A Comprehensive Case of Emphysematous Gastritis in A Young Patient -
Case Report
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Abstract
Gastric emphysema is caused by traumatic mucosal injury. A rare condition called emphysematous gastritis is characterized by intramural gas in the stomach and symptoms of systemic poisoning. It has a mortality rate of between 45% and 60%, thus early diagnosis and rapid treatment, such as fluid resuscitation, nil by mouth, broad-spectrum antibiotics, and bowel rest, are essential to halting the spread of this lethal condition. Surgery is only recommended in cases of stomach perforation. Rare and severe, emphysematous gastritis is characterized by indications of systemic poisoning and air in the stomach wall. It is often brought on by a mucosal defect that allows gas-forming organisms to infect the area, or by hematogenous dissemination from a distant centre. Emphysematous gastritis has a fulminant course, and a 60% death rate, thus early diagnosis and treatment are essential. Here we describe a case of a 17-year-old guy who complained of stomach pain; a CT scan revealed emphysematous gastritis, which is compatible with the diagnosis. Antibiotics were administered to him, and he recovered quickly. It is associated with good prognosis.

Introduction
Emphysematous gastritis is a rare and serious condition characterized by air in the gastric wall and signs of systemic toxicity. It is generally caused by local infection by gas-forming organisms through a mucosal defect or via hematogenous spread from a distant focus. Since emphysematous gastritis has a fulminant course with a mortality rate of 60%, prompt recognition as well as early treatment are crucial [1]. We present a case of a 17-year-old male
who presented with abdominal pain, and CT findings are consistent with emphysematous gastritis. He was treated with antibiotics and had a swift recovery.

**Case presentation**

A 17-year-old male, student by profession, presented with complaints of pain in the abdomen, more in the epigastric and left hypochondriac regions, associated with abdominal distention, a continuous fever, not associated with chills or rigor, multiple episodes of vomiting, and no passage of stools for 3 days.

History: The patient accidentally swallowed a coin at the age of 14 and had it removed endoscopically from the esophagus. There have been no similar complaints in the past. No other hospital admissions; no comorbidities. No NSAID ingestion. On examination, the Abdomen is guarded, more towards the left hypochondrium. Ryles tube revealed bilious secretions. Vitally, the patient is tachycardic (PR 110 bpm) with BP 110/70 mm of Hg. USG A+P: Gross ascites in the abdomen with internal echoes and small bowel loops appear dilated with a maximum diameter of about 2.8 cm and sluggish peristalsis.

URGENT CT A+P done: Diffusely thickened gastric wall with multiple intramural air foci predominantly along the fundus and body region of the stomach with significant perigastric fat stranding suggestive of emphysematous gastritis. The pancreas is normal in size and shows normal contrast enhancement with no focal lesion. The portal vein was normal in diameter. There was no gas in the portal vein.

![Figure 1: Suggestive of Intramural airfoci in the stomach (marked with yellow arrow).](image)

LABS: Hb: 12.9, WBC: 6.9 k, platelet: 150 k, amylase: 286, lipase: 600, LDH: 489, creat: 0.63, urea: 33.3, HIV status: negative, VDRL: negative, HbSAG : negative, Anti HCV : negative. The patient was managed conservatively with nasogastric tube decompression, IV fluids, IV antibiotics (Piperacillin Tazobactam and INJ Octreotide), and PPI.
On day 2 of admission, the patient started passing black-colored stools with periorbital and pedal edema. An upper GIscopy was done, which showed a deep ulcer involving 2/3 of the surface with slough and erythema noted in the body and antrum of the stomach.

Figure 2: Endoscopic view of stomach showing deep ulcer on the gastric surface with slough and erythema

A biopsy taken from the surface showed gastric mucosa lined by atrophied foveolar epithelium. Lamina propria shows compactly arranged mucosal glands and a sparse to mild lymphoplasmacytic infiltration with focal areas of hemorrhages.

Figure 3: Compactly arranged mucosal glands with mild lymphoplasmacytic infiltrate

Gastric fluid culture and sensitivity showed that methicillin-sensitive coagulase-negative staphylococci were also sensitive to penicillin, cefoxitin, erythromycin, Gentamycin, and linezolid. 2D ECHO is normal. Patient started on
INJ Furosemide 20mg BD; abdomen became soft; edema over foot and face settled; it was absent on the 7th day. Values of amylase (26U/L), lipase (30U/L), and Hb (11 gm/dL). The patient started on a full diet and was discharged on day 8 with Tab Cefotaxim 200mg BD for 5 days.

Discussion

Radiological findings of air in the gastric wall are signs of serious conditions such as gastric emphysema and emphysematous gastritis. Gastric emphysema is a benign condition due to the accumulation of gas in the stomach wall, usually after trauma to the gastric mucosa [2]. Emphysematous gastritis is a rare infection caused by invasive gas-forming organisms (gram-positive, gram-negative, anaerobic, or fungal organisms) through the mucosa or hematogenous dissemination from a distant focus [3].

The main distinguishing factor is that gastric emphysema is not associated with acute abdominal pain and has an excellent prognosis even without treatment. Emphysematous gastritis is a severe disease with complaints of severe pain in the abdomen and a guarded prognosis [4].

Emphysematous gastritis was first described in 1889 by Frankel, who believed it was caused by an infection where a prior insult to the mucosal barrier had occurred. This condition is more common in immunocompromised patients with multiple co-morbidities and elderly patients with previous histories of abdominal surgeries, caustic ingestion, NSAIDS, and steroids [3].

Only 60 cases have been reported in the English literature based on a review by Watson et al [5]. According to a systemic review recently published by Watson et al., Emphysematous gastritis cases reported after the year 2000 were associated with lower mortality (62% before 2000 to 22% after 2000). This reduction in mortality has been partially attributed to a lower rate of surgical intervention and better protocols in the treatment of cases of emphysematous gastritis. Pathophysiology is unclear; ischemic injury to the gastric wall seems to be the initiating factor, leading to secondary infections from local bacterial invasion or hematogenous spread [6-7].

Our case is a very rare entity that occurred at a young age with no co-morbidities and only significant history of coin ingestion three years ago. In most cases, the presentation is nonspecific, with severe abdominal pain and vomiting. The diagnosis is confirmed mainly by the CECT abdomen, which shows intramural air in the stomach. Most cases are managed conservatively with IV antibiotics and IV fluids. The role of surgical exploration in these cases is very limited due to the friability of the mucosa in acute inflammatory conditions unless there is gastric perforation.
Conclusion

Emphysematous gastritis is a rare condition with findings of intramural gas in the stomach and associated signs of systemic toxicity. It has a mortality rate ranging from 45% to 60%; early recognition and prompt treatment, including fluid resuscitation, nil by mouth, broad-spectrum antibiotics, and bowel rest, are crucial to preventing the progression of this fatal condition. The role of surgery is indicated only in gastric perforation cases.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his/her consent for his/her images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published, and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Conflict of Interest: Nil

Financial Disclosure: None

References