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Case Report

Paralytic ileus as a delayed gastro-intestinal manifestation of severe COVID-19: cases report

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Abstract: Introduction: A short time ago, COVID-19 disease spread worldwide, causing pneumonia and other extrapulmonary complications. Furthermore, gastrointestinal symptoms are progressively being identified as one of the virus's extrapulmonary manifestations. Here we describe a 68 year old patient identified with SARS-COV-2 infection complicated by paralytic ileus at day 15 of symptoms, confirmed by imaging as distended large bowel with no intestinal obstruction associated with normal liver function, lipase and kalemia. Therapeutic components included were administration of prokinetics with no surgical procedure. Conclusion: In cases of severe paralytic ileus, understanding if its mechanism is a complication of COVID-19 is crucial since underdiagnosing this complication can lead to abdominal distention that will prevent the mobility of the diaphragm and thus the risk of mechanical ventilation if not treated and a possible bowel perforation.

Keywords: ACE 2, COVID-19, cases report, gastrointestinal, paralytic ileus, SARS-CoV-2

Introduction

Over more than a year after the spread of Covid-19 to almost the entire globe [1], the SARS-CoV-2 virus and its multiple variants [2] continue to surprise scientists by its various features, including digestive manifestations that have been revealed as extrapulmonary manifestations of this disease. It was reported that gastrointestinal symptoms occur in 17.6% of positive patients [3] as loss of appetite being the most frequent symptom, subsequently comes diarrhoea, nausea/vomiting, and at least common is abdominal pain [3], these extrapulmonary signs are still underestimated for predicting the diagnosis of COVID-19; however, isolated paralytic ileus remains uncommon as an extrapulmonary manifestation. Here we report a rare case of ileus complication revealed at day 12 of COVID-19 symptoms and how to manage it.

Case presentation

We report a case of a Moroccan man in his sixties, his medical history includes arrhythmic heart disease for which he has taken Vitamin K antagonists for ten years and hypertension since 14 years treated by Amlodipine-Valsartan with no surgical or family history, who was admitted in our intensive care unit at day 12 of symptoms for medical care of severe COVID-19. The patient report was clinical symptoms of cough, difficulty of breathing for the pulmonary signs and headache, myalgia for neurological signs while further detail of the history showed diarrhoea and nausea as gastrointestinal symptoms. Upon admission, the patient was dyspneic, physical examination showed peripheral oxygen saturation (SpO_2) at 60% on ambient air and 88% on 15 liters of oxygen by high concentration mask with bilateral basal coarse crackles on pulmonary auscultation, neurological and hemodynamic vital signs demonstrated no abnormality, abdominal examination showed central obesity with unremarkable cardiac examination. The first laboratory workup findings were significant for inflammatory syndrome including elevated serum leucocyte of 18120/ml, markedly high C reactive protein (CRP) of 328 mg/L, elevation of ferritin to 800

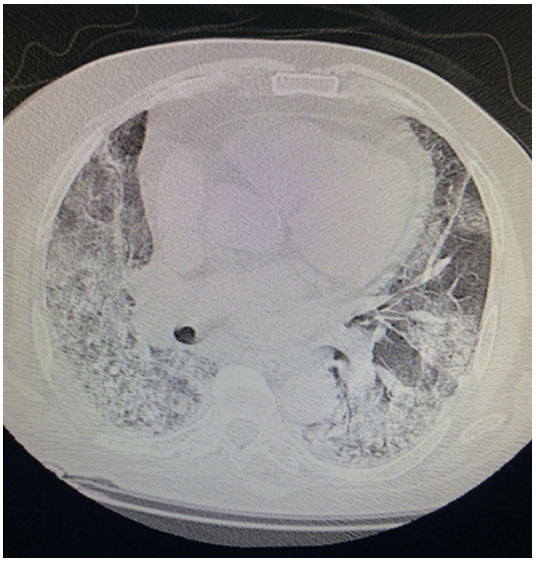

Figure 1. Transversal plane of chest CT scan demonstration a bilateral extended ground-glass opacity estimated at 90%.

ug/L, elevation of IL6 to 858, high fibrinogen 8.2 g/L with positive thromboembolic marker D-Dimer: 0.8 mg FEU/L. Diagnosis of severe COVID-19 infection was based on positive real-time polymerase chain reaction (PCR) of nasopharyngeal swab and chest CT scan that exposed a bilateral extended ground-glass opacity estimated at 90% (**Figure 1**), we started the national COVID-19 protocol immediately after isolation procedures.

Azithromycin 500 mg IV daily for five days, Vitamin C one tablet twice a day, Zinc sulphate 90 mg per day, Vitamin D 25000 per week, esomeprazole 40 mg daily, ceftriaxone 2 g IV daily for 10 days and ciprofloxacin 200 mg per 12 h for 10 days, to avoid thrombus formation.

Enoxaparin at 100 units/kg/12 h was administered by subcutaneous injection, after three days of stay the patient shown abdominal distention with bilious vomiting that did not respond to antiemetic drugs with the capacity to pass minimal gas.

Abdominal examination showed tenderness on palpation and diffuse abdominal tampany on percussion. The rectal bulb was empty on rectal examination.

Laboratory workup showed normal liver function as well as lipase and serum electrolyte

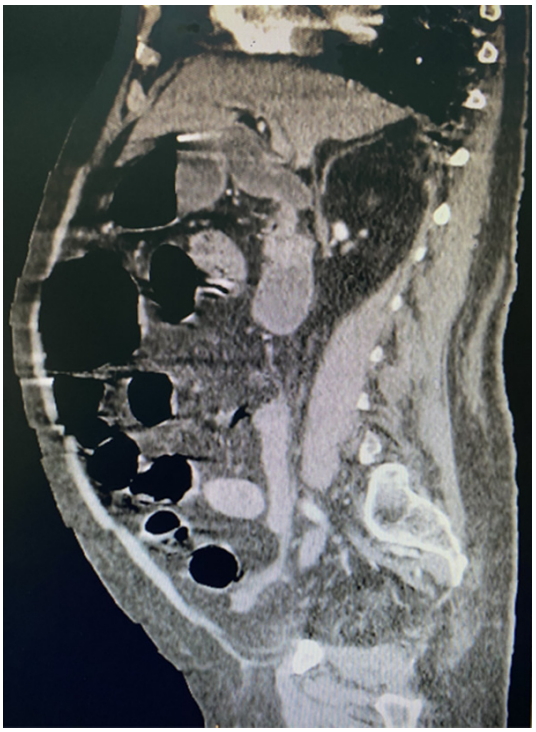

Figure 2. Abdominal CT scan in sagittal plane demonstrating diffuse distended bowel.

(kalemia 4.1 mEq/l, Natremia 141 mEq/l). Paralytic ileus was diagnosed after an abdominal contrast-enhanced computed tomography scan (CT scan) that showed hydroaeric distension of the esophagus, stomach and distended large bowel with no intestinal obstruction with no Minor mesenteric vascular thrombosis (**Figure 2**). The surgical team retained conservative management with administration of prokinetics, a nasogastric tube was inserted right away with enteral diet restriction, and complete parenteral nutrition was started; over the next week, the patient's health improved, and he was able to manage an oral diet. The evolution was favorable and after 15 days in the hospital, the patient was discharged with no need for oxygen support.

This case report follows SCARE 2020 criteria [4].

Discussion

Recently, gastrointestinal involvement related to SARS-CoV 2 has been reported more frequently. According to 29 trials, 12% of SARS-CoV-2 patients presented gastrointestinal symptoms **Table 1** [5]. As shown in a published

Table 1. Related published cases

Study Title	Study Year	Type of Study	References
Prevalence of Gastrointestinal Symptoms and Fecal Viral Shedding in Patients With Coronavirus Disease 2019	2020	A Systematic Review and Meta-analysis	[5]
Manifestations and prognosis of gastrointestinal and liver involvement in patients with COVID-19	2020	A systematic review and meta-analysis	[6]
Angiotensin-converting enzyme-2 (ACE2), SARS-CoV-2 and pathophysiology of coronavirus disease 2019 (COVID-19)	2020	A systematic review	[7]
Bowel perforation in a Covid-19 patient	2020	Case Report	[8]
Gastrointestinal complications in critically ill patients with COVID-19	2020	Case series	[9]
The digestive system is a potential route of 2019-nCov infection	2020	A bioinformatics analysis based on single-cell transcriptomes	[10]
Endothelial cell infection and endotheliitis in COVID-19	2020	Case series	[11]

review, patients with gastrointestinal involvement had a delayed diagnosis and tended to have more unsatisfactory outcomes [6]. Another study has mentioned that patients with intestinal symptoms seemed to have a more extended period between onset of illness and admission to the hospital, which is the case of our patient that was admitted at day 12 of symptoms with 90% of lung involvement [7].

In the absence of a mechanical cause, paralytic ileus is characterized by symptoms that mimic a mechanical bowel obstruction; bowel dilatation on imaging without obstruction confirms the diagnosis. An increasing body of evidence suggests the implication of the bowel in COVID-19 infection. However, paralytic ileus as a complication of COVID-19 has been reported in a few reports; at the height of the outbreak in Italy, a COVID-19-positive patient with diarrhoea and abdominal pain presented with significant bowel distension and ascending colon perforation, neither obstruction of the distal colon nor distension of the small intestine was observed during laparotomy [8]. Two COVID-19 patients with severe colonic paralytic ileus underwent exploratory laparotomy revealing extensive patchy intestinal necrosis according to a series of 141 critically ill patients from Boston [9].

Humans SARS-CoV-2 infection is known to be caused by the virus binding to the angiotensin-converting enzyme-2 (ACE2) receptor on the cell surface. A bioinformatics analysis based on single-cell transcriptomes found that ACE 2 was expressed in the esophagus upper stratified epithelium and absorptive enterocytes derived from the ileum and colon [10], which explains the diffuse distention from the esophagus to colon in our case. According to new research, it has been discovered that the ACE2 receptor is expressed on vascular endothelial cells, and SARS-CoV-2 can infect these cells via this receptor, which can lead to organ damage by microthrombus that destroys vascular endothelial cells [11].

Our patient was satisfied with our medical care.

Conclusion

We have reported a case of a delayed digestive tract complication following COVID-19, which is the paralytic ileus; we have also addressed the timely management of this manifestation and its potential mechanism since it is important to know this manifestation for early diagnosis of it in COVID-19 to avoid possible ischemia and colon perforation, without forgetting the increased risk of inhalation in critically ill sever COVID-19 patients.

Disclosure of conflict of interest

None.

Abbreviations

SpO_2, Peripheral oxygen saturation; PCR, real-time polymerase chain reaction; CRP, C reactive protein; CT scan, computed tomography scan; ACE2, angiotensin-converting enzyme-2.

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