

# PORTOMESENERIC THROMBOSIS WITH BOWEL NECROSIS IN COVID-19 PATIENT: CASE REPORT

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## ABSTRACT

**Background:** COVID-19 related hypercoagulability is by now a well-established complication of this viral disease. The exact pathophysiological mechanisms of this process are not entirely clear but endothelial cell damage is thought to be a precursor to the pathological activation of the coagulation cascade. Although pulmonary embolism is the commonest thrombotic event, thromboemboli can form anywhere in the body and intraabdominal vessels are no exception. Descriptions of cases with bowel necrosis due to portomesenteric thrombosis have been increasingly emerging.

**Case study:** We present the case of a 60-year-old male COVID-19 positive patient with a radiologically confirmed portal vein and superior mesenteric vein thrombosis with small bowel necrosis treated surgically at our Institution. The thrombotic event was contributed to the viral infection and in conjunction with surgical treatment anticoagulant therapy was introduced.

**Conclusion:** Although often self limiting, gastrointestinal complaints in covid patients could also prove to be a surgical emergency. High risk of thromboembolic events in COVID-19 patients has to be taken into consideration while examining and treating the patient.

**Keywords:** COVID-19, thromboembolism, portal vein thrombosis, bowel necrosis

## INTRODUCTION

Since the start of the COVID-19 pandemic many possible complications of the disease have been described, some of them (perhaps unexpectedly) requiring even surgical intervention. The covid related hypercoagulability has emerged as a very real danger and precursor of unfavourable and fatal outcomes. One review of literature found that approximately 20% of covid patients were affected by some form of venous thromboembolism. The commonest form of thrombotic event was of course pulmonary embolism [1]. The exact pathophysiological mechanisms are up to the present time not entirely clear but endothelial cell damage (often attributed to coronaviruses in general) seems to be the primary event leading to the activation

of the coagulation cascade [2-6].

As a result, thromboprophylaxis with anticoagulant therapy became a mainstay of COVID-19 treatment and one of the markers most often used to determine severity of thrombotic-event-risk became D dimers - products of fibrin degradation demonstrating that the coagulation process has begun [6-8].

Outside the respiratory system thromboembolisms related to COVID-19 are possible in all macro- and microvascular structures in the body and acute cardiac and cerebral events as well as deep vein thrombosis in the extremities and gastrointestinal complications have been reported. Descriptions of thrombotic events in intraabdominal vessels similar to the one we are presenting have been increasingly emerging [9-17].

## CASE REPORT

A surgical consult for a 60-year-old male patient hospitalised on the covid ward was requested. The patient's chief complaint was abdominal pain, dull in character and without propagation which started one day prior to hospitalisation. The patient reported one passing of a large amount of loose stool without abnormal changes at the beginning of symptoms, he was not febrile, denied nausea and emesis and had no dysuric problems. His medical history included total gastrectomy with esophagojejunal anastomosis due to cancer and right colectomy performed as treatment of cecal malignancy. Inflammatory blood markers were partially elevated (leukocytes  $8.0 \times 10^9/L$ , CRP 122, procalcitonin 0,15). D-dimer level was  $4745 \mu g/L$ . On examination the abdomen was distended, painful to palpation with signs of peritoneal irritation. Radiologic pulmonary findings were consistent with a milder covid pneumonia. Computed tomography of the abdomen was ordered and showed portal vein and superior mesenteric vein thrombosis (figure 1) with oedema of small bowel loops and a large collection of intraabdominal free fluid. Small bowel perforation was suspected, and emergent laparotomy was performed. Necrosis of a 10 cm-long jejunal segment was found and consequently resected and a termino-terminal anastomosis was formed. Extensive intraabdominal lavage was performed and antibiotics continued. Considering the extensive thrombotic intraabdominal

events, medical history of two malignant intraabdominal diseases and the covid positive status, low molecular weight heparin in the form of dalteparin was continued for 3 months postoperatively. The postoperative course was otherwise uneventful. The patient was discharged on the 10th postoperative day.

## DISCUSSION

Although COVID-19 is primarily a respiratory disease, possibility of complications in other organ systems should not be disregarded. Bearing in mind that especially critically ill covid patients have high thrombotic tendencies, it is important to undergo a more cautious search for causes of specific gastrointestinal symptoms. Often self limiting, gastrointestinal complaints in covid patients could also prove to be a surgical emergency as is shown in the patient we presented. The exact mechanism of COVID-19 hypercoagulability is not fully understood but thrombotic events in viral diseases are a well-known complication [3]. As it has done in all aspects of medical practices, the COVID-19 pandemic has taken its toll on surgical patient care. Unfavourable effects on oncological patients pre- and postoperatively have been well established. Whilst it is perhaps uncommon, persons infected with COVID-19 can stand in need of surgical intervention where a complication of the viral infection is the direct cause of the surgical emergency.

## CONCLUSION

The purpose of this case report is to gather new and contribute to the existing information relating to possible COVID-19 complications. A gastrointestinal complaint in a covid patient can reveal itself as a surgical emergency. Being mindful of this helps us mitigate negative, even fatal outcomes.

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## CONFLICT OF INTEREST:

The authors declare that there is no conflict of interest.

The patient gave his informed consent prior to his inclusion in case report.

**FIGURES**



**Figure 1.** Abdominal computed tomography scan showing portomesenteric thrombosis