

Superior Mesenteric Artery Thrombosis for Emergency Laparotomy in Covid-19 Patient: A Case Report

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ABSTRACT

The novel corona virus disease 2019 (COVID-19) pandemic has caused significant morbidity and mortality worldwide. Most common symptoms include fever, cough, and shortness of breath predominately involving pulmonary function; however there are lesser known presentations which affect other systems too. Vascular complications have been reported lately in the literature which predominately has focus on venous thrombosis which appears to be more common than arterial thrombosis. Among arterial thrombosis, mainly lower limb involvement is reported so far. Here we report an unusual presentation in Covid-19, which presented with acute abdomen due to superior mesenteric artery thrombosis without respiratory symptoms.

We report this case as a varied form of presentation of corona virus complication and need for eternal vigilance and reactive approach for early diagnosis

Keywords: Covid-19, superior mesenteric artery, arterial thrombosis, abdomen.

Introduction

Covid-19 which is declared a global pandemic by WHO usually presents with fever, cough, shortness of breath, and myalgia. Headache, diarrhoea, and sore throat have also been reported although less frequently. One of the major complications other than ARDS is the hypercoagulable state leading to vascular thrombotic complications. We report a case of Covid-19 patient who primarily presented with acute abdomen. Further investigation with computed tomography (CT) revealed superior mesenteric artery thrombosis leading into bowel ischemia.

Case Report

51 year old male patient was diagnosed with Covid-19 one week before and was kept in home isolation. He presented to emergency department with acute abdominal pain and nausea. On

examination he was afebrile, clinically stable without any signs of respiratory distress with 100 % saturation in room air. History wise he was a non smoker and without any previous history of peripheral arterial disease. Further work up with CT angiogram showed superior mesenteric artery thrombosis with resultant bowel ischemic signs. D-dimer was 2.5 mcg/ml and Ferritin level was 687ng/ml .He was operated for urgent laparotomy and thrombectomy.Intra operative it was found that around 45 centimetre of his jejunum was gangrenous which was subsequently resected . At the end of surgery, abdomen was not closed and he was shifted to intensive care unit for elective mechanical ventilation. He was started on heparin infusion which was titrated according to institution protocol. A good hydration was maintained and his vitals were normal throughout his stay in intensive care. He underwent another two more re-look laparotomies where another 10 cm of his gangrenous segment of his jejunum was again resected and jejuno-colic anastomosis was done. Superior mesenteric artery flow was found to be good. He was extubated after third laparotomy and abdominal closure and later shifted to high dependency unit after six days in intensive care unit. He was later shifted to ward where he had a long hospital stay of almost forty days before getting discharged. At the time of discharge he had recovered completely and was advised follow up on outpatient basis.



Figure 1: Selected saggital reformat of the abdominal CT scan showing thrombus in the main superior mesenteric artery and one od its major branches (white arrows). Some of the small bowel loops are not enhancing indicating established bowel ischemia (*)



Figure 2: Mild focal consolidation in the superior segment of the right lower lobe (black arrow). Focal scar with surrounding ground glass density at the superior segment of the left lower lobe (arrow head). Both findings are described lung changes of COVID-19 infection

Discussion

The most common presentation of Covid-19 has been respiratory in nature. But with new emerging data, it seems it can present with various other complications like hypercoagulable state with venous and arterial thrombosis which is prognostic of poorer outcomes [1, 2]. Venous thrombosis occurs more frequently than arterial. Among arterial thrombotic presentations, coronary and lower limb complications are well reported till date [3].

Mechanism of thrombosis in Covid-19 cases can be attributed to various theories which include a severely heightened inflammatory response that leads to thromboinflammation, through mechanisms such as cytokine storm, complement activation, and endothelitis [4]. Excessive cytokine release contributes to thrombosis through multiple mechanisms, including activation of monocytes, neutrophils, and the endothelium, all of which generates a prothrombotic state.

In a series of 150 ICU patients, four arterial occlusions were observed of which one caused mesenteric ischemia, one limb ischemia, and two cases of cerebral ischemia [5]. In a retrospective review of case series involving presentation of acute abdomen and worsening of Covid-19 symptoms early abdominal C.T was advocated [6].

Laboratory findings usually include elevated D-dimer with normal prothrombin time and activated partial thromboplastin time [6]. The recommended modality of treatment is intravenous or subcutaneous use of low molecular heparin or unfractionated heparin and dosing based on coagulation parameters or clinical scenarios.

In our case, patient had no other co morbid illness or known haematological disorders. All other baseline investigations were normal including echocardiography. C.T angiogram as a part of investigation protocol helped in arriving at a diagnosis which helped in early intervention.

In conclusion, hypercoagulable state in COVID-19 is emerging as a major pathological occurrence with serious consequences in mortality and morbidity. What calls for is an eternal vigilance from physicians to diagnose at the earliest the complications being developed and corrective measures that needs to taken at the earliest and this need not be restricted to critically ill patients, but also those who are in isolation with minimal symptoms.

Conflict of interest/Disclosure

All authors declare that they have no conflicts of interest.

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Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient has/have given his/her consent for his/her images and their clinical information to be reported in the journal. The patient understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

References

- 1) Zhou F, Yu T, Du R, Fan G, Liu Y, Liu Z, Xiang J, Wang Y, Song B, Gu X, Guan L, Wei Y, Li H, Wu X, Xu J, Tu S, Zhang Y, Chen H, Cao B. Clinical course and risk factors for mortality of adult in patients with COVID-19 in Wuhan, China: a retrospective cohort study. *Lancet*. 2020 Mar 28;395(10229):1054-1062.
- 2) Tang N, Li D, Wang X, Sun Z. Abnormal coagulation parameters are associated with poor prognosis in patients with novel coronavirus pneumonia. *J Thromb Haemost*. 2020 Apr;18(4):844-847.
- 3) Garg K, Barfield ME, Pezold ML, Sadek M, Cayne NS, Lugo J, Maldonado TS, Berland TL, Rockman CB, Jacobowitz GR. Arterial thromboembolism associated with COVID-19 and elevated D-dimer levels. *J Vasc Surg Cases Innov Tech*. 2020 Jun 17;6(3):348-351.
- 4) Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, Zhang L, Fan G, Xu J, Gu X, Cheng Z, Yu T, Xia J, Wei Y, Wu W, Xie X, Yin W, Li H, Liu M, Xiao Y, Gao H, Guo L, Xie J, Wang G, Jiang R, Gao Z, Jin Q, Wang J, Cao B. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet*. 2020 Feb 15;395(10223):497-506.

- 5) Helms J, Tacquard C, Severac F, Leonard-Lorant I, Ohana M, Delabranche X, Merdji H, Clere-Jehl R, Schenck M, Fagot Gandet F, Fafi-Kremer S, Castelain V, Schneider F, Grunebaum L, Anglés-Cano E, Sattler L, Mertes PM, Meziani F; CRICS TRIGGERSEP Group (Clinical Research in Intensive Care and Sepsis Trial Group for Global Evaluation and Research in Sepsis). High risk of thrombosis in patients with severe SARS-CoV-2 infection: a multicenter prospective cohort study. *Intensive Care Med.* 2020 Jun;46(6):1089-1098.
- 6) Ignat M, Philouze G, Aussenac-Belle L, Faucher V, Collange O, Mutter D, Pessaux P. Small bowel ischemia and SARS-CoV-2 infection: an underdiagnosed distinct clinical entity. *Surgery.* 2020 Jul;168(1):14-16.
- 7) Han H, Yang L, Liu R, Liu F, Wu KL, Li J, Liu XH, Zhu CL. Prominent changes in blood coagulation of patients with SARS-CoV-2 infection. *Clin Chem Lab Med.* 2020 Jun 25;58(7):1116-1120.