

Case Report

Gangrenous bowel ischemia-a complication of COVID-19: a case report

Ganesh Ashok Swami, Swapnil Kashinath Shinde*, Halnikar Chandrashekhar S.,
Ganesh Asawa

Department of Surgery, Vilasrao Deshmukh Government Institute of Medical Sciences, Latur, Maharashtra, India

Received: 10 March 2021

Revised: 02 April 2021

Accepted: 06 April 2021

***Correspondence:**

Dr. Swapnil Kashinath Shinde,

E-mail: md.drswapnil@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

The novel virus SARS-CoV2 responsible for ongoing pandemic of COVID-19 since March 2020 has not only been found to cause pneumonia but also involves multiple symptoms such as Gastrointestinal system, central nervous system, cardiovascular system as a part of multi inflammatory syndrome, which has been increasingly recognized as a part of disease spectrum. COVID-19 associated coagulopathy has emerged as a major cause of high morbidity and mortality, one of which is result being ischemic bowel disease. So herein, we are going to present the first case of probable case of COVID-19 associated ischemic bowel disease in our institute.

Keywords: Gangrenous bowel ischemia, Complication of COVID-19, Pandemic

INTRODUCTION

In December 2019, various digestive symptoms have been frequently reported in the patients infected with virus¹. A multicentre study in Hubei, China found that nearly 50% of the patients of COVID-19 had symptoms associated with gastrointestinal system in the form of lack of appetite, diarrhoea, vomiting or abdominal pain¹. Coagulation abnormalities in form of raised D-dimer and fibrinogen levels were also found in such cases². Fibrin formation and polymerization may predispose to thrombosis and correlate with worse outcome such as ischemia of the organ². Ischemia colitis, a condition that results from a lack of arterial blood supply to the colon, has been linked to hypercoagulable states.⁴

CASE REPORT

A 54-years-old male patient, who was a known case of DM type 2 and hypertension and was on medication for the same, was admitted in a private hospital in Latur on 25

September 2020 for complaints of fever, cough and cold since past 5 days. There he was diagnosed to have bilateral pneumonia of viral aetiology, and considering the ongoing pandemic he was suspected to have SARS-CoV2 and was advised HRCT which showed patchy areas of ground glass parenchymal opacification in both lungs, s/o viral pneumonia (COVID-19 with severity score of 19/25) and his rapid antigen test was done after 4 days which showed negative result. The patient was managed in the private hospital for pneumonia after which he improved clinically and was advised a repeat HRCT scan after 6 days, which showed multiple patchy areas of patchy area of ground glass appearance in both upper and lower lobes of both lungs, s/o viral pneumonia (COVID-19 with severity score of 7/25) and discharged. But he was re-admitted in the same hospital after 3 days of discharge for the complaints of ongoing respiratory symptoms and severe abdominal pain. Then he got a CECT (A+P) done, which showed – gross ascites with circumferential wall thickening involving ascending colon with secondary intussusception with severe surrounding colonic mesenteric fat stranding with enlarged mesenteric node, and dilatation of distal

small bowel loops with fluid level suggestive of localized ileus/obstruction.

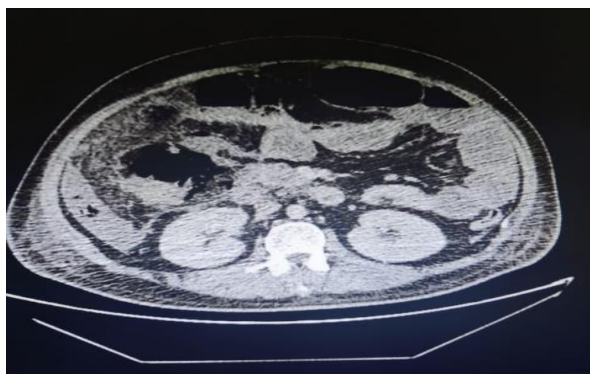


Figure 1: Coronal section of CT abdomen showing dilated large bowel and small bowel loops.

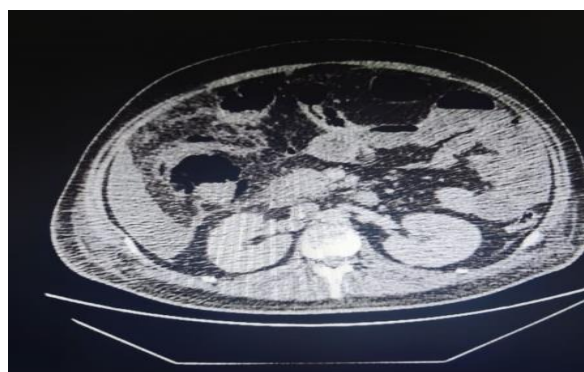


Figure 2: Coronal section of CT abdomen showing dilated large bowel loops.

He was also investigated for COVID profile with LDH 745 IU/L, Sr. ferritin 828 ng/ml, D- Dimer 1245 ng/ml, CRP 39 ml/L, IL 6- 29 pg/ml, which were all elevated. He was then advised surgery opinion for which the patient came to our institute on 17 October 2020. On admission the patient had complaints of severe abdominal pain with increasing abdominal distension and inability to pass flatus and stool since, 4 days with no acute respiratory systems. A diagnostic ascitic tap was done which was sent for routine microscopy which showed total nucleated cells 3400 /cumm, polymorphs 90%, lymphocyte 07%, mesothelial cells 03%, RBC 35-40 /hpf, gram and Z N stain were negative, no evidence of malignant cells, and culture sensitivity which showed no growth. USG A and P showed mild edematous wall thickening in the ascending colon and caecum with gross ascitis.

On clinical examination, he was vitally stable and abdominal was tender, so based on his reports he was managed conservatively by giving higher intravenous antibiotics, kept NBM, vitals monitoring and follow up of his total leucocyte count which was improving. After this line of management, he passed flatus and stool. But suddenly after 3 days, the patient had sudden deterioration of his vitals in form of falling BP, tachycardia, poor

consciousness and low GC score, abdominal guarding and rigidity for which he was immediately intubated, and USG (A and P) was done which showed features suggestive of perforation peritonitis. Patient was planned for emergency exploratory laparotomy on the same day.

On exploration findings showed ischemic necrosis and gangrene from ileocaecal junction to midtransverse colon and right hemicolectomy with resection and anastomosis with loop ileostomy was done. The resected sample was sent for histopathological examination which showed all layers of intestine were infiltrated with chronic inflammatory infiltrate and some section showed thickening of submucosal layer with abundant congested and proliferated blood vessels and few of the blood vessels showed evidence of microthrombi. Since we had a very strong suspicion that these changes may be the result of COVID 19, but since the patient had negative RT PCR and rapid antigen test, we did COVID antibody levels of the patient which were significantly raised. This made it very likely that the pneumonia followed by gangrenous bowel ischemia was due to or the complication ongoing pandemic virus SARS-CoV2. The patient however didn't improve and succumbed after 2 days after operation.

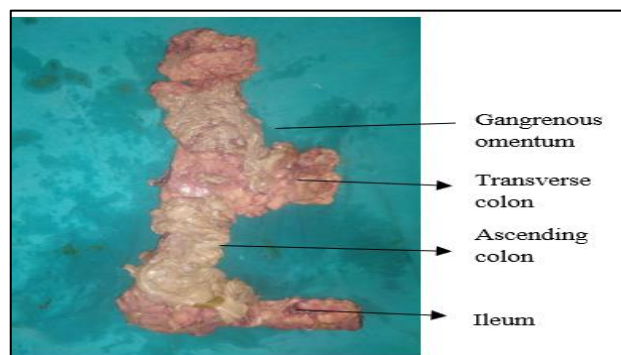


Figure 3: Surgical specimen showing gangrenous ascending colon with gangrenous omentum (intra OP Photo).

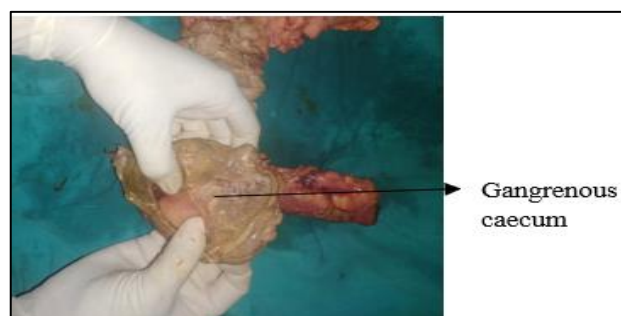


Figure 4: Surgical specimen showing gangrenous caecum.

DISCUSSION

COVID-19 has multifaceted presentation, with symptoms ranging from asymptomatic to rapid multiple organ

dysfunction, and has high mortality with case fatality rate of 2.3%.³ In addition to pulmonary symptoms, gastrointestinal symptoms of abdominal pain, nausea, vomiting, non-bloody diarrhoea have also been identified.^{1,5,6} A cross sectional study done in Hubei, China showed that 3-10% of COVID-19 patients had isolated GI symptoms. ACE-2 receptor a well-recognised receptor of covid 19 virus is also found in the epithelial cell of the GI tract apart from pulmonary alveolar cells.⁷⁻¹⁰ Ischemic colitis caused due to decreased blood supply to the colon leading mucosal injury, ischemia, cellular ischemia, and necrosis has been attributed to multiple aetiologies of which occlusive causes like thrombotic occlusion of mesenteric vein has been described apart from hypoperfusion due to shock, pancreatitis and cardiac failure.¹¹ Hypercoagulable states causing thrombosis have been recognised as one of the risk factors for ischemic colitis due to COVID-19 associated coagulopathy.¹² Treatment of ischemic colitis mainly involves supportive care, with bowel rest and close observation for evidence of perforation, necrosis and gangrene.¹³ Surgical intervention with colonic resection is indicated if imaging shows colon infarction and necrosis or for patients with right sided colon involvement.

Our patient had risk factors for hypercoagulability due to underlying co-morbidities, diabetes mellitus and hypertension, which was exaggerated by the COVID-19 associated coagulopathy. The presence of elevated d-dimer levels, and COVID-19 antibodies in our patient were indicative of the underlying aetiologies of the microthrombi found in the histopathology of the resected gangrenous bowel sections. Our patients presented with abdominal pain by around 2nd week of illness which co related with raised inflammatory markers and D-dimer level. The fact that this ischemic colitis occurred in the 2nd week of his illness with suspected COVID-19 infection when his inflammatory and hypercoagulable state were evident, makes this association very likely to be related.

CONCLUSION

Though there have been case reports in the past during the pandemic period showing correlation of gastrointestinal complications and COVID-19 associated coagulopathy, there has been no such case reported from our institute. Ischemic colitis may be the primary presentation in some of the COVID-19 patients, it prompts us to act immediately, both in terms of investigations and management to reduce high morbidity and mortality associated with it.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Not required

REFERENCES

- Pan L, Mu M, Yang P, Sun Y, Wang R, Yan J, et al. Clinical Characteristics of COVID-19 Patients with Digestive Symptoms in Hubei, China: A Descriptive, Cross-Sectional, Multicenter Study. *Am J Gastroenterol.* 2020;115(5):766-73.
- Spiezia L, Boscolo A, Poletto F, Cerruti L, Tiberio I, Campello E, et al. COVID-19-Related Severe Hypercoagulability in Patients Admitted to Intensive Care Unit for Acute Respiratory Failure. *Thromb Haemost.* 2020;120(6):998-1000.
- Chan KH, Lim SL, Damati A, Maruboyina SP, Bondili L, Abu Hanoud A, et al. Coronavirus disease 2019 (COVID-19) and ischemic colitis: An under-recognized complication. *Am J Emerg Med.* 2020;38(12):27581-4.
- Tsimperidis AG, Kapsoritakis AN, Linardou IA, Psychos AK, Papageorgiou AA, Vamvakopoulos NC, et al. The role of hypercoagulability in ischemic colitis. *Scand J Gastroenterol.* 2015;50(7):848-55.
- Wang D, Hu B, Hu C, Zhu F, Liu X, Zhang J, et al. Clinical Characteristics of 138 Hospitalized Patients With 2019 Novel Coronavirus-Infected Pneumonia in Wuhan, China. *JAMA.* 2020;323(11):1061-9.
- Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet.* 2020;395(10223):497-506.
- Li W, Moore MJ, Vasilieva N, Sui J, Wong SK, Berne MA, et al. Angiotensin-converting enzyme 2 is a functional receptor for the SARS coronavirus. *Nature.* 2003;426(6965):450-4.
- Hamming I, Timens W, Bulthuis ML, Lely AT, Navis G, van Goor H. Tissue distribution of ACE2 protein, the functional receptor for SARS coronavirus. A first step in understanding SARS pathogenesis. *J Pathol.* 2004;203(2):631-7.
- Zou X, Chen K, Zou J, Han P, Hao J, Han Z. Single-cell RNA-seq data analysis on the receptor ACE2 expression reveals the potential risk of different human organs vulnerable to 2019-nCoV infection. *Front Med.* 2020;14(2):185-92.
- Zhao Y. Single-cell RNA expression profiling of ACE2, the putative receptor of Wuhan 2019-nCov. Preprint pending peer review. 2020.
- Washington C, Carmichael JC. Management of ischemic colitis. *Clin Colon Rectal Surg.* 2012;25(4):228-35.
- Gandhi SK, Hanson MM, Vernava AM, Kaminski DL, Longo WE. Ischemic colitis. *Dis Colon Rectum.* 1996;39(1):88-100.
- Brandt LJ, Feuerstadt P, Longstreth GF, Boley SJ, American College of Gastroenterology. ACG clinical guideline: epidemiology, risk factors, patterns of presentation, diagnosis, and management of colon ischemia (CI). *Am J Gastroenterol.* 2015;110(1):18-44.

Cite this article as: Swami GA, Shinde SK, Chandrashekhar HS, Asawa G. Gangrenous bowel ischemia-a complication of COVID-19: a case report. *Int Surg J* 2021;8:1662-4.