CASE REPORT

Mesenteric Ischemia in a Patient with COVID-19 Infection

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Abstract

The novel COVID-19 disease, caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) virus, apart from its respiratory complications and coagulopathy, is also involved in damage to other organ systems. We present a report of presumptive case of COVID-19 positive patient with no respiratory symptoms with superior mesenteric vein and portal vein thrombosis along with acute intestinal ischemia. The patient underwent exploratory laparotomy, resection of the ischemic bowel loops with proximal ileostomy and distal mucous fistula. The case highlights that despite the absence of respiratory symptoms, patients infected with SARS-CoV-2 may show atypical presentations, such as gastrointestinal symptoms.

Keywords: COVID-19, mesenteric ischemia, heparin, laparotomy.

INTRODUCTION

COVID-19 virus, in addition to respiratory complications, has also been implicated in damage to other organ systems as well as coagulopathy. Acute Mesenteric ischemia has also been reported concomitant with COVID-19 pneumonia[1,2]. The exact mechanism of the same is not known. We report a presumptive case of mesenteric ischemia who was also detected to be COVID-19 positive and was taken up for exploratory laparotomy with resection of gangrenous segment and despite all possible measures patient could not survive and was declared dead on post-operative day five.

CASE REPORT

54 year old male, highlander, old case of Ischemic Stroke and Hypertension presented with history of generalised pain abdomen of one day duration. Pain was dull aching type with no aggravating or relieving factors and no radiation. Pain was associated with episodes of non-bilious vomiting. Patient had no history of fever, bowel or bladder complaints. On examination patient was Afebrile with Pulse of 110/min regular, Blood Pressure of 140/90 mmHg and was maintaining saturation on room air with no pallor or icterus. Per abdomen revealed a soft abdomen with mild tenderness and guarding on left side of abdomen. There was no rebound tenderness or rigidity. Per rectal examination was unremarkable and other systemic examination were normal. On routine examination there was leucocytosis with other haematological and biochemical parameters being within normal limits, RT PCR for COVID-19 was also done prior to surgery which was reported positive, chest X ray was normal with no free gas under diaphragm and X ray abdomen had no dilated bowel loops or air fluid levels. USG Abdomen showed a concentric thickening of bowel loop with suspected ischemic pathology. CECT abdomen showed superior mesenteric vein and portal vein thrombosis with ischemic bowel loops (Figure 1 and 2).

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Patient was initially managed with Low Molecular Weight Heparin and other supportive measures. Despite all measures, the patient developed signs of peritonitis with septic shock. Patient was taken up for diagnostic laparoscopy under general anaesthesia with all COVID precautions as per the existing guidelines which revealed venous gangrene of bowel loops and surgery was converted to exploratory laparotomy. Per operatively and detected to have 150 cm gangrenous jejuna and illeal loops 20 cm from duodonojejunal flexure till 100 cm proximal to illeocaecal junction (Figure 3).

Patient underwent resection of gangrenous segment with proximal ileostomy and distal mucous fistula along with peritoneal lavage and drain placements. Patient was successfully extubated, started orally and on refeeds, was made to ambulate and chest and limb physiotherapy was started. On post-operative day 5 patient had sudden cardiac arrest and patient could not be revived despite resuscitative efforts.

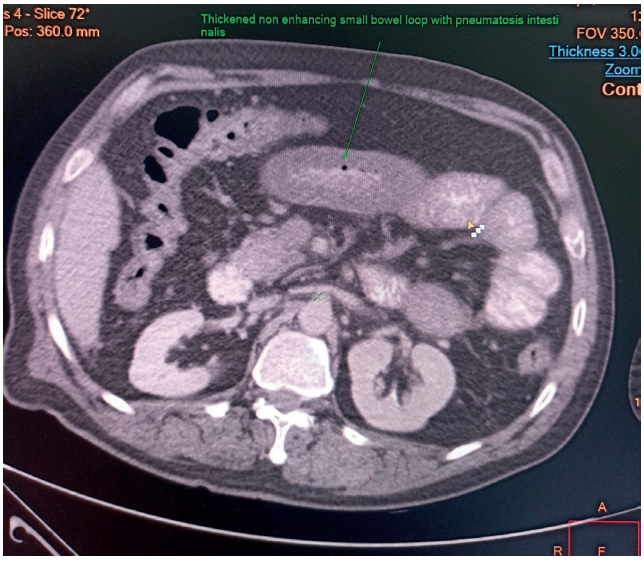

Figure 1.

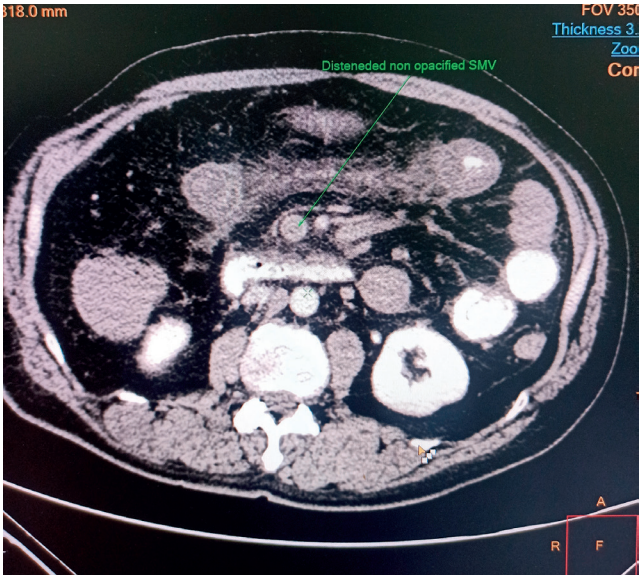

Figure 2.

Figure 3.

DISCUSSION

Coronavirus disease (COVID-19), a highly infectious disease caused by SARS-CoV-2, was first reported in Wuhan, Hubei Province, China. Pulmonary manifestation and hypercoagulopathy is well known. Abdominal symptoms are non-specific and include nausea, vomiting, diarrhea and raised liver enzyme [3]. Acute Mesenteric ischemia (AMI) has also been reported concomitant with COVID-19 pneumonia[1,2]. The exact mechanism of the same is not known. The mechanisms postulated are

(a) Hypercoagulability induced by systemic inflammatory state, endothelial activation, hypoxia and immobilization[2].

(b) Elevated levels of von Willebrand Factor in response to endothelial damage [4].

(c) Expression of angiotensin converting enzyme 2 on enterocytes of small bowel may result in intestinal tropism and direct bowel damage.

(d) Shock or hemodynamic compromise may lead to a non-occlusive mesenteric ischemia.

Patients with severe COVID-19 complicated by mesenteric ischemia may present with abdominal pain, nausea, vomiting, diarrhoea, abdominal distention or worsening systemic status (sepsis). Investigations may reveal elevated lactate levels and fibrin degradation products (D-dimer)[5]. Imaging in the form of USG and CT is essential in timely detection of same. On CT imaging, thick-walled, edematous and dilated bowel (>3 cm) should raise the suspicion of AMI. Presence of pneumatosis intestinalis or portal venous gas suggests bowel ischemia. Non-enhancing thick bowel suggests bowel infarction. Frank perforation presents as discontinuity of bowel wall with localized air containing collection[6].

Management of the condition involves revascularisation of the bowel by removal of thrombus or embolism via radiological intervention or by use of anticoagulation and excision of dead and necrotic bowel loops.

CONCLUSION

Despite the absence of respiratory symptoms, patients infected with SARS-CoV-2 may show atypical presentations, such as gastrointestinal symptoms. A precise knowledge of the occurrence of AMI in COVID-19 patients is essential for early diagnosis and management of the condition to reduce the morbidity and mortality associated with this disorder.

Compliance with ethics requirements: The authors declare no conflict of interest regarding this article. The authors declare that all the procedures and experiments of this study respect the ethical standards in the Helsinki Declaration of 1975, as revised in 2008(5), as well as the national law. Informed consent was obtained from all the patients included in the study.

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