

CASE REPORT; AN EARLY & URGENT ENDOSCOPY MAY AFFECT THE PROGNOSIS IN PATIENT WITH SUSPECTED CORROSIVE INGESTION.

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ABSTRACT

29 years female presented with sudden onset severe abdominal pain, mainly epigastric associated with bouts of bloody stained vomitus. The patient denied history of taking neither non-steroidal anti-inflammatory drugs nor any other substance. The patient was stable at the emergency department with normal physical examination and basic investigations. Hence she was admitted for elective upper gastrointestinal endoscopy. The condition of the patient deteriorated due to marked unexplained massive blood loss. Hence an urgent blood transfusion was commenced and the patient shifted to the intensive care unit for stabilization and close monitoring. Then urgent endoscopy conducted at the intensive care unit showed findings consistent with a severe caustic mucosal injury of the lower oesophagus and the stomach. These findings paved the road for the correct diagnosis and initiation of the proper management. It could be concluded that an urgent endoscopy should be done as earlier as possible in patients who present with unexplained severe upper gastrointestinal bleeding to confirm the diagnosis and initiate a proper management to reduce the severity of acute complications, improve the prognosis and achieve a better outcome.

INTRODUCTION

Hydrogen chloride is one of the caustic substances that may cause severe injury to the oesophagus and stomach. Moreover, serious complications or fatal consequences may be the natural course. Generally, caustic ingestion is reported less frequently in the developed countries (<5%), but it is more common in Eastern countries such as Taiwan where access to hydrochloric acid and sulphuric acid is easy (1). These substances are commonly found in toilet bowl cleaners, anti-rust compounds, battery fluids, and commercial pesticides (1). The reasonable justification is the ease of access to acids because they are promoted as cheap substances with low-risk profile if instructions were followed precisely and lack of awareness regarding the potential harm related to them may affect the storage and careful usage of these substances. According to reports from the American Association of Poison Control, about 200000 cases of caustic ingestion are recorded per year in the United States of America (2,3). Similarly, another report from the Republic of Macedonia documented about 75-80 corrosive poisonings annually: high incidence was observed among females and suicidal intent was reported in 95% of cases (4). In general, most victims are exposed to household or industrial products of caustic elements as result of either accidental occupational exposure or suicidal issue as in our case report (5)(6). Zargar et al described a severity grading system which has been widely adopted. This grading is formed basically of 3 grades starting from normal endoscopic findings, ending up with severe extensive necrosis with a split of grade 2 and 3 to a and b(7). Such a grading system helped in early detection of serious cases and dealing with them appropriately.

Case report

29years old female, housekeeper brought to the Emergency department(ER) with a two-hour history of severe abdominal pain mainly epigastric and an associated blood stained vomitus. The patient denied any use of NSAID drugs or any other substances. The patient has no past medical history of a similar condition or chronic

medical problem, including peptic ulcer disease and psychiatric disorder. She was not admitted to any hospital before. Her vital signs were normal: temperature 37c, blood pressure 120/80, pulse 95/min and saturation was 100% on room air. She was not pale, jaundiced nor cyanosed. Other systems were normal apart from mild abdominal tenderness more at the epigastric area. The basic investigation at ER were normal ;(glucose 6.2,urea 3.8 ,creatinine 37,TP 55,ALB 33,Ca 2.23,Na 135,K4.1,phosph0.33,HB 16.3 ,PLT 140 & WBC 7.5). In addition to that, the patient had normal PT, PTT, INR, arterial blood gases ECG, abdominal ultrasonography, chest X ray and abdominal X-ray. She was admitted to the female medical ward as a case of upper gastrointestinal tract (GIT) bleeding for observation and was planned for a diagnostic endoscopy next day after proper preparation. The patient was kept fasting to rest the bowel and empirical therapy was commenced with omeprazole 80 mg intravenous as a loading dose and followed by fixed rate of 8 mg /hour iv , antacid syrup 30 ml 4hourly, vitamin K 10 mg iv stat besides IV fluids. She continued to vomit large amounts of blood with persistent abdominal pain. In the next day, her haemoglobin dropped from 16.3 to 11.1 gm /dl, indicating ongoing active bleeding. A further drop in haemoglobin was observed as reading approaching a level of 7.3gm/dl hence 2units of packed red blood cells (PRBC) were transfused. Then the patient was shifted to the ICU for stabilization following which an urgent endoscopy was performed that showed erosion of the mucosal surface of the lower oesophagus, stomach and up to the 2nd part of the duodenum. There was severe necrotic damage to the mucosal surface of the lower oesophagus and sloughing of the gastric mucosa with a blackish haemorrhagic area, excoriation and ulcerations that were fitting grade 3 mucosal injury according to Zargar's classification for gastric corrosive injury as shown in Image (1). On the light of the endoscopic findings, the patient admitted that she took a small amount of flash (50ml). It is a household substance that contains concentrated hydrochloric acid and is used for cleaning bathrooms. The patient was kept in the ICU and repeated units of PRBC were transfused for the ongoing blood loss to correct her haemoglobin. The patient suffered aspiration pneumonia due to recurrent and excessive vomiting that improved with proper antibiotics. A surgical evaluation was done for partial intestinal

obstruction that settled with conservative management. Three follow-up sessions of endoscopy were conducted after two, four and ten weeks post hospital admission shown in Images (2–4). The patient tolerated small amounts of soft and liquid meals and further supplemented by parenteral feeding. Barium swallow showed smooth long segment stricture of the body and pyloric canal of the stomach with proximal hold up, very minimal delayed emptying through the stomach and no stricture was seen in the oesophagus as seen in Image (4). No significant abnormality was observed in her investigations. The patient remained stable in the ICU and shifted to the female medical ward. She spent one more week in the ward where she remained stable and then later travelled back home where she did restorative surgery for the pyloric stenosis.

DISCUSSION

Hydrogen chloride is an irritant and corrosive substance to any tissue when it comes into contact. One of its physical features is its high water solubility producing hydrochloric acid. Hence ingestion may result in inflammation of the mouth or mucosal membranes and dental enamel erosion of the oral cavity. Such effect was seen in this case despite being mild. The bleeding was massive and required repeated blood transfusion which indicates the severity of the caustic gastric insult. Some clinical data described mild bleeding following corrosive ingestion and a self-limiting event but massive hemorrhage may present a short time after corrosive ingestion (8) or late in two weeks after ingestion (9). Aspiration pneumonia may result from excessive salivation and repeated vomiting as seen in this patient. In one retrospective study, evaluating 370 patients over a period of twelve years, they confirmed aspiration pneumonia in 4.2% of cases (10). Moreover, it reflects the severity and is associated with higher rates of mortality(10,11).Feeding is another challenge in managing patients with severe corrosive ingestion. Direct oral feeding is not recommended in case of severe insult for oesophageal rest and avoiding infection, hence reducing some of the acute complications. Parenteral feeding is advisable during the first days post caustic damage to the oesophageal and stomach mucosa as supported by some studies to avoid the risk of superadded infection (12,13). Other modalities of feeding may be used if

suitable for these cases as it depends on the extent of severity: nasogastric or nasoenteral tube, gastrostomy or jejunostomy(13). The catabolic state of this condition and the problem of feeding were associated with weight loss: the patient lost about ten kilogrammes which were 16% of her weight during two months. Gastric outlet damage is commonly seen in corrosive ingestion and its severity depends on the concentration of the substance, its nature, the speed of ingesting the corrosive substance and the posture adopted during the time of ingestion (14). The lesser curvature and the pre-pyloric area are the common sites for damage as shown in our case report(15). The outlet obstruction may take one week to develop or many years post caustic ingestion (14,15). The percentage of developing strictures post corrosive ingestion may vary according to the sample size: some studies reported the stricture in 6% to 51,7% of cases(16–18). Oesophageal strictures are more common and severe in alkaline ingestion poisoning than acids (17). On the other hand, gastric stenosis is most frequently reported after acid ingestion as seen in our case report although many cases of gastric stenosis have been associated with alkaline ingestion (4) In this case, the corrosive substance ingested was adequate to destroy the entire stomach that resulted in a diffusely contracted stomach with loss of mucosal surface and reducing the roomy space of the stomach as shown in Image(4). The possibility of stricture formation is directly related to the degree of severity of the gastric injury. One clinical study confirmed that over 80% of patients with grade 3 burns may result in stricture formation, and one-third of those with grade 2 burns may have strictures. Fortunately enough, first degree injuries are rarely complicated with strictures and mortality is also more common in patients with grade 3 injury (7).

Perforation is a serious complication that may require urgent surgical intervention and is an alarming sign for increasing risk of mortality. Fortunately enough our patient was saved from the adverse sequelae despite the impending higher risk. In one study that recruited a small group of cases, oesophageal perforation was documented in 3 % of the participants (19). Gastric perforation is also a known serious complication and vulnerability is increased with ingesting larger amounts of the corrosive substance, high concentrations and if

taken on an empty stomach. The ingestion of corrosives harbours the risk of developing carcinoma even after prolonged periods, hence regular follow-up is advisable. Some studies estimated the risk of oesophageal carcinoma to be about 3%, while the risk of gastric carcinoma is a very low compared to oesophageal carcinoma (20,21) Earlier endoscopic evaluation is recommended for all cases with a higher possibility of corrosive ingestion. The endoscopic findings will pave the road for correct and solid diagnosis, proper assessment and grading, anticipating manageable acute complications, prognosis and initiating definitive earlier management that may improve the outcome. Delayed endoscopy more than 48 hours is not advised because it is associated with increased risk of perforation, strictures and Inflammation (19). The endoscopy is contraindicated in case of supraglottic or epiglottic burn with marked edema, the hypopharynx with third-degree burns and overt perforation (1). Gumaste .et al showed a high incidence of accidental caustic poisoning among children which accounts for 80% of cases (6). Interestingly, the number of children who required hospital admission and treatment was less compared to adult cases which were 39% and 81% respectively(22). Litovitz et al 2001 documented that twenty-seven of these cases may die as a result of the complications of the corrosive insult (3). Most intentional ingestions of caustic that occur in adults are associated with higher morbidity than childhood exposures. This may be explained by ingestion of a large volume of caustic substance and in the presence of the high possibility of co-ingestants. Another observation is that occupational exposures often are associated with severe morbidity and poor prognosis than other exposures because industrial products are more concentrated compared to those used in the home (9). Some clinical studies showed the mortality rate among adults to be between 10 % to 29% (9)(23) and can be reduced to 1% to 5 % with earlier enhanced diagnostic and management approach (4). On the other hand, patients who are exposed to corrosive injury in a suicide attempt may have a higher mortality rate approaching 75 %(24)

More efforts are required to reduce the incidence of corrosive ingestion: we need to increase the awareness of people who come into contact with such substances at the area of production, transport, stores and at home to

avoid incidental events especially among children. More attention must be paid and restriction of access to these hazardous substances in places where people with psychiatric disorders, suicidal attempts or suicidal ideas are living.

Conclusion

The role of early endoscopy is very important in patients with unexplained upper gastrointestinal bleeding. In suspected cases of corrosive ingestion, an urgent upper GIT endoscopy should be arranged as early as possible to confirm the diagnosis, assess the severity, anticipating the possible acute complications and prognosis.

Moreover, it is the right time to initiate the definitive management, which may alter the prognosis and improve the outcome.

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Table (1) shows Zargar's grading classification of mucosal injury caused by ingestion of caustic substances

| Grade | Description | |
|-------|---|--|
| 0 | Normal endoscopic findings | |
| 1 | Presence of edema and an hyperemic mucosa | |
| 2 | a | Presence of superficial ulcers, erosions, friable tissues, blisters, exudates, haemorrhages, whitish membranes |
| | b | As the above adding to it, deep discrete or circumferential ulcerations |
| 3 | a | Small distributed areas of numerous ulceration and necrotic regions that are brown-black or greyish discolored |
| | b | Widespread necrosis |

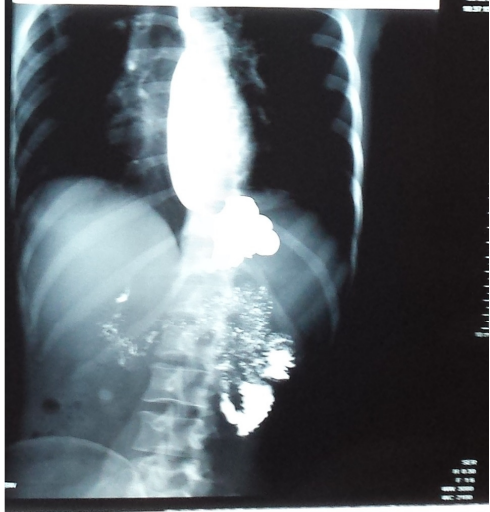
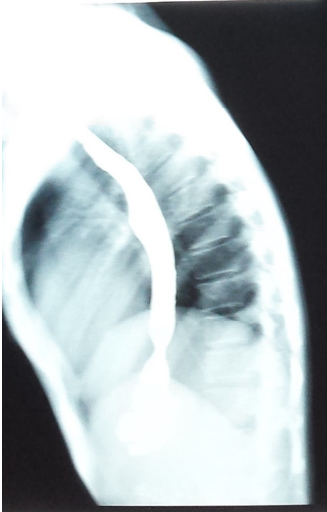
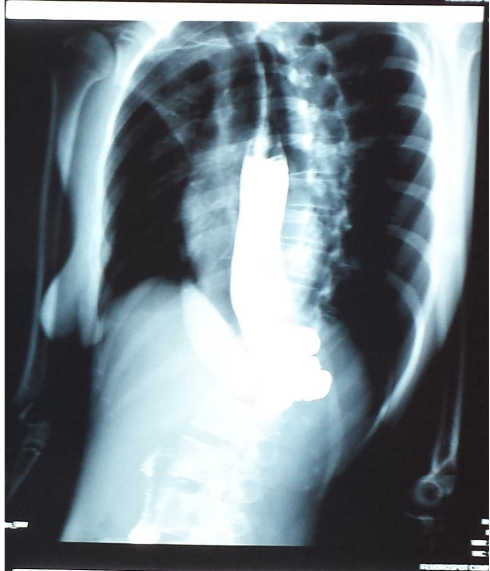
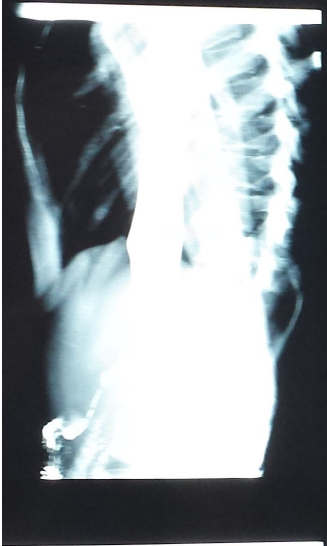
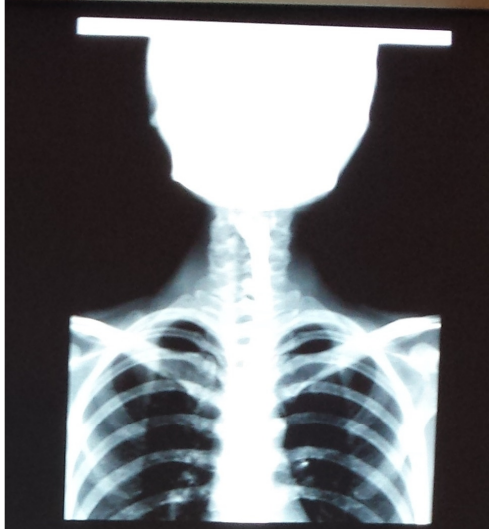
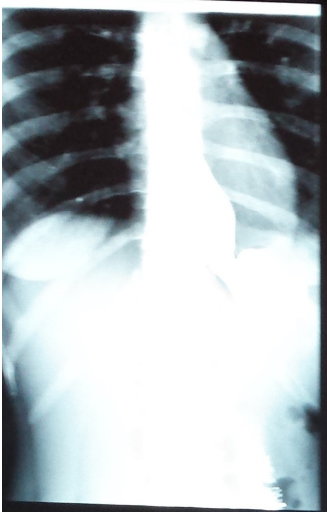


Image (5)Barium study indicates the stricture at the 3rd part of the duodenum with a delay emptying of the gastric content