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Emphysematous gastritis on the post COVID-19 spectrum: A case report

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Abstract
Emphysematous gastritis is an uncommon, life-threatening form of gastritis caused by gas-forming microorganisms. It is frequently associated with diabetes mellitus, alcohol abuse, renal failure, recent abdominal surgery, gastroenteritis, long-term corticosteroid use, ingestion of corrosive agents, and nonsteroidal anti-inflammatory drug use. We report a case of emphysematous gastritis in a 42-year old COVID-recovered patient with no other known risk factors. The probable mechanism may be due to its immunosuppressive nature, which can be considered an independent risk factor for the development of deadly diseases. Medical management of emphysematous gastritis has gained popularity as a treatment option. Emergency gastrectomy is advised only for patients who continue to deteriorate after receiving the best medical care, develop an ulcer, a gastric infarction, or a perforation. We wish to demonstrate through our case study that conservative management of emphysematous gastritis can yield great results if done meticulously. We also aim to shed light on the potential for COVID-19 infections to be standalone immunocompromised states that facilitate lethal infections in susceptible individuals. However more research is required to definitively establish the same.

Keywords: Emphysematous gastritis, gastric emphysema, intramural gas, COVID-19

Introduction
Emphysematous gastritis is an uncommon, life-threatening form of gastritis caused by gas-forming microorganisms. [1] It is frequently associated with diabetes mellitus, alcohol abuse, renal failure, recent abdominal surgery, gastroenteritis, long-term corticosteroid use, ingestion of corrosive agents, and no steroidal anti-inflammatory drug use [2, 4]. Microorganisms associated with emphysematous gastritis include Streptococcus species, Escherichia coli, Enterobacter species, etc. Only 59 cases have been reported in literature based on a review by Watson *et al*., and no guidelines are available for the management of emphysematous gastritis [3]. However, early diagnosis and initiation of medical management have been noted to improve outcomes. Surgical intervention is not indicated during acute infection and is reserved for patients who have failed optimal medical management [1].
SARS CoV2 infection has been documented to manifest with a variety of gastrointestinal problems. Although COVID-19's problems have emerged as a crucial area of current study, they are still mostly unknown. Sonsoles Garrosa-Muoz *et al* study's is the only one to demonstrate a connection between the SARS CoV-2 and emphysematous gastritis [3]. We report a case of emphysematous gastritis in a COVID-recovered patient with no other known risk factors. The probable mechanism may be due to its immune suppressive nature, which can be considered an independent risk factor for the development of deadly diseases.

Case Report
A 42-year-old female with no known risk factors, or history of surgery, presented to the emergency ward with acute abdominal pain with hypotension. She had previously been diagnosed with moderately severe SARS CoV2 infection, two weeks prior to her present symptoms. She was treated with a 1 week course of IV Dexamethasone 8mg tapered down to 2mg, SC Human Insulin in view of incidentally detected elevated blood sugar and a three-day course of Remdesivir following which she recovered fully and was discharged. On examining her current presentation, she had a blood pressure of 80/60 mmHg, she was tachycardia (pulse 120 beats per minute), tachypneoic (respiratory rate 25 breaths per minute), and afebrile (temperature 37.5 °C). Physical examination was notable for abdominal Distension, guarding and features of peritonitis. Laboratory studies showed leukocytosis (white blood cell count of 22.8 x 103/µL), thrombocytopenia of 103 x 103/µL (reference

Range 150-400 x 103/µL), elevated blood urea nitrogen of 76 mg/dL (reference range 6-20 mg/dL), an elevated creatinine level of 3.1 (reference rage 0.7-1.4). Other inflammatory markers such as Serum LDH and C - reactive protein were also elevated. An arterial Blood Gas analysis showed mild acidosis (pH= 7.32) and elevated Serum Lactate. Blood cultures were unremarkable. She underwent contrast enhanced computed tomography (CT) of the abdomen which showed gastric wall thickening along with circumferential gas formation intramurals and portal venous gas. [Figure1]

She was medically managed with nasogastric tube gastric decompression, intravenous fluids, intravenous pantoprazole, and broad-spectrum intravenous antibiotics for 14 days. The patient's symptoms began to resolve within 48 hours, and a check CT scan of the abdomen after 1 week of antibiotics showed resolution of intramural gas. She was subsequently discharged home in stable condition, 19 days after hospitalization.

Discussion

Gastric emphysema and emphysematous gastritis are among the possible diagnosis for intramural gas in the stomach. The two entities must be distinguished since they have different clinical symptoms, radiological findings, treatments, and prognoses. A benign condition known as stomach emphysema is frequently accompanied by vomiting excessively, nasogastric tube insertion, and cardiac resuscitation. Stomach emphysema is characterized by the absence of acute abdominal symptoms and the linear distribution of gas in the gastric wall on imaging. It resolves spontaneously without treatment [6].

Emphysematous gastritis, as opposed to gastric emphysema, is brought on by a bacterial infection that can develop locally through the mucosa or spread throughout the body from a distant location. Patients usually present with severe abdominal pain, nausea, vomiting (occasionally hematemesis), and fever [2, 3]. Physical examination findings include abdominal distension and decreased bowel sounds. CT is the most effective diagnostic imaging modality. Characteristic imaging findings for emphysematous gastritis include gastric wall thickening and presence of mottled gas that has been irregularly distributed in the stomach wall, particularly in the greater curvature and the fundus of the stomach [6].

Emphysematous gastritis has no specific diagnostic criteria, but based on prior research, the following are used to make the diagnosis; Clinical presentation, inflammatory response based on blood tests, Imaging findings, and Evidence of bacterial infection, based on gastric fluid culture or pathology specimens. The factors associated with higher mortality include elevated serum lactate and creatinine levels and concomitant pneumatics in small bowel and colon, thereby requiring higher vigilance and management [2, 4].

Loi T-H *et al* have shown that the common risk factors for the development of emphysematous gastritis are immune-compromised states such as Type 2 Diabetes, Obesity, Chronic alcohol abuse, Long term corticosteroid use, immunosuppressive therapy in transplant recipients due to their inhibition of maturation of lymphocytes at the bone marrow [5]. This predisposes to infections by Enterobacter sp., Pseudomonas aeruginosa, Candida albicans, Staphylococcus aureus, Sarcina ventriculi among others. Based on this case report, it can be hypothesized that a COVID-19 infection may, in itself, be considered a new world immunosuppressive state that may also predispose to severe, life threatening infections, such as emphysematous gastritis.

Medical management of emphysematous gastritis has gained popularity as a treatment option. Emergency gastrostomy is advised only for patients who continue to deteriorate after receiving the best medical care, develop an ulcer, a gastric infarction, or a perforation [1].

There were discovered to be 59 reports in the literature from 2015 to 2020. [2] A higher incidence of the condition or rigorous diagnostic procedures brought on by enhanced vigilance may be to blame for the rise in reports of the ailment. Additionally, just one instance of emphysematous gastritis in a patient who tested positive for COVID-19 has been documented by Garrosa *et al*. [3]

Only two cases of emphysematous gastritis caused by a COVID-19 infection have been documented in the literature, and our case report documents one of them. This opens the door for additional investigation into the possibility that a SARS CoV2 infection can serve as a risk factor independently.

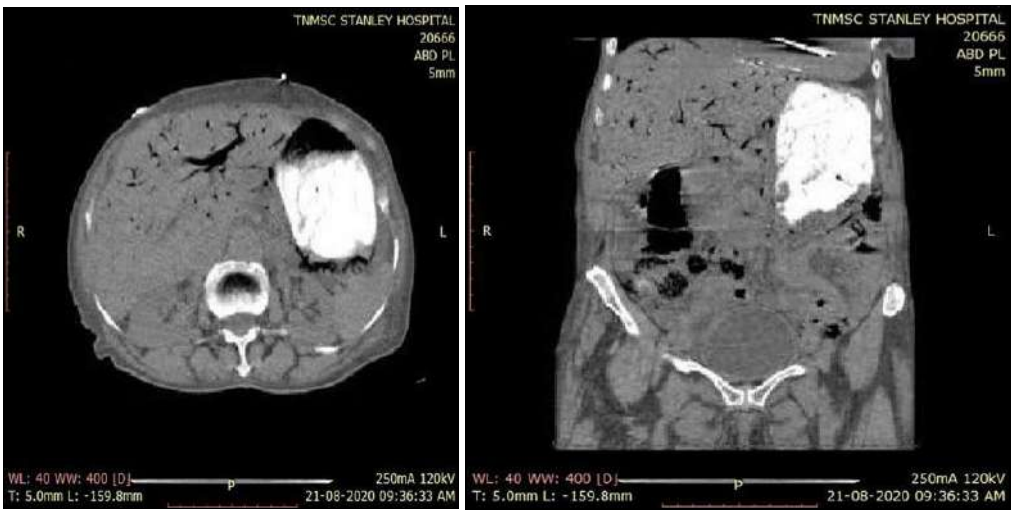

Fig 1: Contrast enhanced computerized tomography image of abdomen showing intramural gas in the wall of the distended stomach (yellow arrow) and portal venous gas (red arrow). (A) Axial section, (B) Coronal section

Conclusion

In the post-COVID period, there has been an increase in the diagnosis, treatment, and reporting of emphysematous gastritis, which is consistent with a tendency toward conservative care, effective diagnostic procedures, and/or a greater incidence rate. However, there has been little change in the correlation between emphysematous gastritis and pre-existing immunocompromised conditions.

Emphysematous gastritis, albeit a fatal condition, may be managed conservatively as per recent available data. The number of indications for radical surgery in this deadly infection have reduced over the last decade. We wish to demonstrate through our case study that conservative management of emphysematous gastritis can yield great results if done meticulously. While multiple risk factors have been shown to play a role in the occurrence of emphysematous gastritis, we aim to shed light on the potential for COVID-19 infections to be standalone immunocompromised states that facilitate lethal infections in susceptible individuals. However more research is required to definitively establish the same.

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References

1. Takano Y, Yamamura E, Gomi K, *et al*. Successful conservative treatment of emphysematous gastritis. Intern. Med. 2015;54:195198.
2. 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 Gastroenterology. 2017;41:17.
3. Garrosa-Muñoz S, López-Sánchez J, González-Fernández LM, Muñoz-Bellvís L. Could SARS-CoV-2 be associated with emphysematous gastritis? Dig Liver Dis. 2021;53(5):540. DOI: 10.1016/j.dld.2021.02.018. Epub 2021 Feb 25. PMID: 33726977; PMCID: PMC7906011.
4. Yalamanchili M, Cady W. Emphysematous gastritis in a hemodialysis patient. South Med J. 2003;96:84-88.
5. Loi T-H, See J-Y, Diddapur RK, Issac JR. Emphysematous gastritis: A case report and a review of literature. http://www.ncbi.nlm.nih.gov/pubmed/17285190. Ann Acad Med Singapore. 2007;36:72–73.
6. Matsushima K, Won EJ, Tangel MR, Enomoto LM, Avella DM, Soybel DI. Emphysematous gastritis and gastric emphysema: similar radiographic findings, distinct clinical entities. World J Surg. 2015;39:1008-17.

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