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CASE REPORT

Bowel perforation in a Covid-19 patient: case report

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Abstract

Introduction Since the outbreak of novel coronavirus (2019-nCoV), it became evident that a proportion of patients may present with gastrointestinal symptoms.

Case We report the case of a Covid-19-infected patient who, during recovery from the pulmonary pneumonia, had gastrointestinal symptoms followed by a diastasic right colon perforation due to acute over distension of the bowel.

Conclusion This case highlights the importance of paying attention to initial gastrointestinal symptoms in order to prevent possible complications.

Keywords Covid-19 · Bowel perforation · Gastrointestinal symptoms · Case report

Introduction

The novel coronavirus disease, caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has spread worldwide becoming a pandemic and causing at present more than 160,000 deaths. Italy was the second Country hit by the global coronavirus pandemic and one with the highest number of registered cases and deaths; therefore, some aspects of the disease could have been anticipated in Italy with respect to other Countries.

Current literature mainly focuses on respiratory symptoms and respiratory acute complications. However, a proportion of patients may present with other concurrent clinical features and, among them, with gastrointestinal symptoms. We report the case of a patient with SARS-CoV-2, with right colon perforation that required emergent surgical treatment.

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Case

On February 26 a 53-year-old male patient was admitted for fever and cough since 9 days and recent onset of dyspnea. His past medical history included hypertension and an episode of paroxysmal supraventricular tachycardia. Real-time PCR of nasopharyngeal swabs tested positive for SARS-CoV-2, and a chest X-ray showed multifocal bilateral lung opacities (Fig. 1). Laboratory tests were as follows: WBC, 12.100; lymphocyte count, 6.6%; Hb 12.5; LDH 313; CRP 104. Treatment with antiretrovirals (lopinavir/ritonavir 400/100 mg BID), hydroxychloroquine (200 mg BID), and anakinra (100 mg BID subcutaneously) was started, along with broad-spectrum antimicrobial treatment with levofloxacin 750 mg QD.

Despite oxygen supplementation and cPAP, however, due to rapid respiratory deterioration in the context of acute respiratory distress syndrome (ARDS), the patient was eventually admitted to the ICU and required intubation on February 28. During his stay in the ICU, treatment with lopinavir/ritonavir, hydroxychloroquine, and anakinra was maintained, while piperacillin-tazobactam and linezolid were started in place of levofloxacin. In addition, he required vasopressor support with noradrenaline. His clinical conditions progressively improved and, after discontinuing antibiotics on March 3 and invasive mechanical ventilation on March 4, the patient was transferred to the Infectious Disease Unit on March 5. The patient was afebrile, his vital signs were stable, and weaning from non-invasive ventilation support was started. On March 8, after 2 days of diarrhea, the patient complained of abdominal pain and marked distension; at clinical

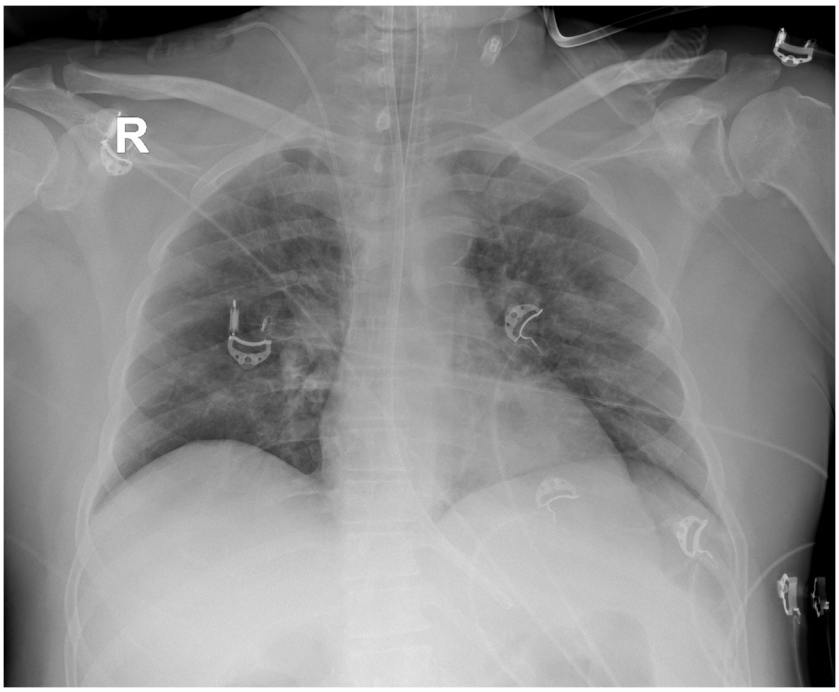

Fig. 1 Chest X-ray showing multiple bilateral ground-glass opacities

examination, signs of peritoneal irritation were detected. A plain X-ray film and a CT scan showed massive free air in the abdominal cavity, distension of the large bowel, and perforation of the ascending colon (Figs. 2 and 3). In addition, pulmonary embolism was detected. The patient underwent emergent laparotomy: intraoperative findings included profuse amount of free air, distension of the entire abdominal colon, and a minimal perforation on the anterolateral aspect

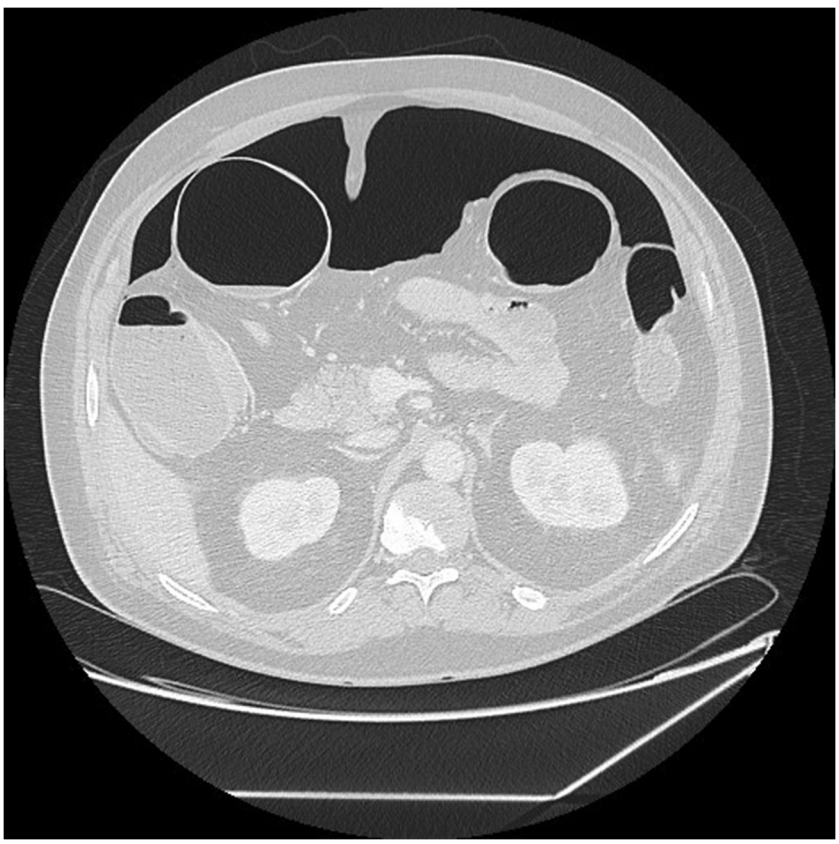

Fig. 2 A high-resolution computed tomography of the abdomen showing free air in the abdominal cavity, axial view

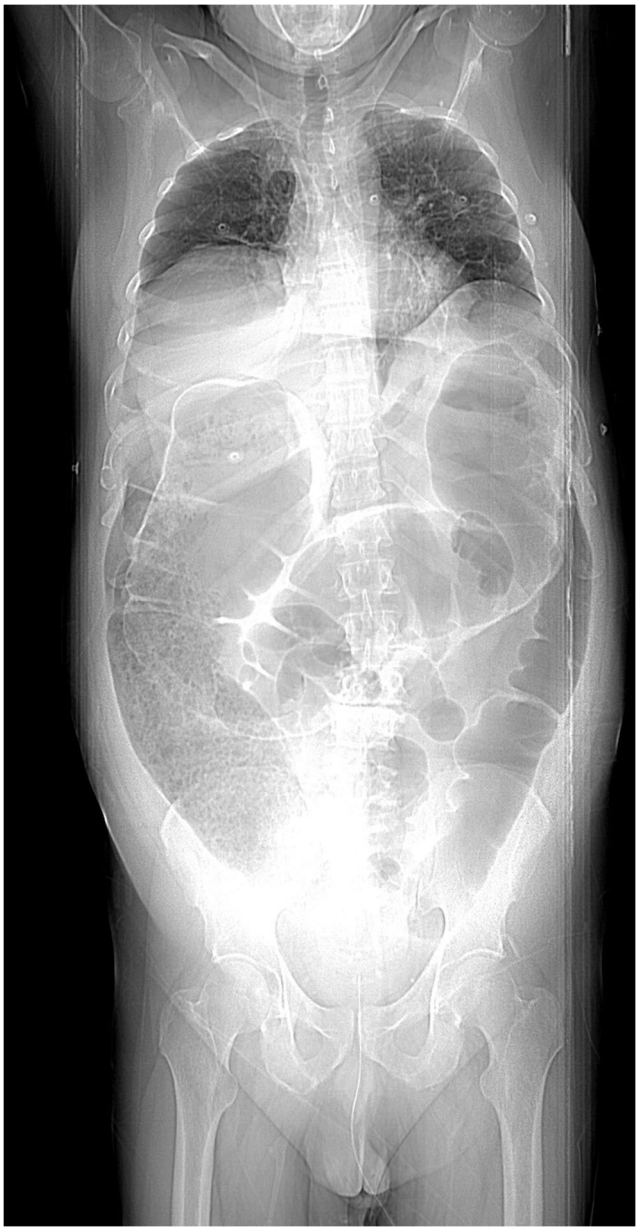

Fig. 3 Computed tomography multiplanar coronal reconstruction showing whole colonic distension

of the distended cecum. Neither obstruction of the distal colon nor distension of the small intestine was noted. A colonic detension and right colectomy with ileo-transverse anastomosis was performed; two abdominal drains were placed in the right paracolic gutter and in the pouch of Douglas.

Gross pathological examination revealed a markedly enlarged bowel with thinner walls, with a 0.3-cm solution in the ascending colon. The histology showed a transmural granulocytic inflammation with edema of mucosa and submucosa layers, and fibrinous-granulocytic perivisceritis. No thrombosis or vasculitis was observed. The presence of viral nucleic acid, searched in paraffin-embedded tissue from the surgical specimens, was not confirmed by the real-time reverse-transcriptase–polymerase-chain-reaction (rRT-PCR) analysis.

Anticoagulant therapy with low-molecular weight heparin and broad-spectrum antibiotic treatment with piperacillin-tazobactam and fluconazole were started immediately after surgery. Enteral feeding was started in postoperative day 4, and first bowel movement occurred on day 6. On postoperative day 8, the patient developed a hematoma of the abdominal rectal muscles that required a surgical wound revision for hemostasis. After surgery, the patient developed fever with progressive increase of WBC and CRP, so meropenem and anidulafungin were started. The patient rapidly became afebrile, and no bacterial growth was detected at blood cultures. Supplemental oxygen and antibiotic treatment were discontinued. A chest X-ray showed resolution of bilateral interstitial pneumonia. Lopinavir/ritonavir was discontinued on March 11, while hydroxychloroquine and anakinra were maintained until March 18.

The patient was discharged on postoperative day 18 (March 26). The SARS-CoV-2 RT-PCR performed on nasopharyngeal on March 23 tested positive, and the patient was encouraged to maintain home quarantine for at least 14 days. At discharge, oxygen saturation on room air was 98%, and no respiratory symptoms were reported.

Discussion

Since the outbreak of novel coronavirus (2019-nCoV) initially developed in China, studies report that respiratory symptoms, such as fever, cough, dyspnea, and respiratory illness, represent the most common manifestations [1].

As evidences from the literature accumulated, it became clear that several gastrointestinal symptoms, such as abdominal pain, diarrhea, and vomiting, were also observed [2]. Moreover the CO19 virus has been found in stool specimens [3], and a potential fecal-oral transmission route has been suggested [4].

In the case herein described an acute over distension of the whole colon, without mechanical distal obstruction, which led to a diastasic colonic perforation, was observed. Although the physiopathology of this event is unknown, we assumed a direct insult to the colonic cells by the coronavirus itself. ACE2 protein, a cell receptor for SARS-CoV-2, has been found in the glandular cells of gastric, duodenal, and rectal epithelia, suggesting the possible tropism of SARS-CoV-2 for the gastrointestinal tract and partially explaining the gastrointestinal symptoms [5]. In addition, SARS-CoV-2 RNA was mainly detected in the cytoplasm of gastrointestinal epithelial cells indicating that the virus can infect and replicate in these cells [6]. In the present case, the viral RNA was not detected by rRT-PCR analysis in the surgical specimens; however, it should be noted that the analysis was performed in paraffin-

embedded tissues since no fresh samples were available. Another hypothesis was an altered colonic motility due to an imbalance of the autonomic innervation of the colon. Since the neuroinvasive propensity has been demonstrated as a common feature of coronaviruses, a neuronal injury should be regarded as a possible pathogenetic mechanism [7].

Since we are dealing with a novel disease whose clinical manifestations are partly unknown, we are learning about possible rare expression of the infection and its complications. This case highlights the need to be vigilant for gastrointestinal symptoms in Covid-19-positive patients for an early diagnosis and prevention of possible complications.

Availability of data and material No data available.

Authors' contributions All authors contributed to the study conception and design. Material preparation, data collection, and analysis were performed by D. Parolini, M. Ripa, and S. Racca. The first draft of the manuscript was written by P. De Nardi, and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Consent to publish The patient has consented to the submission of the case report to the journal.

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