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Authors:
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Gastroduodenal ischemia in a patient with severe SARS-CoV-2 infection

Isabel Garrido MD^{1,2}, Armando Peixoto MD^{1,2}, Guilherme Macedo MD PhD^{1,2}

¹Gastroenterology and Hepatology Department, Centro Hospitalar Universitário de São João, Porto, Portugal

²World Gastroenterology Organization (WGO) Porto Training Center

Corresponding author:

Isabel Garrido MD

Gastroenterology and Hepatology Department, Centro Hospitalar Universitário de São João, Alameda Prof. Hernâni Monteiro, 4200-319 Porto, Portugal;

Email address: isabelmng@hotmail.com

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Statement of Ethics: All rules of the local ethics committee were followed, preserving patient identity and confidentiality.

A 54-year-old male, with a past medical history of hypertension, dyslipidemia, obesity and diastolic heart failure, was admitted due to COVID-19 pneumonia. Respiratory failure gradually deteriorated and the patient was transferred to the Intensive Care

Unit (ICU), where mechanical ventilation and venovenous extracorporeal membrane oxygenation (VV-ECMO) were started. On the second day in ICU, he had a septic shock due to ventilator-associated pneumonia. Five days later, the patient had new-onset melena and laboratory data showed a hemoglobin level of 7.8g/dL. He required blood transfusions and vasopressor requirements increased. Esophagogastroduodenoscopy revealed fundus and proximal body with large hemorrhagic ulceration and distal gastric corpus and antrum (Figure 1) with circumferential bluish appearance. The second part of the duodenum also presented mucosal ulceration. Abdominal computed tomography showed thickening of the gastric wall, with signs of submucosal edema. Histopathologic examination was compatible with gastroduodenal ischemia. No further episodes of digestive bleeding occurred under intravenous proton-pump inhibitors and vasopressor support. An endoscopic reevaluation was performed 20 days later and showed complete healing of the gastroduodenal mucosa.

We report a rare case of gastroduodenal ischemia in a patient with COVID-19 receiving VV-ECMO. The pathophysiology is probably explained by the systemic inflammatory and pro-coagulative environment related with SARS-CoV-2 infection in association with the patient's underlying critical illness. Indeed, ACE-2 receptor is expressed in endothelial cells that can be infected with consequent microvascular damage leading to vasoconstriction and propagation of microthrombi leading to ischemia¹. Although there are few cases of upper gastrointestinal bleeding related to SARS-CoV-2 infection in the literature, some authors have already described acute mucosal injuries, gastroduodenal ulcers and ischemic colitis in hospitalized patients²⁻⁴. We therefore hypothesized that the number of cases with gastroduodenal ischemia may gradually grow as the number of infected patients increased worldwide.

References:

1. Varga Z, Flammer AJ, Steiger P, et al. Endothelial cell infection and endotheliitis in COVID-19. *Lancet*. 2020 May 2;395(10234):1417-1418.

2. Ignat M, Philouze G, Aussenac-Belle L, et al. Small bowel ischemia and SARS-CoV-2 infection: an underdiagnosed distinct clinical entity. *Surgery*. 2020;168(1):14-16.
3. Vanella G, Capurso G, Burti C, et al. Gastrointestinal mucosal damage in patients with COVID-19 undergoing endoscopy: an international multicentre study. *BMJ Open Gastroenterol*. 2021;8(1):e000578.
4. Pérez Roldán F, Malik Javed Z, Yagüe Compadre JL, et al. Gastric ulcers with upper gastrointestinal bleeding in patients with severe SARS-CoV-2. *Rev Esp Enferm Dig*. 2021 Feb;113(2):122-124.

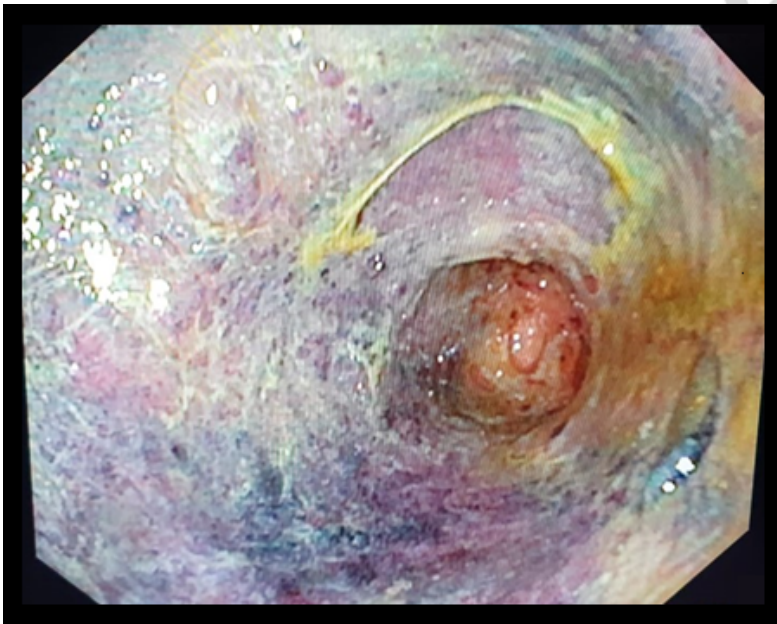


Figure 1 - Antrum with circumferential bluish appearance compatible with gastric ischemia.