Case Report
Multiply Recurrent Episodes of Gastric Emphysema

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1. Background

First described by Franekel in 1889, gastric emphysema continues to represent an unusual cause of portal venous air in both children and adults [1]. Clinicians must be able to distinguish this benign condition, in which air dissects below the mucosa from a luminal source, from emphysematous gastritis, which is caused by a gas-forming bacterial infection and which has a mortality rate as high as 70% [2, 3]. Generally isolated and self-limited, gastric emphysema has only once been reported to be recurrent [4]. Here, we present the clinical, endoscopic, and radiographic findings in a patient with multiple bouts of gastric emphysema.

A 64-year-old male with a history of pancreatitis and chronic abdominal pain presented to his community hospital with worsening abdominal pain and hematemesis. Computed tomography (CT) showed diffuse gastric pneumatosis and portal venous air. He was urgently transferred to a tertiary hospital with hypotension and abdominal pain out of proportion to exam findings. Due to a concern for gastric ischemia, he underwent diagnostic laparoscopy; however, his stomach appeared grossly normal. Intraoperative upper endoscopy (EGD) was performed, which showed diffuse edema and mucosal ischemia of the proximal 50% of the stomach (Figure 1).

The patient was managed with proton-pump inhibitor (PPI) therapy and bowel rest. Repeat EGD on hospital day five showed resolution of ischemia. Gastric biopsies would later show no pathologic alteration. The patient’s pain resolved and he was subsequently discharged.

The patient returned five days later with recurrent abdominal pain, hematemesis, and intermittent episodes of hypotension. Bowel rest and intravenous PPIs were re instituted. CT scan showed worsening portal venous air and gastric pneumatosis (Figure 2). Repeat EGD demonstrated only mild gastric mucosal ischemia. Mesenteric angiography was performed and showed atherosclerosis and an aberrant left gastric artery, with its origin above the diaphragmatic crus (Figure 3). There was no flow limiting stenosis. He was started on antiplatelet and statin therapy.

He since has had an additional recurrence of gastric pneumatosis and portal venous air, which was again managed conservatively.

2. Discussion

In this case, we suspect that mesenteric atherosclerotic disease, aberrant left gastric arterial anatomy, dyslipidemia, and intermittent bouts of hypotension all contributed to a syndrome of intermittent mesenteric flow insufficiency resulting...
in mucosal ischemic ulceration, gastric emphysema, and portal vein gas. The patient's pain-induced vomiting may have been a contributing factor in the development of his recurrent episodes of pneumomatisis.

Main causes of benign gastric pneumomatisis are varied and include gastric outlet obstruction, excessive vomiting, placement of a nasogastric tube, CPR, and ulcer disease [5]. Additional unusual sources of portal venous gas have been described. Zenooz et al. described colonic ischemia as a potential source of portal venous gas, which resolved after colectomy [6]. Blunt abdominal trauma has also been implicated as an uncommon source of gastric pneumomatisis, which has been successfully managed nonoperatively with repeat imaging and endoscopy to confirm resolution [7]. Prior to this, aggressive celiotomy and gastric resection had been advocated [8].

To our knowledge, this is the first reported case of both serial episodes of gastric pneumomatisis (>2) and gastric mucosal ischemia as a precipitating factor for the development of gastric emphysema. Interestingly, nonocclusive mesenteric disease has been associated with the development of portal venous gas in the setting of ischemia [9]. In addition, idiopathic gastric pneumomatisis has also been described with a sole presenting symptom of pain by Barbour et al. [10] for which an extensive workup only yielded minor celiac artery atherosclerotic disease as a possible culprit. This patient is currently undergoing evaluation by vascular medicine and vascular surgical services.

Chronic ischemic gastritis is an unusual entity with a frequently delayed diagnosis, likely from the nonspecific symptoms, inadequate histopathology, and a generalized belief that the stomach has a robust arterial blood supply that protects it from ischemia [11]. This case demonstrates the diligence necessary to make this rare diagnosis and adds ischemic gastritis to the differential diagnosis of gastric emphysema and demonstrates under select circumstances the ability to manage this entity nonoperatively.

Disclosure

The authors have no relevant disclosures for the preparation of this paper.

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