CASE REPORT

Case Report: Acute lower limb ischemia in a recovered COVID-19 patient [version 1; peer review: peer review discontinued]

Rawand Abdulrahman Essa , Sirwan Khalid Ahmed

Department of Adult Nursing, College of Nursing, University of Raparin, Ranya, 46012, Iraq

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Abstract

Arterial thrombosis is rarely reported in relation to COVID-19 patients. It occurs mostly in critical patients especially those with acute respiratory distress syndrome and patients in intensive care units. The cause of arterial thrombosis is mostly related to a cytokine storm.

However, limited studies are available regarding arterial thrombosis in COVID-19 disease. Here, we present a case of lower limb ischemia in a moderately symptomatic COVID-19 patient in Iraq within three days after recovery from COVID-19. The patient presented with severe right lower limb pain, forefoot, cyanosed toes, and lower limb ischemia was diagnosed by physical examination and ultrasound. The patient was successfully treated by anticoagulant drugs. Our case alerts healthcare workers that they need to be more cautious of life threatening COVID-19 complications in order to begin early and effective preventive measures.

Keywords

Lower limb ischemia, COVID-19, Arterial thrombosis

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Corresponding author: Rawand Abdulrahman Essa (rawandessa86@gmail.com)

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Introduction

Severe acute respiratory syndrome (SARS-CoV-2), which causes coronavirus disease 2019 (COVID-19), is an enveloped RNA β -coronavirus, and is directly responsible for the current worldwide pandemic, which has resulted in a growing number of cases and mortality globally^{1,2}. The infection was first considered to cause solely respiratory dysfunction; however, various clinical presentations have shown that COVID-19 is a systemic disease, not restricted to the lungs^{3,4}. Between 20–55% of COVID-19 infected patients develop abnormal coagulation, including changes in activated prothrombin time (PT), partial thromboplastin time (aPTT), and increased D-dimer, which correlates with infection severity and is linked to higher mortality^{5,6}. COVID-19 coagulopathy patients are prone to venous and arterial thromboembolic events as opposed to haemorrhage⁷.

As far as we know, there is currently no Iraqi research showing that thrombosis ischemia from the lower limb is a rare clinical complication of COVID-19. Here we report an unusual presentation of an 83-year old male patient who had recovered from COVID-19, who developed right lower limb ischemia after improving from clinical features of COVID-19, i.e. fever, myalgia, and non-productive cough.

Case presentation

An 83-year-old male patient with no relevant past medical history, was admitted to the emergency room with moderate respiratory symptoms, malaise, myalgia and fever (38°C). The patient's mobility was good. A CT scan showed multiple honeycomb appearance and bilateral parenchymal infiltrations in the lungs (Figure 1). A diagnosis of COVID-19 was made. The patient was sent home on supportive care drugs, including vitamin D3 5000 IU strength for 7 days, zinc 11 mg for 10 days duration and vitamin C (10 g, given over a period of 8–10 h for 10 days duration), dexamethasone 4mg injection for 3 days, meropenem 1g vial for 2 days and glucosamine 1000 mg pill for 5 days duration.

A total of 19 days after diagnosis of COVID-19, the patient was readmitted to the emergency unit complaining of severe right lower limb pain of two days duration. The patient was not displaying any COVID-19 symptoms; fever, myalgia, and cough and RT-PCR test was negative. At physical examination, the patient presented with discomfort; the right forefoot was cyanosed and forefoot was cold, with decreased movement of toes, and there was very weak pulsation at the posterior tibial artery and dorsalis pedis site. The popliteal artery was palpable and there was little sensation in the right lower limb (Figure 2).

Abdominal, neurological, locomotor systems' examinations were normal. Vital signs on presentation were as follows: temperature, 37.3°C (normal range, 36.1–37.5°C), blood pressure was 136/83 mmHg (normal range, 120/80mmHg), heart rate was 96 beat per minute (normal range, 60–100 bpm) and oxygen saturation was 95% on room air (normally SPO2 >94%). The patient underwent a Doppler ultrasound, electrocardiogram (ECG), ultrasound and blood test for the purpose of arterial examination. The blood test revealed the following results: total leucocyte count, 7900 (normal range, 4000–10000/ul); haemoglobin, 12.9 g/dL (12–15.5 g/dL); lymphocytes, 2200/ul (normal range, 800–5000/ul); blood urea, 47mg/dl (normal range, 15–45 mg/dl); platelets, 245,000/ul (normal range, 165000–415000/ul); serum creatinine, 1.1 mg/dl (normal range 0.7–1.4 mg/dl). Rose Bengal and hepatitis B and C viruses were negative. ALT alanine aminotransferase was (U/L) of 25 IU/L (normal range <50 IU/L), ferritin level was 1122.61 ng/ml (normal range 30 – 400 ng/ml). Other investigations such as D-dimer, aPTT, PT, lactate dehydrogenase, C-reactive protein, lactic acid, cardiac troponin I and international normalised ratio (INR) were not available. The ultrasound showed no abnormalities in the abdominal internal organs, normal sized liver of homogenous texture with no focal lesion, normal size of spleen and pancreas with no space-occupying lesion (SOL), normal sized right and left kidneys, echogenicity with regular outline, no stone, normal urinary bladder wall

Figure 1. A CT scan of the patient's chest showing multiple honeycomb appearance and bilateral parenchymal infiltrations.

Figure 2. The right forefoot of the patient. (A and B) Before treatment; (C and D) three days after treatment.

thickness with no stone and SOL and free from ascites, no plural effusion, no obvious bowel lesion, and no lymphadenopathy. The Doppler ultrasound showed the following: normal flow velocity and spectrum in the common femoral arteries and superficial femoral arteries; popliteal proximal 2/3 of right and left leg arteries with long segment distal 1/3 right leg artery; occlusion in few collateral vessels at the foot; and no evidence of recent or old deep venous thrombosis. The patient had minimal thigh and leg varicose veins; no thrombophlebitis, patent great saphenous veins, inferior vena cava and iliac veins. ECG was normal (Figure 3).

Acute lower limb ischemia was diagnosed and the patient was treated medically: aspirin tablet 100 mg once daily PO; Cilostazol tab 100 mg twice daily PO; Pentoxifylline tab 400 mg twice daily PO without any adverse effects. During follow-up of the patient for two months, the tip of toes was gangrenous and relieved totally from ischemia and pain. The patient remained on acetyl salicylic acid tablet 100 mg once daily PO, and Cilostazole tablet 100 mg once daily PO.

Discussion

The hypercoagulable status of critically diseased patients with COVID-19 has been shown during this pandemic. Furthermore, published epidemiological data have shown that thromboembolic events, such as unexpected ischemic limbs and veins, have arisen in these patients^{8,9}. Notable increases of fibrinogens, INR and D-dimers with some grade of aPTT prolongation and PT in patients with COVID-19 have been identified frequently and correlated with worse haemostatic disturbances¹⁰. In our case, D-dimer, INR, PT, and aPTT were not available. The prevalence of thrombosis is not clearly

Figure 3. Echocardiogram of the patient before treatment, which was normal.

known in COVID-19 patients because most studies depend on hospitalized patients with higher risks of co-morbidity than those with asymptomatic or mild cases¹¹. In our patient, like others, acute limb ischemia was diagnosed by physical examination, medical history and Doppler ultrasound. Our case shows that acute right lower limb ischemia may develop as a complication of COVID-19, as the patient had no past medical history and only showed these symptoms after improved clinical features of COVID-19.

Our case differs from three case reports. The first, by Fahad *et al.*, showed that a 49-year-old female patient presented with acute lower limb ischemia before a fever and other respiratory symptoms developed with no comorbidity¹². The second case report identified a 71-year-old Spanish man with history of diabetes mellitus who presented with dry cough, dyspnea, and fever accompanied by rapid onset of severe right upper arm pain, which was detected as intraluminal thrombosis¹³. The third case reported a 43-year old male with past medical history of diabetes mellitus and hypertension, who presented with acute lower limb ischemia after development of dyspnea and fever¹¹. Our case of an 83-year old male with no past medical history presenting with acute lower ischemia after two weeks of recovery from COVID-19 viral pneumonia.

Clinical findings in patients who have died from COVID-19, have shown that existence of systemic thrombotic microangiopathy affects primarily elderly men with cardiovascular comorbidities and obesity¹⁴. However, acute lower ischemia has been reported in younger patients without comorbidities¹⁵.

Therefore, appropriate prevention strategies and therapeutic measures remain a challenge because the exact mechanism is not fully understood and high-quality studies are lacking¹⁶. Our case shows that acute lower ischemia can happen after patients have recovered from COVID-19. It is critical to monitor recovered older patients for thromboembolic events. Further evidence is required to assess the prevalence of thromboembolic events in those who have recovered from COVID-19.

Conclusion

In conclusion, we report a recovered COVID-19 patient who developed acute right lower limb ischemia. Our case shows that healthcare workers must be mindful of life-threatening symptoms linked to recovered COVID-19 patients in order to begin effective and safe intervention as soon as possible.

Consent

Written informed consent for the publication of the article and any associated images was obtained from the patient.

Data availability

All data underlying the results are available as part of the article and no additional source data are required.

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