LETTER TO THE EDITOR

Emphysematous Gastritis: An Ominous Condition Masquerading as Enterocolitis in Immunocompromised Host

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Dear Editor,

Emphysematous gastritis is a rare, but often fatal condition, characterized by diffuse inflammation of the stomach wall with gas forming organisms, leading to gastric wall necrosis. It carries a high mortality (>60%).[1] It can occur in patients with diabetes mellitus, steroids intake and other immunosuppressed conditions or postoperatively. History of NSAIDs and alcohol abuse is often present. The patient commonly presents with acute abdomen, hematemesis, melena, sepsis, and septic shock. The organisms notorious to cause this condition are *Staphylococcus aureus, Streptococcus* species, *Escherichia Coli, Enterobacter* species, *Clostridium* and *Candida* species, however, in most cases, the organism may not be identified. The condition can be diagnosed on endoscopy and/or computed tomography (CT). Imaging reveals the typical feature of thickening of gastric wall with intramural gas. Occasionally, gas may be seen in the portal venous system. Treatment involves either conservative management or surgical resection of the stomach, depending on the patient's clinical condition.

A 15-year-old male child, with relapsed high risk B cell acute lymphoblastic lymphoma presented to our ICU on day 13 of chemotherapy with abdominal pain, respiratory distress, and history of multiple loose stools. He was receiving chemotherapy in the form of high-dose methotrexate, cytarabine, L-asparaginase, and dexamethasone. He was put on mechanical ventilation due to worsening acute respiratory distress syndrome (ARDS) and received noradrenaline due to severe septic shock. With the presumptive diagnosis of severe neutropenic enterocolitis, he was treated with intravenous broad-spectrum antimicrobials (ceftazidime-avibactam, aztreonam, teicoplanin, and voriconazole). Apart from persistently elevated lactates (>8 mmol/L), other biochemistry was normal. Enzyme immunoassay for galactomannan and β-D-glucan were negative. Due to worsening condition, a CT scan was performed which showed gastric wall thickening with intramural gas in the fundal region suggestive of Emphysematous gastritis (Fig. 1). Endoscopy could not be performed due to severe hemodynamic instability. Surgeons were consulted who suggested conservative management. The blood culture was positive for *S. aureus, Streptococcus pneumoniae, Pseudomonas,* and *Klebsiella pneumoniae*. The patient's hemodynamic status worsened over the next 48 hours requiring escalating doses of vasopressors and he expired on the 3rd day after ICU admission.

Emphysematous gastritis is of infective origin caused by either local bacterial invasion or hematogenous spread. Early diagnosis and aggressive treatment is necessary as the condition is highly fatal.[2] It is also important to differentiate emphysematous gastritis from a similar condition called gastric emphysema.[3] Immunosuppression remains one of the significant risk factor for development of Emphysematous gastritis.[4] Gastric emphysema is

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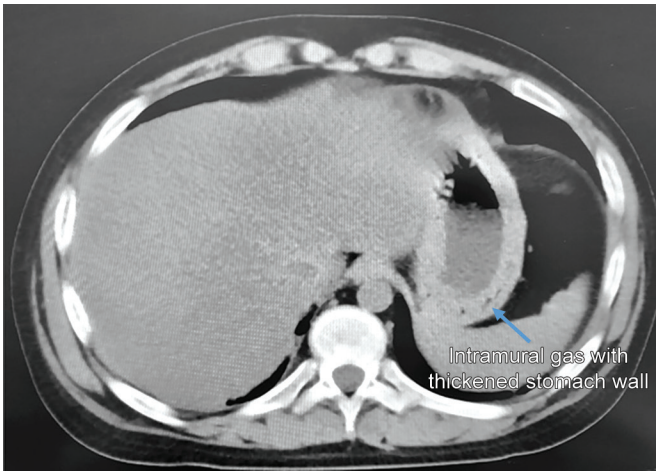

Fig. 1: Computed tomography suggestive of gastric wall thickening with intramural gas

non-infectious, generally benign, and self-limiting, seen in patients with mechanical causes such as gastric outlet obstruction. It presents with nausea, vomiting, often following nasogastric tube placement.[5] It has good prognosis contrary to Emphysematous gastritis. Endoscopy can help to confirm the diagnosis of Emphysematous gastritis by presence of ulcers and necrosis of the gastric muscularis mucosa.

Emphysematous gastritis needs aggressive management, especially in immunocompromised patients.[6] Medical management is generally preferred and includes resuscitation, appropriate antimicrobials, and organ support.[7] Surgical intervention, although associated with poor outcomes, needs consideration when conservative management fails, however, the optimal timing is difficult to ascertain.[8] Watson et al. stated that the incidence of surgical intervention has significantly reduced after 2000 AD, compared to before, along with statistically significant reduction in mortality (59.4 vs 33.3%, $p = 0.046$).[1] We believe that a high index of suspicion and individualized treatment, including surgical intervention, may help in further reducing the mortality of this rare but dreaded condition.

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