

Gastric outlet obstruction as a sequel of hydrochloric acid ingestion

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Abstract

Corrosive injury of the upper gastro-intestinal tract is a common cause of morbidity and may result in mortality. Gastric outlet obstruction is a common late sequel, which is best confirmed by esophagogastroduodenoscopy. The surgical management for gastric outlet obstruction has been proven to be beneficial in relieving the symptoms and improving the quality of life. We present here a case of gastric outlet obstruction following hydrochloric acid ingestion as an attempt of self-harm and its surgical management. After the desired surgical treatment, the patient improved clinically which was also reflected in the biochemical results. Proper patient evaluation and planning of operation are vital before surgery.

Introduction

Many domestic toilet cleaning liquids (harpic in our case) contain hydrochloric acid (10%) as the active ingredient. Its ingestion, accidental or suicidal, causes gastric and esophageal stenosis. When hydrochloric acid comes in contact with the body tissues, it transforms hemoglobin into hematin and tissue proteins into acid proteins, resulting in coagulation necrosis. Thrombosis of small vessels takes place, producing heat that increases the injury. They usually happen in few hours after corrosive ingestion. In the following days, these processes continue, which are characterized by bacterial invasion, inflammatory response and formation of granulation tissue. Until second week following ingestion, collagen deposition is minor, and after three weeks of ingestion the healing process begins. Then tissue fibrosis occurs, resulting in narrowing of the gastric lumen and stricture formation.¹⁻⁵ Surgical correction is then necessary.

Case Report

A 26 year old housewife, non-diabetic, normotensive, non-asthmatic, non-smoker, non-alcoholic hailing from Jessore, presented with the problems of difficulty in swallowing, vomiting after meal, weight loss, weakness and pallor which started after ingestion of corrosive poison (harpic) two months back with the intention of self-harm. She was treated conservatively for the last two months and was reasonably well but for the last one month she complained of vomiting few hours after meal,

containing undigested food particles, sour in taste, not stained with bile. She also lost experienced a significant weight loss with associated weakness and pallor. She was referred by her physician to a surgeon for surgical management of her problem. On examination, she was moderately anemic, nutrition below average, BMI- 18 kg/m², all the vital signs within normal limit. Abdominal examination was normal, without any definite lump. Other systemic examinations were normal. Upper gastro-intestinal endoscopy revealed a large ulcerative lesion which bled on touch involving the antrum and pylorus. The channel was narrowed and the scope could not be negotiated beyond the pylorus. The stomach dilated and the residual food material was present. Barium meal X-ray was suggestive of ulceration along the greater curvature with pyloric stenosis and narrowing at different parts of the duodenum. Other laboratory results showed- Hemoglobin- 9.0 g/dL, Na⁺- 152 mmol/L, K⁺- 3.7 mmol/L, Cl⁻- 122.0 mmol/L, serum bilirubin- 0.6 mg/dL, serum aspartate aminotransferase- 61 U/L, serum alanine tranferase- 39 U/L, serum alkaline phosphatase- 57 U/L, random blood glucose- 5.8 mmol/L, serum CPK- 941 U/L. The plain radiograph of the chest and electrocardiogram was normal. The patient was prepared for surgery and underwent surgical management. Bilroth-I gastrectomy was performed. The immediate and early post-operative period was uneventful and the patient recovered without any significant complaints. One month after the operation, the patient improved both clinically and biochemically. Laboratory results showed normal hemoglobin level and normal serum electrolyte status. The



patient was advised for follow-up every month to see the outcome following the surgical management.

Discussion

The main causes of hydrochloric acid ingestion in societies like Bangladesh are mainly accidental or suicidal. The clinical picture following hydrochloric acid ingestion depends upon the concentration and amount.⁶ Early signs and symptoms are not consistent with the extent of damage. The early features are nausea, vomiting, burning sensation and pain in the mouth and throat, retrosternal pain and epigastric pain, sometimes with bloody content. Hyper-salivation, difficulty in swallowing, ulceration and/or whitish plaques in pharynx, palate and oral cavity are common.⁷⁻⁹ Gastric outlet obstruction ensues usually after a month or may be later and the principal features are vomiting after meal, epigastric fullness, anemia and weight loss. It is best diagnosed by endoscopy of upper gastrointestinal tract. The endoscopy is usually carried out to see the location of stricture.^{3,8} Barium meal X-ray can also help to distinguish from complete to partial obstruction. Combination of upper gastrointestinal endoscopy with barium study is needed to assess the extent of upper gastrointestinal injury. It is of five types.¹⁰ Short ring stricture of the stomach within 1 to 2 cm of the pylorus is type I. Stricture extending proximally up to the antrum is type II. Mid-gastric stricture involving the body and sparing the proximal and distal parts of the stomach is classified as type III. Type IV is diffuse gastric involvement (like linitis plastica). And gastric stricture associated with a stricture in the first part of the duodenum is type V.

Carcinoma may also result from the strictures as a part of long-term complications. Once the diagnosis is established and the patient properly evaluated, the surgical intervention provides good outcome for the patient,¹¹ though endoscopic dilatation is the option in some cases.³ Relief of obstruction with preserving reasonable gastric volume is the main aim of surgery in corrosive gastric outlet obstruction. Proper timing of the surgery is crucial. Early surgical intervention has been shown to improve the mortality and morbidity. The type of surgery will depend on the extent of injury and the state of pylorus and antrum.¹² In our case, bilroth-I gastrectomy⁷⁻⁹ was performed and the patient showed sign of improvement both clinically and biochemically on regular follow-up.

Conclusion

After the initial management of hydrochloric acid poisoning, it takes a variable amount of time before the patient starts developing gastric outlet obstruction. After the diagnosis is confirmed, by both clinical assessment and endoscopy, properly planned surgery provides the patient relief from the distressing symptoms and thus improves the quality of life.

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