerous corrosive agents. Packing of these agents should be made child-proof to prevent accidental ingestion by children. A sound social support system should be developed to assist in relieving stresses

that predispose to suicide.

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None.

6. Conflict of Interest

None.

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