

Successful conservative approach to covid 19 with extensive splanchnic circulation thrombosis

Swanand Redekar¹, Satheesh Rao Ak², Shivanshu Misra^{3*}

¹DNB Gastro Junior consultant, Department of Medical Gastroenterology, Narayana Hospital, Mysore, India

²DM Gastro Head of Department of Medical Gastroenterology, Narayana Hospital, Mysore, India

³Consultant, Department of Bariatric and Minimal access Surgery, Shivani Hospital and IVF, Kanpur, U.P., India

Received: 20-10-2020 / Revised: 25-11-2020 / Accepted: 15-12-2020

Abstract

The novel 2019 coronavirus disease (COVID-19), which is caused by infection with the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), was first reported in Wuhan, China, in December 2019. Since that time, the COVID-19 pandemic has spread rapidly around the world in an exponential fashion and has caused many deaths. Preliminary data have reported an increased risk of venous thromboembolism and acute myocardial infarctions, most likely caused by excessive inflammation, platelet activation, endothelial dysfunction, and stasis. The high mortality and its relationship with thromboembolic diseases in COVID-19 have increasingly attracted attention. D-dimer has been repeatedly reported to be a useful biomarker associated with the severity of disease and is a predictor of adverse outcomes. The high incidence of venous thromboembolism (VTE) and the importance of giving anticoagulant thromboprophylaxis is stated in guidance documents and supported by consecutive autopsy findings noting frequent deep vein thrombosis in 7 of 12 COVID-19 patients (58%) with complicating pulmonary embolism in 4 patients (33%). An increased incidence of arterial thromboses such as stroke and acute coronary syndromes has also been reported in COVID-19. The effectiveness of prophylactic and therapeutic anticoagulant use in this context is controversial. Hereby we are reporting a case of covid 19 with extensive splanchnic circulation thrombosis presented to Narayana hospital, Mysore, managed successfully with conservative approach without any surgical intervention.

Keywords: coronavirus disease (COVID-19), pandemic, thromboprophylaxis, Arterial occlusion, Ischemia, SARS-CoV-2

This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.

Introduction

The novel 2019 coronavirus disease (COVID-19), which is caused by infection with the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), was first reported in Wuhan, China, in December 2019.

Since that time, the COVID-19 pandemic has spread rapidly around the world in an exponential fashion and has caused many deaths [1-3].

Case presentation

Chief complaints : 55 year gentleman presented to emergency room of Narayana hospital, Mysore with history of dry cough with fever since 1 week and diffuse dull continuous abdominal pain worsening after food intake since 2 days associated with 2 episodes of bilious vomiting. There was also history of constipation and mild abdominal distention since 2 days. Patient was known case of Ischemic heart disease, post PTCA status 5 years ago, on antiplatelets.

*Correspondence

Dr. Shivanshu Misra

Consultant, Department of bariatric and minimal access surgery, Shivani hospital and IVF, Kanpur, U.P., India

E-mail: shivanshu_medico@rediffmail.com

Physical examination: Findings at presentation were blood pressure 99/47mm of Hg, pulse 126 beats per minute, temperature 36.8 degree C, RR 15 per minute, and oxygenation 99% on room air. Pulmonary exam revealed basal crepts over lungs. Cardiac exam revealed tachycardia. He was alert and oriented to person, place, and time. Abdomen was soft , mild diffusely tender , with sluggish bowel sounds & mild distention.

Investigations:Initial lab evaluation showed- HB 15gm/dl, TC- 8k cu mm, Platelets-100k/microl , Creatinine -1.1 mg/dl ,CRP- 5 MG/L ,D DIMER- 8

NG /ML, LDH - 1076, CRP- 23 mg/l, INR- 1.89. Arterial blood gas analysis was normal.Liver function tests, Prothrombin time, APTT, Electrolytes were normal.Covid 19 RT PCR and rapid antigen test were positive

Imaging:HRCT thorax showed peripheral subpleural patches of ground glass opacities.CECT abdomen showed- superior mesenteric artery & distal splenic artery thrombosis, jejuna wall thickenings, multiple splenic, bilateral renal and gall bladder wall infarcts.2 DECHO showed anterolateral wall hypokinesia with EF of 30 percente.

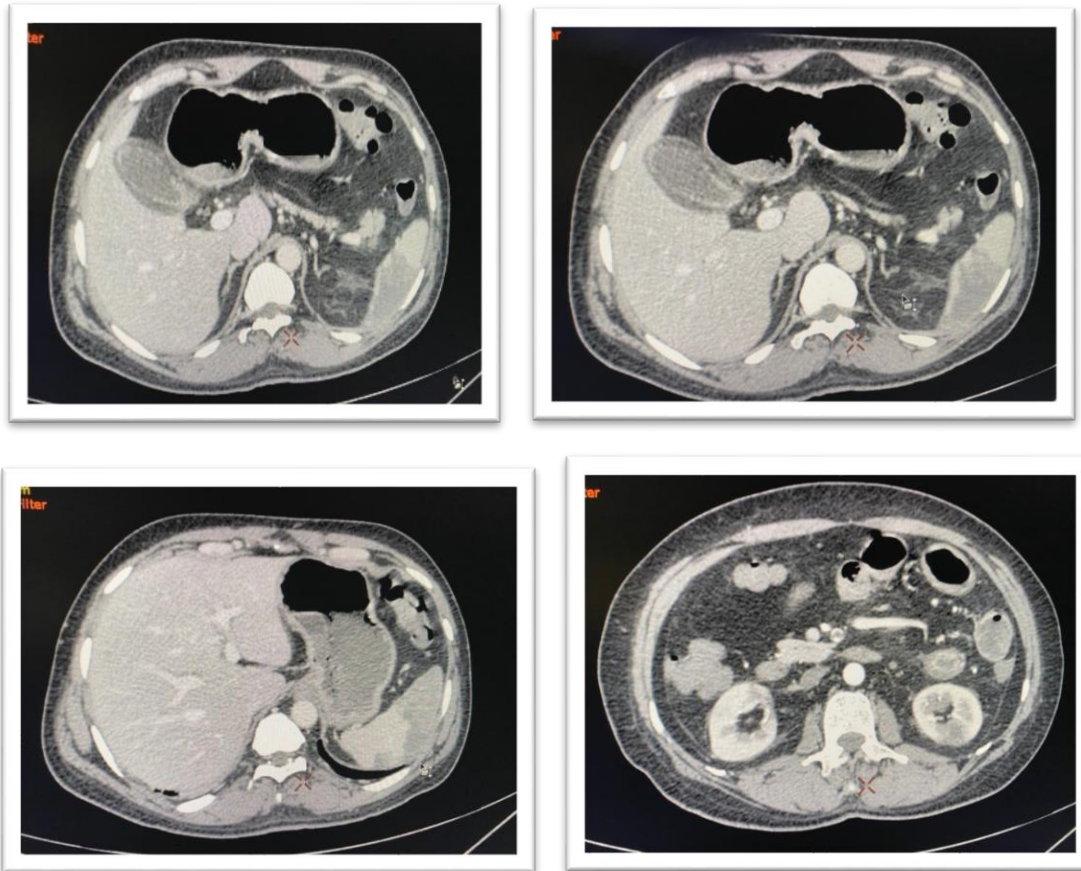


Fig 1:Imaging

Management and course

Patient was treated by team of gastroenterologist, cardiologist , and physician. He received doxycyclin, Ivermectin,IV broad spectrum antibiotics , Remdesivir , metronidazole , prokinetics along with supportive care .Antiplatelets were continued.He was started on unfractionated heparin infusion 1000 units hourly immediately after diagnosis with PT APTT monitoring which was changed after 3 days to LMWH –

Dalteparin (5000 U s.c. BD) along with oral Acenocoumarol 1 mg/day targeting INR between 2 to 3.He was put on liquid diet orally along with limited IVF. Over the span of next 12 days patient improved symptomatically. His fever, cough, abdominal pain, distension disappeared slowly and also oxygen saturation started maintaining above 95 % after some intermittent variations. He had altered bowel habits which were managed symptomatically.

His protein C, S, APLA, homocystein evaluation was normal. Finally he was started with solid food which he tolerated well and discharged with oral Acenocoumarol 1 mg/day and antiplatelets as before.

Discussion

The high incidence of venous thromboembolism (VTE) and the importance of giving anticoagulant thromboprophylaxis is stated in guidance documents. An increased incidence of arterial thromboses such as stroke and acute coronary syndromes has also been reported in COVID-19. Disease course tends to begin with fever, dry cough, tiredness, myalgia and difficulty in breathing. However, many other symptoms have been identified including headache, chest pain, loss of taste and smell sensation, and various GI manifestations. An unexpected course of this disease includes thrombosis-related complications, which have been identified especially in intensive care unit (ICU) patients which are an important cause of death in patients with COVID-19. [4,5] Levolger S et al studied arterial thrombotic complications in COVID-19 patients. Since complications of COVID-19, including coagulopathy, it may contribute to the development of arterial ischemic events. Elevated D-dimer levels in the setting of COVID-19 have been described in many cohort studies. Moreover, COVID-19 causes elevated cytokine levels, including but not limited to tumor necrosis factor α , interleukin (IL) 1 β , IL-6, and interferon γ . They reported four cases of an acute arterial occlusion in COVID-19 patients and literature review on the occurrence of arterial thrombosis in patients with COVID-19. Their findings demonstrate that physicians should be vigilant for signs of thrombotic complications in both hospitalized and new COVID-19 patients. [6] Iba T, Levy JH et al studied the unique characteristics of COVID-19 coagulopathy. The characteristics of COVID-19-associated coagulopathy (CAC) are distinct from those seen with bacterial sepsis-induced coagulopathy (SIC) and disseminated intravascular coagulation (DIC), with CAC usually showing increased D-dimer and fibrinogen levels but initially minimal abnormalities in prothrombin time and platelet count. Venous thromboembolism and arterial thrombosis are more frequent in CAC compared to SIC/DIC. Clinical and laboratory features of CAC overlap somewhat with a hemophagocytic syndrome, antiphospholipid syndrome, and thrombotic microangiopathy. The pathophysiology of COVID-19-associated coagulopathy (CAC) is complex and likely to differ in important ways from the standard mechanisms of thrombosis reported in critically ill

patients. This review compared various well-characterized types of coagulopathy with CAC [7] Thrombosis in severe COVID-19 may be due to inflammation; endothelial injury by viral affinity for ACE2 receptors in respiratory tract, heart, GI tract, and distal vasculature; activation of tissue factor pathway; excessive thrombin generation; increased fibrin formation; and polymerization with fibrinolysis shutdown and a hypoxia inducible transcription factor-dependent signaling pathway. The typical finding in COVID-19 coagulopathy is raised prothrombin time, fibrinogen, and D-dimers with a modest decrease in platelet count with near normal activated partial thromboplastin time [8-10].

A general approach has been recommended for all in-hospital COVID-19 patients presenting with coagulopathy. These interventions should include pharmacological thromboprophylaxis, preferably with intravenous unfractionated heparin or low molecular weight heparin (LMWH), unless contraindicated [8].

In some of recent studies with covid 19 infection and SMA thrombosis, one patient with multiple comorbidities, managed conservatively, did not survive.

In the 4 operated patients, only two (28-year-old woman, 52-year-old man) survived while one (56-year-old man) was still on ventilatory support. Surgical procedures performed were jejunal resection with laparostomy followed by double jejunostomy and abdominal wall closure 2 days later (28-year-old female), bowel resection and side-to-side stapled anastomosis (52-year-old man) [11,12] Del Hoyo J et al presented a fatal case of extensive splanchnic vein thrombosis in a patient with Covid-19. CT scan showed worsening of liver, mesenteric and splenic ischemia and newly developed pulmonary opacities in left inferior and middle lobes. Given the extent of the ischemia, the patient was not deemed a candidate for either surgery or radiological interventions. She died three days after onset of symptoms. This case highlighted the fatal complication of hepatic vein thrombosis in the setting of SARS-CoV2 infection. A 31% incidence of thrombotic complications in ICU patients with COVID-19 has been reported, despite thromboprophylaxis. Severe inflammatory state, in conjunction with hypercoagulability and endothelial dysfunction, may explain this high incidence. Considering the negative results of other prothrombotic factors, COVID-19 could explain this extensive splanchnic and hepatic vein thrombosis. This case suggests that COVID-19 should be suspected in patients presenting with this syndrome, mainly during the pandemic context, in order to detect the infection

promptly and to treat its thrombotic complications. Singh B et al also reported similar splanchnic vein thrombosis in COVID-19 in their review of literature. [13,14]Our case is unique because in spite extensive splanchnic arterial thrombosis and multiple intra abdominal organ infarcts & bowel ischemia, patient was managed successfully with UFH and LMWH and supportive care without need for surgical intervention unlike other reported cases.

Conclusion

Acute thrombosis in the setting of COVID-19 can be a devastating complication with a drastic increase in morbidity and mortality. CAC resembles SIC/DIC, HPS/HLH, APS, and TTP/HUS in some aspects but has unique features that may be defined as a new category of coagulopathy. Since multiple factors are involved in the development of CAC, further understanding of the underlying pathophysiology is necessary for appropriate management. We hope to raise awareness in the importance of recognizing arterial thrombi as a result of COVID-19 in patients with no other obvious explanation, as a prompt diagnosis may influence potential treatment options and lead to better outcomes.

Acknowledgement

The authors like to thank the hospital medical and pathology department as well as the patient for all their help for preparing this article.

References

1. Coronavirus disease (COVID-19) Pandemic. Geneva: World Health Organization, April 13, 2020. (<http://www.who.int/emergencies/diseases/novel-coronavirus-2019>)
2. Klok FA, Kruip MJHA, van der Meer NJM, Arbous MS, Gommers DAMPJ, Kant KM, et al. Incidence of thrombotic complications in critically ill ICU patients with COVID-19. *Thromb Res* 2020; 191: 145-7.
3. Zhou F, Yu T, Du R, Fan G, Liu Y, Liu Z, et al. Clinical course and risk factors for mortality of adult in patients with COVID-19 in Wuhan, China: a retrospective cohort study. *Lancet* 2020; 395(10229):1054-62.
4. Guan WJ, Ni ZY, Hu Y. Clinical characteristics of coronavirus disease 2019 in China *N Engl J Med* 2020; 382(18): 1708-20.
5. Wang T, Chen R, Liu C, Liang W, Guan W, Tang R, et al. Attention should be paid to venous thromboembolism prophylaxis in the management of COVID-19. *Lancet Haematol* 2020;7(5):e362-e363.
6. Levolger S, Bokkers RP, Wille J, Kropman RH, de Vries JP. Arterial thrombotic complications in COVID-19 patients. *Journal of Vascular Surgery Cases and Innovative Techniques*. 2020 ;6(3):454-9.
7. Iba T, Levy JH, Connors JM, Warkentin TE, Thachil J, Levi M. The unique characteristics of COVID-19 coagulopathy. *Critical Care*. 2020; 24(1):1-8
8. Cao W, Li T COVID-19: towards understanding of pathogenesis. *Cell Res*.2020; 28:1-3.
9. Gupta N, Zhao YY, Evans CE. The stimulation of thrombosis by hypoxia. *Thromb Res*.2019; 181:77-8.
10. Beccara L, Pacioni C, Ponton S, Francavilla S, Cuzzoli A. Arterial mesenteric thrombosis as a complication of SARS-CoV-2 infection. *Eur J Case Rep Intern Med* .2020;7(5):98.
11. De Barry O, Mekki A, Diffre C, Seror M, Hajjam ME, Carlier RY. Arterial and venous abdominal thrombosis in a 79-year-old woman with COVID-19 pneumonia. *Radiol Case Rep* 2020; 15:1054-1057.
12. Ignat M, Philouze G, Aussenac-Belle L, Faucher V, Collange O, Mutter D, Pessaux P Small bowel ischemia and SARSCoV- 2 infection: an under diagnosed distinct clinical entity. *Surg J*.2020; 168:14-16.
13. Del Hoyo J, López-Muñoz P, Fernández-de la Varga M, Garrido-Marín A, Valero-Pérez E, Prieto M, Aguilera V. Hepatobiliary and Pancreatic: A fatal case of extensive splanchnic vein thrombosis in a patient with Covid-19. *Journal of Gastroenterology and Hepatology*. 2020;3(4):65.
14. Singh B, Kaur P, Maroules M. Splanchnic vein thrombosis in COVID-19: A Review of Literature. *Digestive and Liver Disease*. 2020;2(3):87.

Conflict of Interest: Nil

Source of support: Nil