

Original Article

COVID-19 associated with both pulmonary embolism and lower limb ischemia

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ABSTRACT

An obese 47-year-old female with no previous medical record was admitted to the hospital due to a feeling of weakness started 10 days ago, pain and change of color in the right lower limb observed 2 days ago. A molecular test for SARS-CoV-2 was found positive. Axial CT image and CT pulmonary angiography were performed indicating both COVID-19 and pulmonary embolism. What is more, lower extremity CT angiography was obtained revealing ischemia of the right lower limb.

A few cases of concurrent presence of thrombosis in two different vascular sites in the same COVID-19 individual have been reported so far. Clinicians should consider COVID-19 associated with both these rare complications within the same patient. Imaging is a useful tool for the early diagnosis of them.

Key words: COVID-19; pulmonary embolism; arterial thrombosis; limb ischemia

INTRODUCTION:

Coronavirus disease 2019 (COVID-19) is an infectious disease affecting mainly the human respiratory system. [1] However, it can also present atypical signs indicating hypercoagulability such as venous thromboembolic events and arterial thrombosis [1-5] few cases have reported thrombosis observed simultaneously in two different vascular territories within the same patient. [6-

9] we present the emergence of both pulmonary embolism and right limb ischemia in a COVID-19 patient.

2. PRESENTATION OF THE CASE

An obese 47-year-old female with no medical record was admitted to the hospital due to a feeling of weakness started 10 days ago. She also reported pain and change of color in the right lower limb observed on day 8 of symptoms onset.

During clinical examination shortness of breath, tachypnea and 96% peripheral oxygen saturation were found. The right lower limb was colored, cold and swollen, whereas pulses were palpated at the femoral and popliteal arteries but were absent in more distal sites, regarding the posterior tibial and dorsalis pedis arteries of the foot.

A chest radiograph revealed intrapulmonary opacities in the right upper lobe. Axial computed tomography (CT)

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image was then obtained showing bilateral rounded ground glass opacities consistent with COVID-19 pneumonia (Figure 1A) while CT pulmonary angiography revealed filling defects located in both right and left pulmonary arteries (Figure 1B). A molecular test for SARS-CoV-2 was performed confirming the diagnosis of COVID-19. Moreover, lower extremity CT angiography demonstrated filling defects of the lower right popliteal artery and occlusion of the right sural arteries (Figure 2). The laboratory exams reported significant d-dimer elevation (27.75 $\mu\text{g/ml}$).

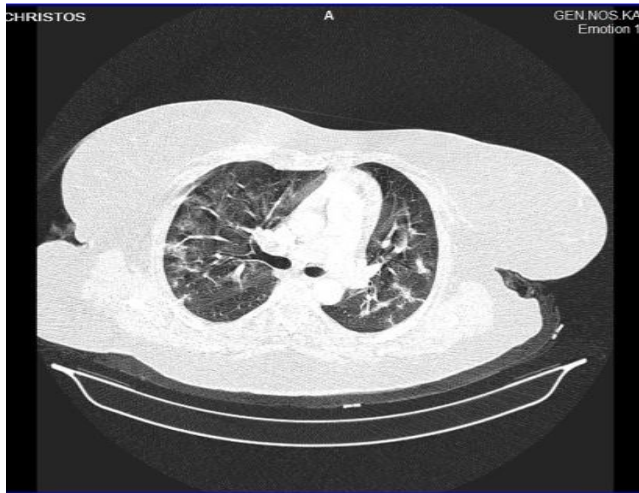


Fig 1. Axial CT image (A) and CT pulmonary angiography (B) in a 47-year-old female patient with a positive molecular test for COVID-19. She complained of weakness started 10 days ago. The image A showed typical appearance of COVID-19 with bilateral and extensive peripheral ground glass opacities while the image B revealed pulmonary embolism involving the right main

pulmonary artery extending into its lobar branches and the segmental branches of the left pulmonary artery as well.

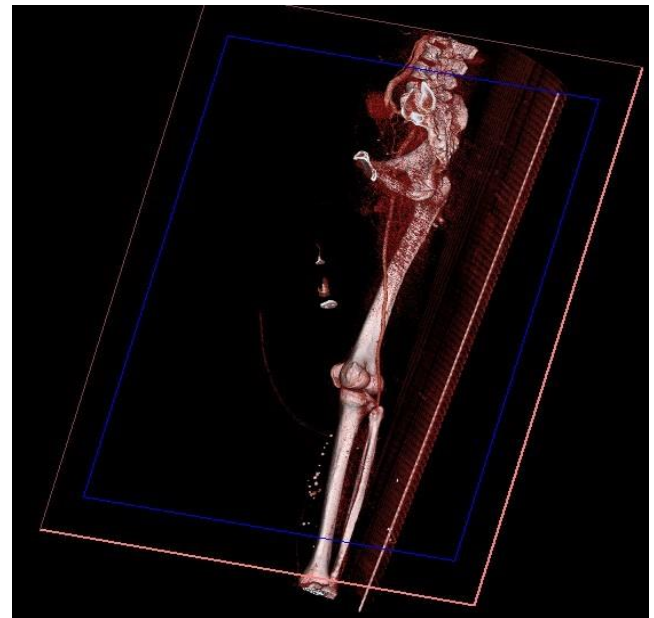


Fig 2. Lower extremity CT angiography in a 47-year-old female patient with a positive molecular test for COVID-19. She complained of pain and color change in the right lower limb 2 days ago. The exam demonstrated filling defects of the lower right popliteal artery and occlusion of the right sural arteries.

The diagnosis of both pulmonary embolism and right foot ischemia was made and fondaparinux, 10 mg once daily, along with ampicillin-sulbactam, 3 gr three times per day, were administered. The vascular surgery suggested amputation of the extremity following the successful treatment of pulmonary embolism. The patient remained stable for seven days but suddenly passed away on day 8 of hospitalization.

3. DISCUSSION

The frequency of thrombotic complications in COVID-19 patients is about 31%, despite systemic thromboprophylaxis, with 27% venous and 4% arterial thrombotic events. [1] Limited literature is available regarding arterial thrombosis, especially acute limb ischemia associated with COVID-19. [2-5] These complications are considered emergency conditions that can result in severe disability and mortality. The underlying mechanisms are not yet completely understood. It seems that the direct infection of the vascular endothelium from the virus and the increased level of inflammatory mediators including cytokines lead to hypercoagulable state. [1, 2]

A few cases of concurrent presence of thrombosis in two different vascular sites in the same COVID-19 individual have been reported so far. In particular, there are only five such cases which claim that thrombosis affect different sites and types of vasculature within the same COVID-19 patient. [6-9]

4. CONCLUSION

Lower limb acute ischaemia comprises a rare complication of COVID-19. The concurrent presence of thrombosis in both arterial and venous territories is also scarce with significant impact on patient's outcome. High clinical suspicion of these complications is required whereas imaging should have a pivotal role for the early diagnosis of them.

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6. Declarations of interest

None

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