Atypical COVID-19 presentation in a patient undergoing staged thoracoabdominal aortic aneurysm repair

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ABSTRACT
This report outlines a case of atypical presentation of COVID-19 viral infection. A two-stage repair of a Crawford type III thoracoabdominal aortic aneurysm was planned for a 65-year-old man. The first stage, thoracic endovascular aortic repair in the descending aorta, was uneventful, and the patient was discharged on postoperative day 2. He was readmitted 10 days later, presenting with diarrhea, lower limb pain, and weakness after walking 25 meters. The patient displayed no fever or upper respiratory tract signs or symptoms. Findings on computed tomography and magnetic resonance of the spinal cord were normal. The patient tested positive for COVID-19 virus and later during hospitalization developed more typical fever and respiratory symptoms that were managed medically. (J Vasc Surg Cases and Innovative Techniques 2020;6:337-9.)

Keywords: COVID-19; Thoracoabdominal

The COVID-19 pandemic is causing a major strain on hospital resources around the globe. The typical presenting symptoms in the majority of patients range from common upper respiratory tract signs, such as cough, sore throat, and fever, to more severe shortness of breath and severe respiratory dysfunction. In some patients, this might lead to pneumonia, acute respiratory distress syndrome, and ventilator dependency.

In addition, milder symptoms not commonly associated with upper respiratory tract infection can be the only presenting symptoms. These symptoms include loss of smell and taste, stomach aches, body aches, and nausea.

We present a case of COVID-19 infection with atypical debut in a patient having undergone staged endovascular thoracoabdominal repair 2 weeks previously. The patient consented to publication of this case and images.

CASE REPORT
A 65-year-old man was referred to the vascular department for an abdominal aortic aneurysm measuring 6 cm on ultrasound. The patient had an extensive medical history of hypertension, coronary artery disease with previous myocardial infarction and stenting, previous stroke without residual deficit, stable Crohn disease (managed by azathioprine treatment), hypothyroidism, and gout. He also suffered from chronic lower back and hip pain occurring after walking 500 meters. He had palpable pulses in the femoral and dorsalis pedis arteries bilaterally with an ankle-brachial index (ABI) of 0.86 on the right and 0.82 on the left. Ten years previously, he had severe hypertension and left renal artery stenosis, which was treated with a renal stent. Creatinine concentration at admission was normal.

At initial referral, computed tomography angiography confirmed a 6.3- x 7.3-cm type III Crawford thoracoabdominal aortic aneurysm (TAAA) extending from the mid descending thoracic aorta to the aortic-iliac bifurcation (Fig 1). The descending aorta was ectatic and “shaggy” with large amounts of irregular intimal thrombus (Fig 2). The left kidney was atrophic, and renal scintigraphy confirmed that the left kidney contributed only 22% of overall renal function.

Because of the patient's multiple comorbidities, he was considered unsuitable for open TAAA repair. He was found to be anatomically suitable for an endovascular repair with a four-vessel fenestrated endovascular graft. There was some question about the caliber and suitability of the iliac access vessels, and there was also a high risk for distal thrombus embolization from the shaggy descending thoracic aorta. To minimize the risk of spinal cord ischemia (SCI) and to evaluate and optimize the iliac access, the procedure was planned for two stages with a 4- to 6-week interval for recovery and development of collateral pathways to the spinal cord.

The patient underwent stage one, percutaneous thoracic endovascular aortic repair with placement of a thoracic stent graft from the shaggy descending thoracic aorta to the aortic-iliac bifurcation. To minimize the risk of spinal cord ischemia (SCI) and to evaluate and optimize the iliac access, the procedure was planned for two stages with a 4- to 6-week interval for recovery and development of collateral pathways to the spinal cord.

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Ten days after discharge, the patient returned emergently to the outpatient clinic with complaints of leg pain on exertion bilaterally. There was no pain at rest. He also described vertigo on postural changes and that his legs felt weak and “gave way” after 25 meters of walking. The symptoms had started 2 to 3 days after discharge, and for the last 2 days he also described diarrhea twice daily; he had no fevers, chills, or nausea. On physical examination, the patient was somewhat ashy in appearance. The abdomen was soft and nontender. Foot pulses and ABIs were unchanged, and there were no signs of lower limb weakness or sensory loss.

The patient was admitted with cultures of urine and feces. Laboratory test results were normal except for a C-reactive protein (CRP) level of 53 mg/L. There was no fever on admission.

Because of a low-level suspicion of SCI (due to loss of control of his legs) or thrombus embolism to the internal iliac arteries, causing buttok claudication, the patient underwent computed tomography angiography. The scan was unremarkable, showing a well-positioned endograft and patent visceral and iliac arteries. A neurology consultation found no clinical indication of SCI.

A magnetic resonance scan of the medulla was performed to exclude ischemia, and findings were normal.

The patient was isolated on admission because of his diarrhea. On day 2, he continued to have pain on exertion, and temperature was 38.1°C. As no explanation was found for his complaints and considering the current coronavirus pandemic, a COVID-19 test was performed. This was positive. The patient was subsequently moved to the infectious disease department for further care. Here he developed increasing respiratory symptoms and elevation of CRP level to 154 mg/L. He was treated with oxygen supplementation and respiratory therapy without need for further ventilatory support. The patient was discharged to home after 9 days in good clinical condition.

The patient’s contacts were traced and questioned for symptoms. However, testing was not performed on asymptomatic individuals at that time. As the patient was isolated on admission because of gastrointestinal disease, the patient was isolated before he was tested for coronavirus, and staff used gown, gloves, and mask when in contact with him.

### DISCUSSION

The typical and most common presentation of COVID-19 is that of upper respiratory tract infection with fever, cough, and respiratory distress. Symptoms vary from very mild to very severe, and the incubation period is 2 to 14 days, with increasing symptoms over time. However, as in this case, COVID-19 can also be manifested in an atypical fashion, clouding diagnosis, particularly in the setting of concurrent diseases or treatments.

Endovascular TAAA repair is a procedure that carries a significant risk of SCI because of blockage of critical collateral supply to the spinal cord during the procedure. The more anatomically extensive the repair is, the higher the risk. Patients who have shaggy aorta (aortic intraluminal wall thrombus) seem to be at even higher risk because of atheroembolic embolization periprocedurally. In addition, complications leading to drop in blood pressure in the perioperative period are also
COVID-19 was low in Denmark at the time, and the prevalence in the hospital was equally low. Staff were required to stay home if they displayed minimal signs of upper respiratory tract infection. This case has not changed the staging policy or staging duration at the department. This is due to the fact that overall, the threshold for aneurysm repair at this time has been raised to 7 cm. In addition, at present, all patients admitted to the hospital for overnight stay are tested for coronavirus. Given the coagulopathy associated with COVID-19, inflammatory markers including CRP level will be rechecked before proceeding with stage two of the repair.

**CONCLUSIONS**

In the current setting of a global coronavirus pandemic, patients presenting with atypical signs and symptoms and admitted to a hospital should undergo liberal testing for COVID-19 to prevent disease transmission to patients and staff. Until results are known, isolation and protective measures should be taken.

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