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CLINICAL, EPIDEMIOLOGICAL, ENDOSCOPIC PROFILE AND OUTCOME OF CORROSIVE INJURIES OF GASTROINTESTINAL TRACT – A TERTIARY CARE EXPERIENCE

Gastroenterology

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ABSTRACT

Background: Corrosive gastrointestinal tract injuries are a source of considerable morbidity all over the world and differ in their presentations.
Methods: This study was done on 58 patients with history of acute corrosive injury with a period of 24 hours of ingestion presenting to the Intensive care ward and reviewed by the Institute of Medical Gastroenterology Madras Medical College within a period of one year from December 2017 to November 2018. A detailed history was recorded and patients were analyzed on the basis of age, sex, mode of ingestion, intention of consumption, nature of corrosive and clinical symptoms. UGI endoscopy was also done within 24 to 48 hours of admission. The patients were serially followed up and subjected to repeat UGI endoscopy after 6 weeks and the results were analyzed.
Results: Based on this study the incidence of corrosive ingestion was higher in males 67% (n=39) than females 33% (n=19). The most common intention of corrosive ingestion was suicidal found in 71% (n=41) and only 29% (n=17) were accidental. Acid ingestion was more common than alkali ingestion. Chest pain and dysphagia were the most common symptoms at presentation. On UGI scopy, 14 had grade 0, 9 have grade 1, 22 have grade 2 and 13 have grade 3 degree of corrosive injuries based on Zargar classification. On follow up 3 were lost to follow up, 2 patients expired, all patients with endoscopic grading up to grade 2a were managed conservatively, esophageal dilatation was done in 15 patients, surgical management including esophageactomy in 2 cases and gastrojejunostomy in 2 cases was done. 3 patients were subjected to feeding jejunostomy for nutritional management.
Conclusions: Corrosive injury of the upper gastrointestinal tract is a common problem with variable clinical presentations. Acid injury is more common in developing countries like India. The depth of injury is the most important determinant of the outcome. Early endoscopy is helpful in assessing the extent of injury. Nutritional support is given by total parenteral nutrition and feeding jejunostomy in grade 2B and 3A injuries. Intraluminal stents may be effective in the prevention of stricture but require endoscopic experience. Nasogastric tube and antibiotics have no role in preventing stricture. Endoscopic dilatation is the treatment of choice for esophageal stricture and gastric outlet obstruction. Surgery is recommended in patients who have a high grade of injury, refractory to endoscopic dilatation and who develop complications

KEYWORDS

Corrosive ingestion, UGI scopy, Endoscopic dilatation, Zargar classification.

INTRODUCTION

The word 'corrosive' is derived from the Latin verb corrodere, which means 'to gnaw away', indicating how these substances seem to 'gnaw' their way through flesh or other material. Corrosive injury of the upper gastrointestinal tract is a worldwide clinical problem. Eighty percent of the corrosive injuries occur in children, where it is due to accidental ingestion of the caustic agents.[1] Adults usually ingest caustic agent with a suicidal intent.[2] Occasionally, ingestion of caustic agent is seen in psychiatric or alcoholic patients.[3] Unlike in the West, accidental or suicidal ingestion of acids is a common type of corrosive poisoning in India because of easy access to acids. Sulfuric and hydrochloric acids are sold across the counter as cheap toilet cleansers, and industrial and laboratory workers have free access to acids at their places of work.[4]

Acids induce tissue injury by means of tissue protein desiccation to produce coagulative necrosis which results in cellular protein desiccation, denaturation, and precipitation resulting in eschar formation and is usually limited to the more superficial layers of mucosal tissue as penetration into the deeper layers is impeded by the presence of the eschar. In case of alkali ingestion, the site most commonly affected is the esophagus. The stomach is relatively spared of the damage of neutralization by endogenous HCL; with few patients having damage in the small intestine as well.[5] Alkali injury hence can be transmural and if associated with perforation can lead to mediastinitis, and peritonitis.[6] In stomach the injuries are common in the antrum. The reason for the predilection to affect the antrum is due to the "magenstrasse" flow of liquid acids along the lesser curvature of the stomach with resultant pooling in the pylorus secondary to acid-induced pylorospasm. The relative sparing of the duodenum may be due to the pylorospasm and the alkaline pH of the duodenum, but injury does occur.[7]

Clinical presentation in a patient who has consumed corrosive can be from being occasional asymptomatic to being extremely moribund. Pain which can be at multiple sites such as oropharyngeal pain, chest pain, epigastric or abdominal pain, burns in the oral cavity and oropharynx, Nausea, vomiting, dysphagia, refusal to swallow and drooling of secretions. The suspicion of complications includes hematemesis or melena indicates upper gastrointestinal bleeding, respiratory distress if present may be due to aspiration of contents, esophageal perforation, vocal cord injury and systemic acidemia. Rarely in patients who present late may show signs of end stage complications like shock, metabolic acidosis, DIC, and vital organ hypo perfusion. Those patients surviving a few weeks after a grade II or III injury may subsequently present with dysphagia, vomiting from stricture formation, motility abnormalities of the pharynx and esophagus, formation of aorta- and tracheoesophageal fistulas and pulmonary thrombosis.[8] Another dreaded long-term complication is

the association of malignant potential in patients with strictures following alkali ingestion.[9]

Endoscopy is contraindicated in hemodynamically unstable patients with necrosis around the lip and oral cavity, severe laryngopharyngeal edema, severe respiratory distress, and suspected perforation. Endoscopy is usually recommended in the first 12–48 hours although it is safe up to 96 hours after caustic ingestion. Endoscopy should be performed with caution and gentle insufflation.

Zargar's modified endoscopic classification of corrosive ingestion is useful in grading endoscopic lesions; grade 0 is normal, grade 1 has mucosal edema and hyperemia, grade 2A shows superficial ulcers, grade 2B has deep focal and circumferential ulcers, grade 3A shows focal necrosis, grade 3B has extensive necrosis, and grade 4 shows perforation.[Figure 1].

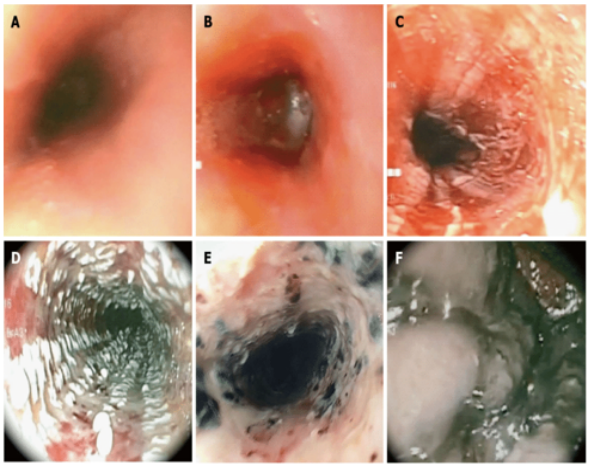

Figure 1: Endoscopic pictures of Zargar classification 0 to ⅢB. A: Zargar Grade 0: Normal mucosa; B: Zargar Grade Ⅰ: Edema and erythema of the mucosa; C: Zargar Grade ⅡA: Hemorrhage, erosions, blisters, superficial ulcers; D: Zargar Grade ⅡB: Circumferential bleeding, ulcers. Exudates; E: Zargar Grade ⅢB: Focal necrosis, deep gray or brownish black ulcers; F: Zargar Grade ⅢB: Extensive necrosis, deep gray or brownish black ulcers.

MATERIALS AND METHODS

This is a prospective cross sectional study conducted among patients with history of acute corrosive ingestion presenting within 24 hours and admitted in the Intensive Care ward in Rajiv Gandhi Government General Hospital, Madras Medical College, and Chennai over a period of one year between January 2018 and December 2018. Fifty eight were included in this prospective observational and analytic study.

Inclusion criteria Patients age >12yrs, Patients with history of corrosive ingestion presenting within 24 hours of ingestion, Upper GI endoscopy done in patients within 24 hours of admission.

Exclusion criteria Patients presenting after 24hours of corrosive ingestion, Patients with respiratory distress, Patients with suspected perforation either radiologically clinically or endoscopically (grade IV injury).

All patients who were admitted with history of corrosive ingestion underwent thorough history taking and detailed clinical examination after initial stabilization of airway, breathing and circulation. Corrosive details that were recorded include the nature of corrosive, intent suicidal or accidental, demographic data and clinical presentations. After initial clinical evaluation patients underwent upper GI endoscopy within 24 hours of admission to assess the degree and extent of injury and severity was graded based on Zagars's classification.[10] Patients were followed up for period of 6 weeks and managed according to their clinical presentations.

Laboratory investigations including complete blood counts, renal and liver function tests were done in all patients. Chest and abdomen x-rays were taken to rule out perforation. Patients were subjected to Upper GI endoscopy within 24hours of admission. The findings were noted, and patients were managed accordingly. The patients were serially followed and were subjected for barium studies and a re-look Upper GI endoscopy after 6weeks and the findings were analyzed. Statical analysis was done using computer software (SPSS version 20).

RESULTS

Among the 58 patients with a history of acute corrosive ingestion 71% patients (n=41) and 29% patients (n=17) had suicidal and accidental history of consumption respectively. The mean age was 25.73 +/- 4.62. the youngest was 14 years and the oldest was 71 years. Out of 58 cases the majority of patients were males 67% (n=39), females 33% (n=19).

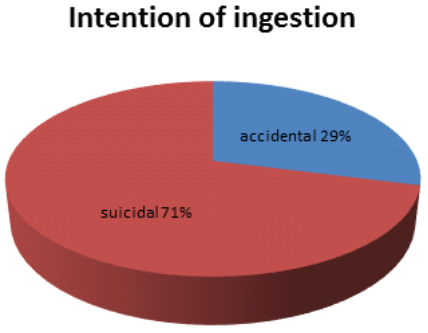

Figure 2: Intention of corrosive substance consumption

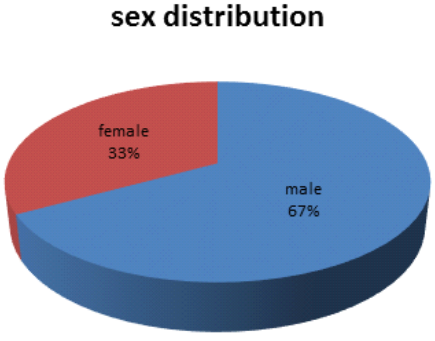

Figure 2: Sex distribution of corrosive ingestion

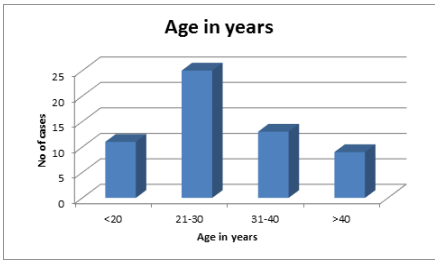

Figure 3: Age distribution of corrosive ingestion

Acid consumption was more common than alkali consumption. Toilet cleaning acid 45% (n=26) was the most common substance followed by phenyl 38% (n=22). The other substances included boric acid, herbicides, kerosene, insect repellant and unknown substances.

Chest pain (n=41) and dysphagia (n=36) were the most common symptoms at presentation.

All patients were subjected to upper gastrointestinal endoscopy. On UGI scopy, 14 had grade 0, 9 have grade 1, 22 have grade 2 and 13 have grade 3 degree of corrosive injuries based on Zargar classification.

Table 1: Analysis of symptoms

Symptoms	No of cases
Chest pain	41
Dysphagia	36
Difficulty in breathing	32
Vomiting	27
Hematemesis	21
Oral lesions	11
Skin lesions	7
Seizures	2

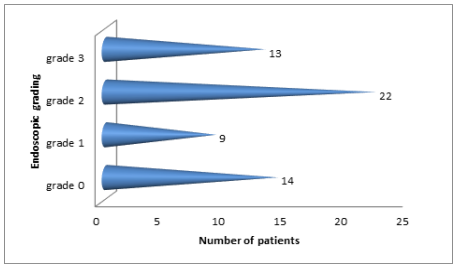

Figure 4: Endoscopic grading of severity of corrosive injury

On follow up 3 were lost to follow up, 2 patients expired, all patients with endoscopic grading up to grade 2a (n=31) were discharged within 3 days and started on oral feeds prior to discharge. 15 patients required endoscopic management and esophageal dilatation was done with Savary Gillard dilator. Surgical management including esophageactomy in 2 cases and gastrojejunostomy in 2 cases was advised. 3 patients were subjected to feeding jejunostomy for nutritional management prior to definitive procedure.

DISCUSSION

Poisoning with corrosive substances is a very common occurrence in our country due to easy availability of these compounds in our household. Ingestion of these substances causes a wide variety of damage to the GI tract both acute (perforation, hemorrhage, etc.) and delayed (stricture, carcinoma).

The age of the patients ranged from 14 years to 67 years. The mean age was 25.73 ± 4.62, the youngest was 14 years and the oldest was 71 years. Out of 58 patients there 67% were males (n=39) and 33% females (n=19). This was in concordance with the previous studies done by Mirji P et al.[11]. Further analysis revealed that 21% (n=12) patients had consumed corrosive substance under the influence of alcohol.

Acid consumption was more common than alkali consumption. Toilet cleaning acid 45% (n=26) was the most common substance followed by phenyl 38% (n=22). The other substances included boric acid, herbicides, kerosene, insect repellant and unknown substances. The most common substance used was household toilet cleaning acid presumably because of its easy availability and less cost. This was similar to the results published by Dey S et al[12] where the offending agent was found to be acids (muriatic acids, Harpic and others) in all cases.

Chest pain (n=41) and dysphagia (n=36) were the most common symptoms at presentation. Patients also had symptoms of difficulty in breathing (n=32), vomiting (n=27), hematemesis (n=21), oral lesions (n=11), skin lesions (n=7) and seizures (n=2). In various studies conducted by Zargar et al dysphagia and oropharyngeal pain were the most common symptoms. Endoscopy was performed in all 58 patients with caution and gentle insufflation. The average time to endoscopy in our study was 11.76±2.62 hours from time of consumption. On UGI scopy, 14 had grade 0, 9 have grade 1, 22 have grade 2 and 13 have grade 3 degree of corrosive injuries based on Zargar classification.

All patients were advised to follow up at 4 weeks after corrosive consumption. 3 were lost to follow up. Among the 3 patients who did not follow up, 2 had grade 0 and 1 patient had grade 1 injury. 2 patients expired, one patient had grade 2b and the other had grade 3a injury. All patients with endoscopic grading upto grade 2a (n=31) were managed conservatively. Follow up endoscopy and barium meal was done in all patients. Follow up endoscopy and barium meal revealed that patients with grade 0,1, and 2a injuries healed without strictures. 15 patients required endoscopic management and esophageal dilatation was done between 4 and 6 weeks. Surgical management including esophageactomy for 2 patients for long segment esophageal involvement and gastrojejunostomy for 2 patients was advised due to gastric outlet obsrtuction. 3 patients were subjected to feeding jejunostomy 3 weeks after consumption to maintain nutrition status prior to definitive procedure.

A review analysis has shown patients with injuries up to grade 2A have excellent prognosis and can be discharged after 24–48 h of observation. Patients with grade 2B and 3A injury develop strictures in 70%–100% cases. All patients with grade 2B and 3A injuries can be managed conservatively; they require nutritional support for 6–8 weeks by total parenteral nutrition or feeding jejunostomy.[13]

CONCLUSION

Corrosive injury of the upper gastrointestinal tract is a common problem with variable clinical presentations. Acid injury is more common in developing countries like India. The most common age group is between 20 and 30 years. Early endoscopy is helpful in assessing the extent of injury. Zargar classification of endoscopic injuries is important to assess the depth of injury and plan further management Nutritional support is given by total parenteral nutrition and feeding jejunostomy in subacute stage in grade 2B and 3A injuries. Intraluminal stents may be effective in the prevention of stricture but require endoscopic experience. Nasogastric tube and antibiotics have no role in preventing stricture. Endoscopic dilatation with or without intralesional steroid and mitomycin injection is the treatment of choice for esophageal stricture. Surgery is recommended in patients who are refractory to endoscopic dilatation and who have a high grade injury at presentation. Survivors must be counseled with regard to their suicidal intentions and a multidisciplinary approach is important.

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