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Case Report

Bowel necrosis associated with COVID-19 pneumonia: A report of two cases

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ABSTRACT

A novel coronavirus, called as SARS-CoV-2, caused multiple typical and atypical respiratory symptoms with several reported abdominal findings. We have described 2 cases of an unusual presentation of Covid-19. For patient 1, a woman aged 59-year-old had pneumonia and new onset abdominal pain. In patient 2, a 60-year-old man admitted with positive polymerase chain reaction test and abdominal pain from 2 weeks ago. Both lung and abdominal computed tomography (CT) were achieved in a few days. Acute ischemic mesenteritis and other abdominal complications were observed in the CT scan. Bowel necrosis in combination with peritonitis founded by laparotomy. Early diagnosis of abdominal complications in Covid-19 pneumonia can improve patient outcomes.

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Introduction

The novel coronavirus originally reported from Wuhan, China, and has spread worldwide [6].

The most common symptoms stayed fever, dry cough, myalgia, fatigue, and less frequent abdominal pain [7].

Typical features of Covid-19 in computed tomography pre-vailed ground glass opacity (GGO) with the peripheral and multifocal distribution [8,9].

Chest CT characteristics in severe patients remained multilobar consolidative opacities. Most of the results in patients with an intensive care unit (ICU) were ARDS [10].

The thromboembolic event occurs frequently in patients with Covid-19. A pro-coagulant pattern and an endothelial thrombo-inflammatory syndrome are probably mechanism [1].

A cytokine storm, hypoxic injury, endothelial dysfunction, hypercoagulability, and/or increased platelet activity are common causes of thrombosis in COVID-19 patients [4].

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Fig. 1-1 – Upper abdominal images exhibit small area of pneumoperitoneum.

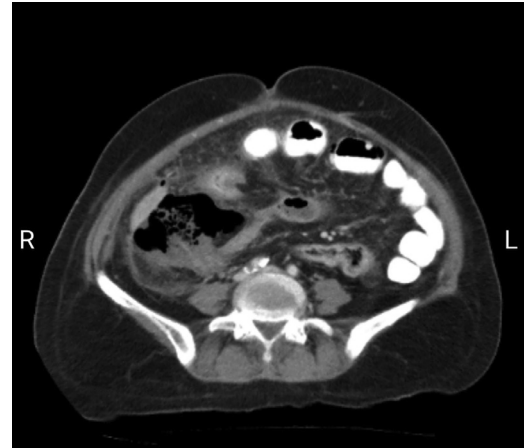


Fig. 1-3 – Portal phase post abdominal CT scan demonstrates cecal wall infarction defect with pneumoperitoneum and free fluid.

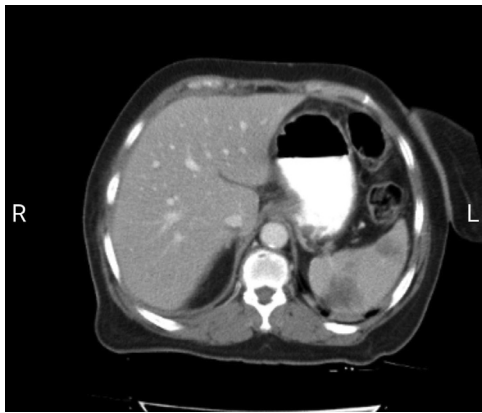


Fig. 1-2 – Craniocaudal contrast-enhanced CT images of the abdomen show multiple segmental infarction of the spleen.

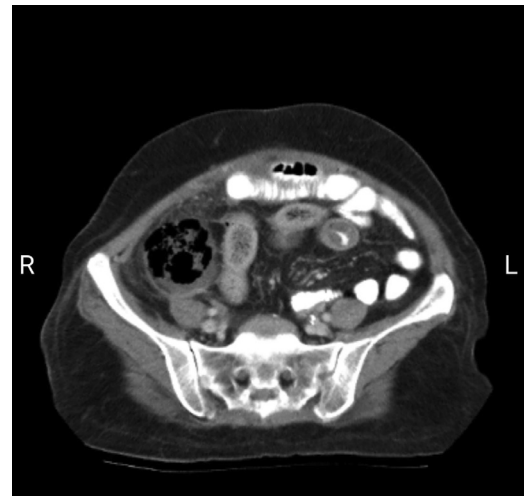


Fig. 1-4 – Contrast-enhanced images shows a thickened small bowel wall, mesenteric stranding and vascular engorgement.

Clinical and radiologic observation

Patient 1: A 59-year-old female, presented with dyspnea, cough, low grade fever (38c) and weakness for a couple weeks, abdominal pain at referral day. She was a known case of type2 diabetes mellitus for 20 years. She lived with her family. The patient was hospitalized for further care.

Non contrast chest CT demonstrates widespread predominantly bilateral subpleural patchy GGO with some areas of crazy paving, bronchiectasis, and vascular enlargement (Fig. 1-6).

Laboratory studies revealed hyperleukocytosis (White Blood Cell: 10.6×10^3), respiratory alkalosis (pH: 7.54) and normal values of prothrombin time, international normalized ratio level.

Abdominopelvic CT scan with IV contrast shows typical findings of mesenteric ischemia and infarction, including small bowel ischemia, large bowel necrosis with perforation, mesenteric congestion, and free air (Fig. 1-1, 1-3, 1-4, 1-5). Wedge shaped region of low-attenuation in the spleen consistent with splenic infarction (Fig. 1-2).

Surgical exploration revealed generalized peritonitis due to a necrotic bowel from the distal ileum to the transverse colon, with perforation of the terminal ileum. The patient was admitted to the ICU and placed mechanically ventilated. A patient died several days later. Findings in histopathology include: mucosal infarction of the intestinal wall and mesenteric vein thrombosis (Fig. 1-8, 1-7, 1-9).

Patient 2: A 60 years old man with positive test of COVID-19 presented to the emergency department with abdominal pain from 2 weeks ago. The patient became worse in a few days. He was a known case of diabetes mellitus and hypertension.

A routine blood test revealed the leukocyte count of 15.4×10^9 Cell/L, normocytic anemia (the amount of hemoglobin: 9.4 grams/deciliter) and the normal values of prothrombin time, international normalized ratio, and increased lactate dehydrogenase level (LDH: 601).



Fig. 1-5 – Coronal image reveals large bowel necrosis and small bowel ischemia.

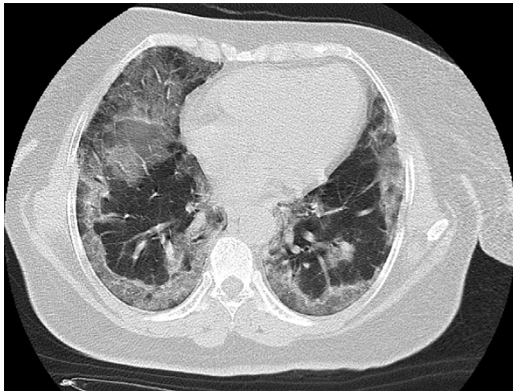


Fig. 1-6 – Chest CT Scan reveals diffuse bilateral peripheral patchy ground glass opacity with mild vascular dilation.

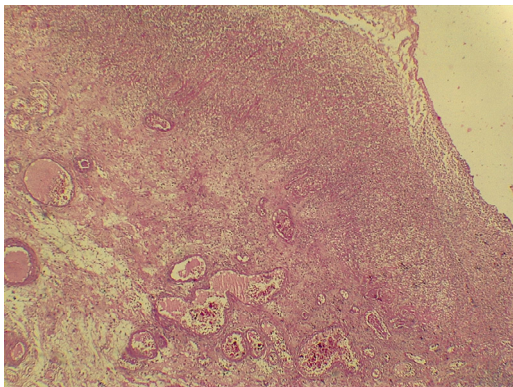


Fig. 1-7 – Mucosal infarction of the intestine.



Fig. 1-8 – Vascular thrombosis of mesenteric vein.

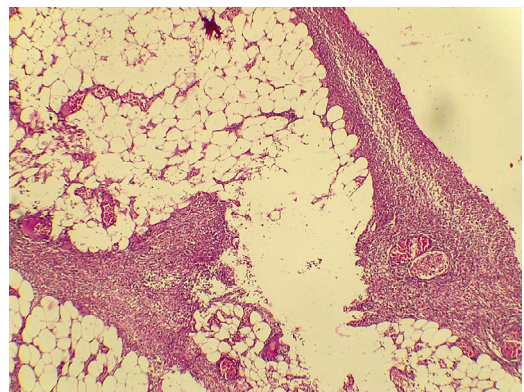


Fig. 1-9 – Acute serositis.



Fig. 2-1 – Contrast enhanced CT scan demonstrates air-fluid level in upper abdomen and segmental infarction of the right kidney.

A CT scan was obtained which shows small and large bowel ischemia and perforation, kidney and spleen infarction (Fig. 2-1, 2-2, 2-3).

Chest CT scan revealed bilateral subpleural patchy GGO, subpleural bands, pleural effusion (Fig. 2-4).

The patient was taken urgently to the operating room for laparotomy. Post op diagnosis abode spontaneous

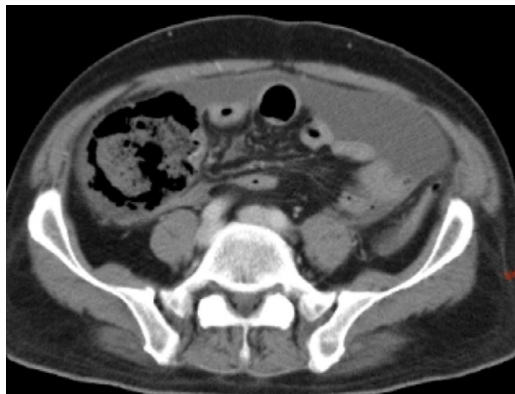


Fig. 2-2 – Axial image exhibit intramural air in the cecal wall with free intraperitoneal fluid.



Fig. 2-3 – Arterial phase image reveals wedge shape hypodensity in upper pole of spleen.



Fig. 2-4 – Axial CT image with lung window shows peripheral bilateral patchy GGO with subpleural band and bronchiectasis compatible with late phase of covid-19.

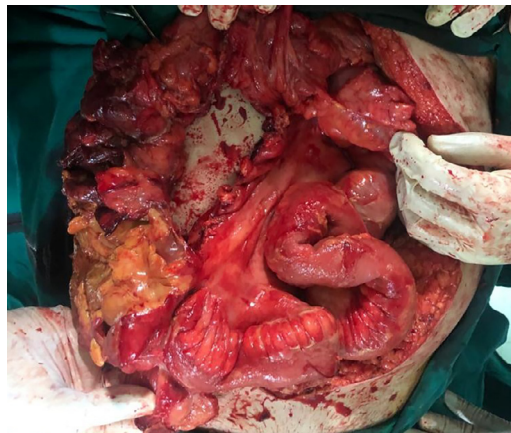


Fig. 2-5 – Bowel necrosis in cecum & ascending colon.

perforation secondary to the cecal and ascending colonic wall necrosis (Fig. 2-5). The patient remained clinically stable, improving symptoms during hospital stay. He was accordingly discharged after approximately 1 month.

Discussion

Some Covid-19 patients have a chief complaint of gastrointestinal symptoms such as diarrhea, vomiting and abdominal pain during the disease [1].

During COVID-19 Coronavirus Pandemic Reducing the mortality rate is the most purpose of the world health organization. High rates of thromboembolic events in Covid-19 patients contributing to mortality [3].

The prevalence of venous thromboembolism (VTE) in hospitalized non-ICU patients due to Covid-19 remained high, and particularly high in critical patients requiring intensive care [2].

The incidence of VTE has increased in patients admitted for Covid-19, and further imaging may be recommended for low suspicion of VTE [5].

Conclusion

Radiologists need to be aware of thromboembolic events in Covid-19 that can occur in any organ from head to toe. For any patients of Covid-19 with new onset and unreasonable abdominal pain suspected for acute mesenteric ischemia (AMI), contrast enhanced abdominal CT scan containing arterial and venous phase is needed. Multidetector CT diagnostic performance for AMI detection is high, with 64%-96% sensitivity and 92-100% specificity [11-13].

Improve the prognosis of AMI dependent to the early diagnosis and rapid management of patients [12]. Early diagnosis and prompt management of acute mesenteric ischemia are mandatory to improve the patient's prognosis [11]. The identification of any thromboembolic complications in primary

investigation should look for other associated thrombotic events like mesenteric ischemia, splenic, and renal infarction.

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