ORIGINAL RESEARCH PAPER

General Surgery

A CASE REPORT OF EMPHYSEMATOUS GASTRITIS

KEY WORDS:
emphysematous gastritis, gas forming organisms.

Dr. Sasi Ragavan V	Institute of General Surgery, RGGGH & MMC, Chennai-03, Tamil Nadu, India
Prof. Dr. P. S. Shanthi	M.S, Institute of General Surgery, RGGGH & MMC, Chennai-03, Tamil Nadu, India
Prof. Dr. A. Sagaya Inba Sekar	Institute of General Surgery, RGGGH & MMC, Chennai-03, Tamil Nadu, India
Dr. Vimala G*	M.S, Institute of General Surgery, RGGGH & MMC, Chennai-03, Tamil Nadu, India *Corresponding Author

ABSTRACT

Emphysematous gastritis is a rare disease with gastric inflammation and intramural gas formation due to gas-forming microorganisms.Early diagnosis and management are important since emphysematous gastritis is associated with high rates of morbidity and mortality.We present a case of emphysematous gastritis in an elderly male which was managed conservatively.

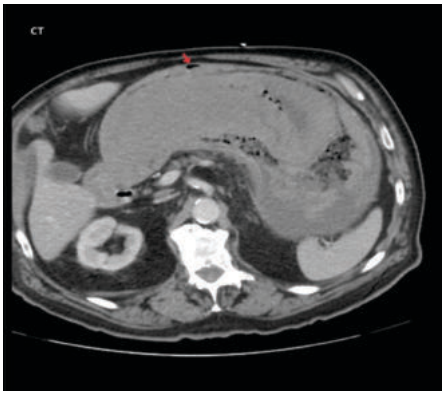
INTRODUCTION -

Emphysematous gastritis is a rare lethal infection of the gastric wall caused by gas-producing organisms. The most commonly involved organisms include Streptococci, Escherichia coli, Enterobacter species, Clostridium welchii and Staphylococcus aureus.Emphysematous gastritis is a rare variant of phlegmonous gastritis. It is caused by gas forming organisms and may arise from local spread through the mucosa or even hematogenous dissemination from a distant focus.The stomach is a very uncommon site of involvement because of its acidity and efficient mucosal barrier.Early diagnosis by imaging and prompt intervention is the key in the management of Emphysematous gastritis.

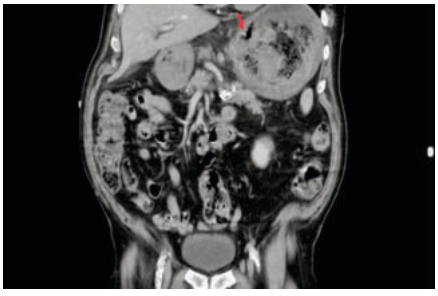
Case Report -

A 60 years old Male with a history of Diabetes mellitus for 20 years presented to the emergency department with complaints of epigastric discomfort and abdominal distension for 15 days,associated with non bilious vomiting.No history of fever , hematemesis, malena.He was a chronic alcoholic and non-smoker. On examination,he was hemodynamically stable with blood pressure 130/77 mmHg, pulse rate115 beats per minute, respiratory rate 18 breaths per minute, and temperature 37.5°C. On per abdomen examination there was abdomen distension with epigastric tenderness with guarding and no rigidity.Bowel sounds were sluggish.

Tympanic note heard on percussion.Per rectal examination was normal.Laboratory studies showed leukocytosis (white blood cell count of 18.8 x 103/μL), elevated CRP levels 158 mg/L(<10mg/L).Blood cultures were unremarkable.He underwent computed tomography (CT) of the abdomen; which was normal.Oral Contrast CT of abdomen showed intramural gas seen in fundus of the stomach with contained perforation. Additional evaluation with esophagoga stroduodenoscopy and biopsy showed findings consistent with gastric wall necrosis.He was medically managed with nasogastric tube gastric decompression, intravenous pantoprazole, broad-spectrum intravenous antibiotics (vancomycin, and piperacillin-tazobactam), and intravenous fluids.The patient responded well with medical management. An improvement was noted within 48 hours, and he was subsequently discharged home in stable condition, 10 days after hospitalization.



A)



B)

Fig. [A] & [B] CT showing intramural gas in stomach

DISCUSSION -

Emphysematous gastritis is a rare but potentially fatal condition which is characterized by the presence of air in the wall of the stomach with associated systemic toxicity. Clinical presentation of emphysematous gastritis is relatively non-specific and is typically characterized by abdominal pain, nausea, vomiting, and occasionally hematemesis. Physical examination findings vary depending on the degree of severity but can range from mild abdominal tenderness to peritonitis, especially in the setting of perforation. A distinction between Emphysematous gastritis and Gastric emphysema has been described in the literature. Since the two conditions have identical radiographic findings of gastric

pneumatosis with an almost equal association with portal venous gas and pneumoperitoneum, we believe that the two entities likely represent various severities on the spectrum of the same disease.Gastric emphysema is a benign process and is usually associated with gastric outlet obstruction, excessive vomiting, nasogastric tube placement, and cardiopulmonary resuscitation. Acute abdominal symptoms are absent in gastric emphysema.Distinction is primarily based on the severity of systemic toxicity and hemodynamic instability. Although the exact pathophysiology behind emphysematous gastritis is not clearly understood, an ischemic injury to the gastric wall seems to be the inciting event for emphysematous gastritis.This ischemic injury may lead to a secondary infection either from local bacterial invasion through the ulceration or from hematogenous spread.

The diagnosis of emphysematous gastritis is most commonly and best established on CT scan of the abdomen, although abdominal roentgenogram may be sufficient to make the diagnosis. The extent of gastric emphysema as well as presence of portal venous gas and pneumoperitoneum in this setting do not correlate with the severity of disease or need for operative management.CT is the preferred and most effective diagnostic imaging modality. Pertinent imaging findings for emphysematous gastritis include gastric wall thickening and presence of irregular, mottled gas in the stomach wall, particularly in the fundus and greater curvature.These findings remain in place despite changes in body position. usually identifies an inflamed, erosive, or necrotic area of mucosa in patient with .The role of esophagogastroduodenoscopy in the diagnosis of emphysematous gastritis has not been clearly defined despite its increased use in the management of emphysematous gastritis in the last two decades. Matsushima et al. recommended an esophagogastroduodenoscopy as part of the algorithm in the management of emphysematous gastritis and the presence of ischemic gastric mucosa as an indication for surgical exploration. However, Robinson et al. reported a case of emphysematous gastritis with evidence of necrotic mucosa on esophagogastroduodenoscopy and portal venous gas on CT scan where non-operative management was chosen given hemodynamic stability with good outcome. Alvin et al. described a case of a patient who underwent surgical exploration due to findings of severe erosive and necrotic gastritis on esophagoga stroduode noscopy without noting any evidence of gastric ischemia on subsequent exploration . Thus, we believe that esophagogastroduodenoscopy findings are poor predictors for the presence of transmural ischemia and that operating solely on esophagogastroduodenoscopy findings of necrosis may lead to unnecessary extensive surgical interventions. On the other hand, esophagoga stroduodenoscopy may have a role in patients who have clinical deterioration and surgical exploration is being considered. Esophagoga stroduodenoscopy allows identification of the offending organism by culturing mucosal samples and allowing tailoring of antibiotic therapy accordingly. None of our patients underwent an esophagoga stroduodenoscopy given clinical improvement with conservative management.

The management of emphysematous gastritis initially includes intravenous fluid resuscitation, nil per oral , Proton pump inhibitors and broad-spectrum antibiotics covering gram negative and anaerobic organisms.The addition of antifungal coverage may be necessary since Candida species is a possible infectious culprit. NGT decompression may be necessary especially in the setting of gastric distension on imaging, persistent emesis, and concern for bleeding. However, care must be taken as gastric perforation is a concern in this setting. Surgical exploration is indicated in patients who fail optimal medical management, demonstrate signs of clinical deterioration, and peritonitis . According to a systematic review recently published by Watson et al., EG cases reported after the year 2000 were less likely to undergo surgical exploration (62.5% before 2000 versus 22.2% after 2000) with a lower associated mortality overall (59.4% before 2000 versus 33.3% after 2000). This reduction in mortality has been partially attributed to the lower rate of surgical intervention in the management of EG. Our approach is to utilize surgical exploration selectively and based on clinical deterioration regardless of CT scan findings with the utilization of esophagogastroduodenoscopy as an adjunct to help make the decision to operate in unclear cases.

CONCLUSION -

Emphysematous gastritis is a rare condition presenting with findings of intramural gas in the stomach wall with associated signs of systemic toxicity.Early recognition and the initiation of supportive care and antibiotics is key to prevent progression of this potentially fatal condition. Surgical intervention for emphysematous gastritis should not be used as initial therapy, and should be considered when medical management has failed or the patient develops peritonitis.

Funding: NO FUNDING SOURCES

Conflict Of Interest: NONE DECLARED

Ethical Approval: NOT REQUIRED

REFERENCES -

1. Matsushima K., Won E.J., Tangel M.R., Enomoto L.M., Avella D.M., Soybel D.I. Emphysematous gastritis and gastric emphysema: similar radiographic findings, distinct clinical entities. World J. Surg. 2015;39:1008–1017. [PubMed] [Google Scholar]
2. Yalamanchili M., Cady W. Emphysematous gastritis in a hemodialysis patient. South. Med. J. 2003;96:84–88. [PubMed] [Google Scholar]
3. Watson A., Bul V., Staudacher J., Carroll R., Yazici C. The predictors of mortality and secular changes in management strategies in emphysematous gastritis. Clin. Res. Hepatol. Gastroenterol. 2017;41:e1–e7. [PubMed] [Google Scholar]
4. Robinson S.L., Sadowski B.W., Eickhoff C., Mitre E., Young P.E. Emphysematous gastritis in a patient with untreated cyclic vomiting syndrome. ACG Case Rep. J. 2019;5:1–3. [PMC free article] [PubMed] [Google Scholar]
5. Van Mook W.N.K.A., Van der Geest S., Goessens M.L.M.J., Schoon E.J., Ramsay G. Gas within the wall of the stomach due to emphysematous gastritis: case report and review. Eur. J. Gastroenterol. Hepatol. 2002;14:1155–1160. [PubMed] [Google Scholar]
6. Successful conservative treatment of emphysematous gastritis. Takano Y, Yamamura E, Gomi K, et al. Intern Med. 2015;54:195–198. [PubMed] [Google Scholar]
7. A combination of intramural stomach and portal venous air: conservative treatment. Sharma P, Akl EG. J Community Hosp Intern Med Perspect. 2016;6:1–4. [PMC free article] [PubMed] [Google Scholar]
8. Emphysematous gastritis: a case report and a review of literature. Loi T-H, See J-Y, Diddapur RK, Issac JR. http://www.ncbi.nlm.nih.gov/pubmed/17285190. Ann Acad Med Singapore. 2007;36:72–73. [PubMed] [Google Scholar]
9. Emphysematous gastritis associated with invasive gastric mucormycosis: a case report. Jung JH, Choi HJ, Yoo J, Kang SJ, Lee KY. J Korean Med Sci. 2007;22:923–927.