

Title:

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Gastrointestinal barotrauma: a rare cause of acute gastric ischemia

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Dear Editor,

We report the case of a 61-year-old male with no significant past medical history or cardiovascular risk factors, who presented to the Emergency Department following ascent to an altitude of 4,000 meters. The patient reported pain with abdominal dissension and coffee-ground emesis. Laboratory workup revealed elevated acute-phase reactants and lactate dehydrogenase levels. Abdominal radiography demonstrated gastric chamber dilatation, prompting nasogastric decompression and further evaluation with contrast-enhanced abdominal computed tomography (CT).

CT imaging revealed pronounced thickening of the gastric fundus and proximal body, attributed to submucosal edema and mucosal hyperenhancement. Associated findings included gastric venous pneumatosis (Fig. 1A) and significant portal venous gas (Fig. 1B), highly suggestive of acute gastric ischemia (AGI). Mild involvement of the proximal small intestine was also observed, with no evidence of major splanchnic vessel occlusion.

An urgent diagnostic laparoscopy revealed a collapsed but viable-appearing stomach, with a normal color and texture. Real-time perfusion assessment using indocyanine green fluorescence angiography confirmed preserved mucosal vascularization.

Intraoperative esophagogastroduodenoscopy (EGD) demonstrated congested and erythematous mucosa on the posterior gastric wall, with loss of the normal vascular pattern and deep erosions consistent with moderate ischemic injury (Fig. 1C and D).

The patient was managed conservatively with bowel rest, continued nasogastric decompression, proton pump inhibitors, and antibiotics. He showed progressive clinical improvement without recurrence of symptoms. Repeat CT and EGD performed six months later confirmed complete resolution of ischemic changes.

Discussion

AGI is a rare clinical entity, largely due to the stomach's robust collateral blood supply, but has a high mortality rate of 30-40 % (1,2). Common etiologies include systemic hypoperfusion, vasculitis, and thromboembolic events (1,2), while gastrointestinal barotrauma represents an underrecognized cause. Rapid pressure changes, such as those occurring during high-altitude ascents, may lead to gastric perfusion through the formation of microbubbles and hypo perfusion phenomena, in a mechanism similar to that described in the decompression of divers and in aeromedical literature (4).

Diagnosis relies on clinical suspicion, imaging findings, and EGD, with the most frequently affected areas being the greater curvature, posterior gastric wall, and fundus (3).

Despite significant radiologic findings, the absence of transmural necrosis or full-thickness ischemia on EGD and laparoscopy, and therefore a moderate IGA (1), supported a conservative approach, which led to a favorable clinical outcome. This case underscores the importance of early diagnosis and a multidisciplinary evaluation, which may allow for non-operative management and avoidance of unnecessary surgical intervention in select patients with AGI.

References

1. Tang SJ, Daram SR, Wu R, et al. Pathogenesis, diagnosis, and management of gastric ischemia. Clin Gastroenterol Hepatol 2014;12(2):246-52.e1. DOI: 10.1016/j.cgh.2013.07.025
2. Gray S, Hanna A, Ganti L. Gastric ischemia secondary to abdominal distension. Cureus 2021;13(1):e12793. DOI: 10.7759/cureus.12793
3. Sharma A, Mukewar S, Chari ST, et al. Clinical features and outcomes of gastric ischemia. Dig Dis Sci 2017;62(12):3550-6. DOI: 10.1007/s10620-017-4807-4
4. Vann RD, Butler FK, Mitchell SJ, et al. Decompression illness. Lancet 2011;377(9760):153-64. DOI: 10.1016/S0140-6736(10)61085-9

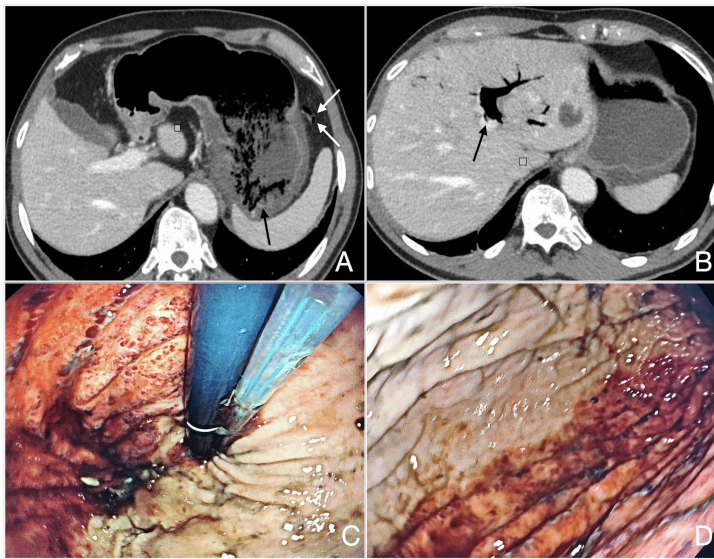


Fig. 1. A and B. Computed tomography (CT) image with presence of thickening of the proximal gastric fundus-body, gastric pneumatosis, of the left gastric veins (A) and at the portal level (B). C and D. The esophagogastroduodenoscopy (EGD) showed an erythematous, friable mucosa, with deep erosions on the posterior gastric wall consistent with ischemic injury.