Case Report

Emphysematous gastritis: A case report

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ABSTRACT

Emphysematous gastritis, a rare clinical entity is characterized by the presence of gas in the stomach wall. It is potentially fatal disease and usually presents with systemic toxicity. We are presenting a case of a young female who has presented to our emergency room with systemic signs and contrast-enhanced computed tomography abdomen was showing gas within the gastric wall. The patient was managed conservatively and subsequently discharged.

Key words: Computed tomography, Emphysematous gastritis, Mortality, Upper gastrointestinal Endoscopy

Emphysematous gastritis is a rare clinical entity with serious outcomes. It is characterized by the presence of intramural gas which usually occurs in an immune-compromised state or in those patients who have potential risks. If left untreated, mortality is around 60% [1]. Prompt recognition and early antibiotics may help in patient survival.

CASE REPORT

A 25-year-old female, with no medical comorbidities, presented to the emergency room with complaints of central abdominal pain and multiple episodes of vomiting for two days. During the previous two days, she had reported to the emergency room once with similar complaints and was managed with non-ulcer dyspepsia and improved on receiving antiemetics, proton pump blockers, and IV opioid analgesia. On the next day, she reported back with increasing abdominal pain which had become so severe that the patient was unable to sleep. The pain was localized to the epigastrium and was associated with nausea and vomiting.

On physical examination, she had an anxious look with cold and moist skin and was uncomfortable in any one posture. Vital examination showed tachycardia with a pulse rate of 120 beats/min, non-invasive blood pressure of 124/78 mmHg, a respiratory rate of 18/min with a regular abdomino-thoracic pattern, and an oral temperature of 100.7°F. No clinical abnormality was noted on examination of respiratory and cardiovascular systems. Abdominal examination identified rigidity and tenderness in the epigastrium. Bowel sounds were well-heard on auscultation. Based on clinical examination, a provisional diagnosis of the acute abdomen was suggested with a high likelihood of acute pancreatitis or acute gastritis. Subsequently, the patient was managed with nil peroral, started on Intravenous (IV) fluids, and IV opioid analgesics.

Meanwhile, blood investigations including Complete Blood Count, Liver Function Test, Kidney Function Test, Serum amylase levels, venous blood gases, and electrolytes were ordered. An ultrasound scan of the abdomen was also arranged. The hemogram revealed normal hemoglobin levels with leukocytosis (Total Leukocyte count = 13,600/mm^3). Renal and liver function tests were normal. Serum amylase levels were within the normal range (78 IU/ml). The ultrasonography abdomen was reported unremarkable. The patient was taken for contrast-enhanced computed tomography (CECT) abdomen which showed a distended stomach, with foci of intramural air and some extra-luminal exudative fluid, suggestive of emphysematous gastritis (Fig. 1).

An urgent upper gastrointestinal endoscopy was conducted which showed multiple hemorrhagic spots mainly in the fundus and the posterior wall of the body with multiple linear ulcers (Fig. 2). These changes were sparse in the antrum. Beyond the duodenal apex, extensive changes were seen in the form of ulcers and superficial erosions. Biopsy of the affected regions was taken and sent for histopathological examination. Retrieved tissue was also sent for microbiological studies including culture and sensitivity. The vasculitic profile was negative and the profile for inflammatory bowel disease was also negative.

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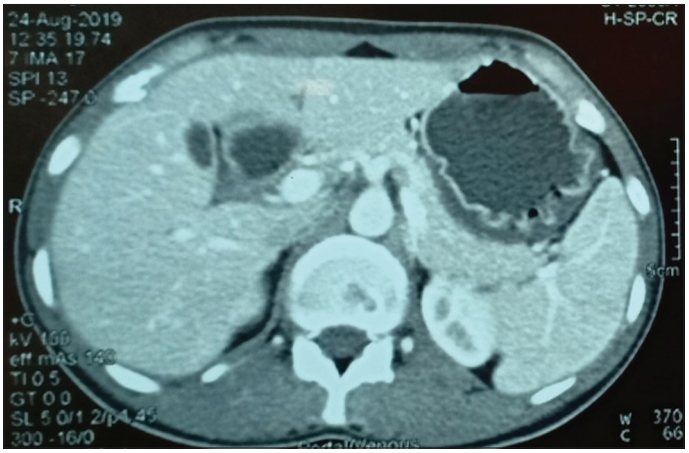

Figure 1: Contrast-enhanced computed tomography abdomen showing air foci present in the gastric wall (Day 2)

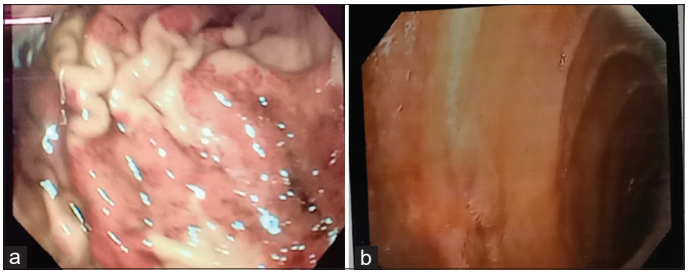

Figure 2: (a and b) Gastrointestinal endoscopy showing erythematous mucosa in fundus and body of stomach and an ulcer in first part of duodenum (Day 2)

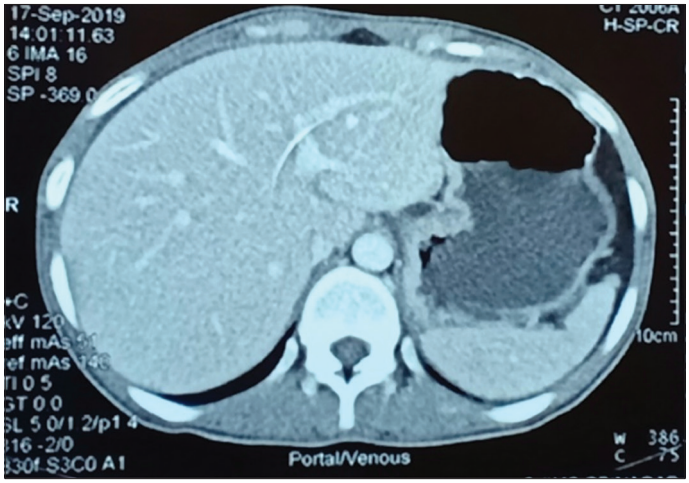

Figure 3: Contrast-enhanced computed tomography showing resolution of intramural gastric gas (Day 9)

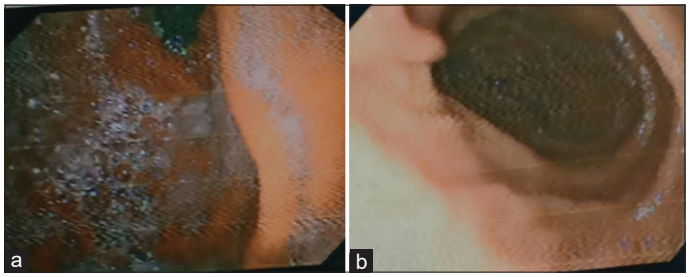

Figure 4: (a and b) Gastrointestinal endoscopy showing normal gastric mucosa and healed ulcer in duodenum (Day 9)

Histopathologic examination of the gastric specimen showed features of acute active gastroduodenitis and from the culture of gastric tissue, *Escherichia coli* was grown which was sensitive to tigecycline. The patient was started on culture intravenous tigecycline, to which she improved.

After 1 week, the patient was subjectively better, her abdominal signs were improved. Repeat imaging and upper gastrointestinal endoscopy showed the resolution of changes (Figs. 3 and 4). The patient is on our routine follow-up and is doing well.

DISCUSSION

Gastric emphysema was described by Brouardel in 1989 and is generally an indolent disease caused by disruption of the gastric mucosa and subsequent infiltration of the mucosa by air. It is usually a self-limiting disease and resolves without sequelae [2]. The presence of air in regions of the stomach wall may be due to two diseases: One entity is gastric emphysema and the other one is emphysematous gastritis, both of which differ in etiology, clinical presentation, evolution, and prognosis [3]. Emphysematous gastritis is a rare and severe gas-forming infection in the gastric wall. It is caused by the disruption of the mucosa and subsequent invasion of the gastric wall by gas-forming bacteria. This results in acute suppurative inflammation of the wall that compromises the submucosa and muscle layer, with the formation of abscesses, necrosis, and perforation in some cases [4].

Etiology may differ, but a common factor in all cases is increased intragastric pressure caused by, for example, nasogastric intubation, hyperemesis, acute pancreatitis, duodenal obstruction, use of non-steroidal anti-inflammatory drugs, peptic ulcer, alcoholism, acids and alkalis, high dose dexamethasone therapy, instrumentation of the upper gastrointestinal tract general anesthesia, and cardiac resuscitation [5]. The microorganisms most commonly encountered in emphysematous gastritis are Group A β-*hemolytic Streptococcus*, *Staphylococcus*, and *E. coli*. Other pathogens are *Pseudomonas aeruginosa*, *Clostridium perfringens*, and *Klebsiella pneumonia* [2,6].

Symptoms are mild pain abdomen and vomiting. In a few cases, the clinical presentation is septic shock with signs of systemic toxicity such as fever, tachypnea, and peritonitis. Diagnosis is usually made by CECT; however, endoscopy is done to confirm and for biopsy sampling [7].

No consensus exists as to the optimal treatment strategy, although a small number of studies have reported successful results with conservative treatment alone [8,9]. Conservative management with bowel rest, parenteral nutrition, and broad-spectrum antibiotics were successful. It is generally recommended that surgical intervention is not indicated in patients without evidence of sepsis, or ischemia. The role of endoscopy in cases like this is strictly to monitor severity, identify gastric necrosis, and exclude other pathology.

Our patient responded well to therapy, because a diagnosis was made promptly, and timely intervention with intravenous antibiotics was the key factor. In addition, the patient was neither immunocompromised nor she was on any immunocompromised drugs.

CONCLUSION

Emphysematous gastritis is a rare, rapidly progressive, and potentially fatal bacterial infection of the stomach wall. In some cases, early antibiotic therapy can be curative as in our case.

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