

COVID-19 and the Gastrointestinal System: Lesions Beyond the Symptoms?

Giuseppe Grande, MD¹, Silvia Cocca, MD¹, Salvatore Russo, MD¹, Santi Mangiafico, MD¹, Angelo Caruso, MD¹, Flavia Pigò, MD¹, Rita Conigliaro, MD¹, and Helga Bertani, MD¹

¹Gastroenterology and Digestive Endoscopy Unit, Azienda Ospedaliero, Universitaria di Modena, Modena, Italy

ABSTRACT

The outbreak of the COVID-19 pandemic has radically changed the daily hospital care activity for all medical specialists. Although the predominant symptoms of this new coronavirus infection are respiratory, the gastrointestinal tract is also significantly involved. In this short report, we will discuss a new and unexpected clinical presentation related to COVID-19 colonization of upper gastrointestinal tract.

INTRODUCTION

Although COVID-19 infection has been recognised as a predominant respiratory syndrome, daily clinical experience and latest studies refer also gastrointestinal (GI) tract involvement.

CASE REPORT

In this context, we report the case of a 79-year-old man who was admitted for the persistence of fever, myalgia, malaise, confusion, and severe shortness of breath. He was receiving long-term oral medications for diabetes; his body mass index was 26 and did not smoke. Vital signs revealed a blood pressure of 165/90 mm Hg, pulse of 96 bpm, a temperature of 39°C, and a respiratory rate of 25 breaths/minute (peripheral pulse oximetry 87%). The throat and nasopharyngeal swabs were positive for COVID-19 RNA, and the computed tomography revealed bilateral interstitial pneumonia. Since the admission, the patient was treated with noninvasive ventilation and intravenous steroids. Because of progressive improvement of his breathing drive, on day 10, noninvasive ventilation was replaced with high-flow nasal oxygen and oral feeding was restarted. During his first meal, he complained of dysphagia and regurgitation of retained food. Few hours later, he had 2 episodes of melena, followed by hemodynamic instability and hypotension. Complete blood count showed a hemoglobin concentration of 8.5 g/dL (before it was 10.4 g/dL), and after fluid resuscitation and high dosage of proton pump inhibitors administration, an urgent upper endoscopy was performed in a negative pressure room with anesthesiologist's assistance.

The endoscopic examination showed the presence of multiple deep longitudinal ulcerations (7–10 mm in size) covered with fibrin and blood clots in the upper esophagus at 26 cm from the incisors (Figure 1). The ulcers were surrounded by fragile, irregular, and hyperaemic mucosa with a small amount of perilesional bleeding. There were no other pathological findings in the other explored tracts. A 4-quadrant epinephrine injection was performed close to the lesions, and based on the clinical history of the patient and given the endoscopic picture, esophageal brushing was taken from the inflamed mucosal area. The samples were positive for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) RNA detected using the real-time reverse transcriptase polymerase chain reaction test. Proton pump inhibitor were continued at a high dosage together with alginate therapy per mouth and total parenteral nutrition replaced per-os nutrition. On day 13, after rapid clinical deterioration, the patient died from massive pulmonary embolism.

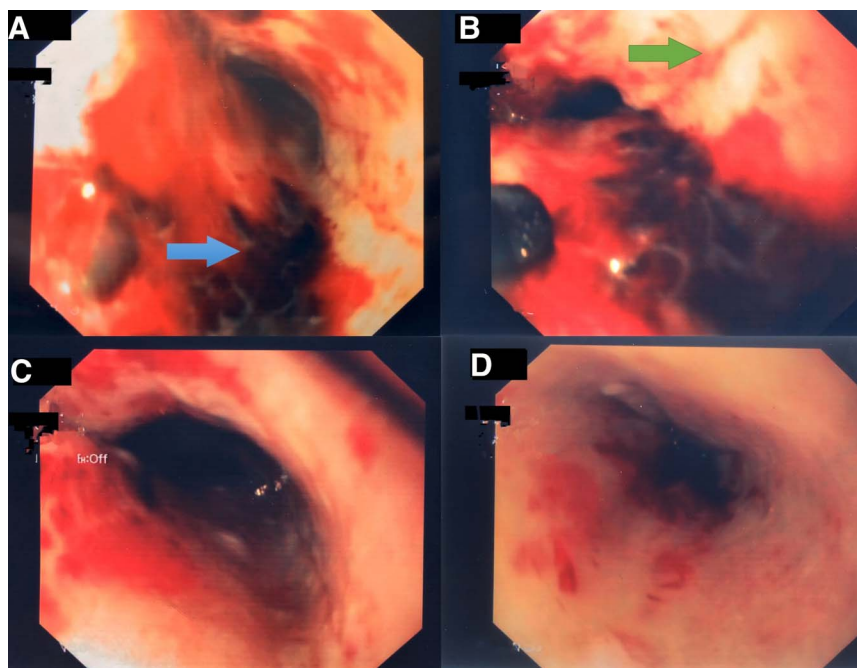


Figure 1. Upper endoscopy pictures showing (A and B) cervical hemorrhagic esophagitis with deep longitudinal ulcerations covered by fibrin (green arrow) or cluster clots (blue arrow). (C and D) Middle esophagus showed hyperemic mucosa with some superficial erosions.

DISCUSSION

At the end of 2019, a novel coronavirus (2019-nCoV) was identified as the cause of a cluster of pneumonia cases in Wuhan (China). It rapidly spread, resulting in an epidemic throughout China and all over the world.¹ In February 2020, the World Health Organization designated the disease COVID-19 that stands for coronavirus disease 2019.² Northern Italy is one of the most affected areas in the world. The most common symptoms of hospitalised patients are fever, fatigue, dry cough, dyspnea, and diarrhoea. Lesser common symptoms are muscle ache, confusion, headache, abdominal pain, nausea, and vomiting.^{3–5} A large case series published by Lin et al showed that the presence of SARS-CoV-2 RNA in the feces does not necessarily correlate with more GI symptoms, whereas the confirmation of SARS-CoV-2 in GI tissue specimens is associated with a worst prognosis.⁶ Indeed, GI tract involvement by COVID-19 has been demonstrated since the first cases, whereas direct lesions of mucosal tract or motility-like symptoms have not been yet fully characterized.⁹

We present the patient presented with predominant respiratory symptoms correlated with COVID-19 infection, and the onset of acute dysphagia was unexpected and delayed. Moreover, the most frequent GI symptoms described are diarrhoea and nausea, but not dysphagia. This could be considered the direct on-site effect of the virus, rather than the consequence of an acute systemic inflammatory state. It is well known that the most common viral esophagitis caused by cytomegalovirus, Herpes simplex virus, and human papilloma virus could present with dysphagia and odynophagia. There are several risk factors for the development of infectious esophagitis, including

haematological malignancy, solid tumors, autoimmune disease, eosinophilic esophagitis, human immunodeficiency virus infection, organ transplantation, and ongoing immunosuppressive therapy.⁷ Our patient had no predisposing risk factors of infectious GI damage; therefore, we hypothesized a direct esophageal SARS-CoV-2 invasion as the cause of mucosal and vascular endothelial damage, leading to ulcerations and finally bleeding. In addition, recent studies have shown that the angiotensin-converting enzyme 2 receptors, which are essential for cells infected by COVID-19, are highly expressed not only in lung cells, but also in the epithelial cells of the esophagus, in the enterocytes from the ileum and colon and in the intrahepatic bile duct cholangiocytes.^{8,9} Hence, in clinical practice, the significance of GI symptoms in SARS-CoV-2 infected patients should not be underestimated, and an early diagnosis of GI involvement could improve their treatment plan and global outcome.

DISCLOSURES

Author contributions: G. Grande and S. Cocca wrote the manuscript. S. Russo and A. Caruso revised the images. S. Mangiafico and F. Pigò reviewed literature. R. Conigliaro and H. Bertani revised the manuscript for intellectual content. G. Grande is the article guarantor.

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