



41-year-old Man With Pulmonary Embolism 5 Months After Covid19

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Abstract

Background: Hypercoagulation is one of the striking features of COVID-19. Patients hospitalized with COVID-19 are at high risk for venous thromboembolism. However, it is unknown if the risk for venous thromboembolism persists after discharge.

Case Summary: We report a case with pulmonary embolism 5 months after COVID-19. No risk factors for venous thrombosis have been identified.

Conclusion: In COVID-19 related hospitalization, large studies are needed to identify the risk of venous thromboembolism after discharge.

Introduction

Coronavirus disease 2019 (COVID-19) is continuing its spread with more than 30 million confirmed cases around the globe. To date, the long-term sequelae of COVID-19 is unknown as we are still in the first months of the pandemic. Our experience with other coronaviruses suggests the potential for ongoing organ damage [1] and this might be applicable to COVID-19. With this huge number of infected patients, the long-term impact of COVID-19 will cause a significant burden on health care system. Hypercoagulation is one of the remarkable features of COVID-19. Patients who are hospitalized with COVID-19 are at increased risk for venous thromboembolism. Incidence of venous thromboembolism in patients with COVID-19 is 20 to 40 percent in the intensive care unit (ICU) [2-4] and 3 to 8 percent in non-ICU [5,6] even when prophylactic anticoagulation is used. However, it is unknown if risk for venous thromboembolism continues after discharge. We report a case without risk factors for venous thromboembolism, developed pulmonary embolism 5 months after COVID-19. This case raises concern about the possibility of prolonged risk for venous thromboembolism in COVID-19.

Case Report

A 41-year-old male was admitted to the hospital because of chest pain. It started 2 days earlier and continued to worsen until the time of presentation. The pain is left-sided and nonradiating. He described the pain as sharp and stabbing. He noted that the pain worsens with respiration. He rated the pain at 6 on a scale of 0 to 10 (with 10 indicating the most severe pain). He has no fever, runny nose, sore throat, chills, palpitations, cough, and shortness of breath, nausea, abdominal pain, diarrhea, joint pain or rashes. He has no leg pain or swelling. He reported no recent travel or previous surgery. The patient had no medical history and took no medications. His family history included hypertension and heart disease in his mother. He had no previous history or family history of thromboembolic events. He did not smoke tobacco, drink alcohol, or use illicit drugs. He was exercising regularly.

6 months ago, patient was diagnosed with COVID-19 through nasal swab nucleic acid test. He had cough and shortness of breath that lasted for 2 weeks and completely resolved after. Due to mild clinical disease course, the patient was isolated at home. He did not require oxygen supplement or hospital admission.

On examination, the temperature was 36.6°C, the blood pressure 138/64 mm Hg, the heart rate 118 beats per minute, the respiratory rate 21 breaths per minute, and the oxygen saturation 93% while the patient was breathing ambient air. The heart

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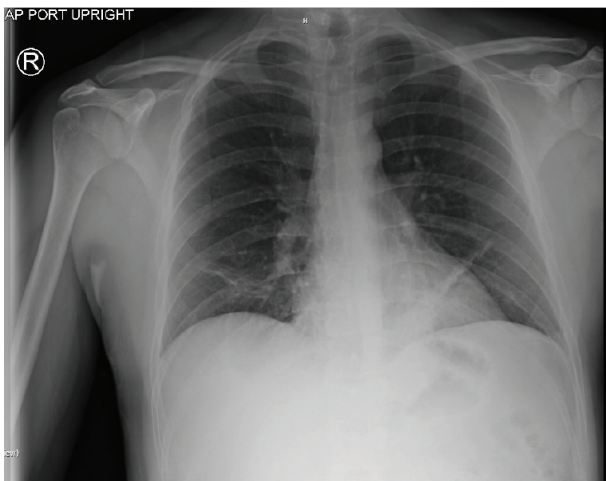


Figure 1: Radiography of the chest revealed atelectasis in right and left lower lobes

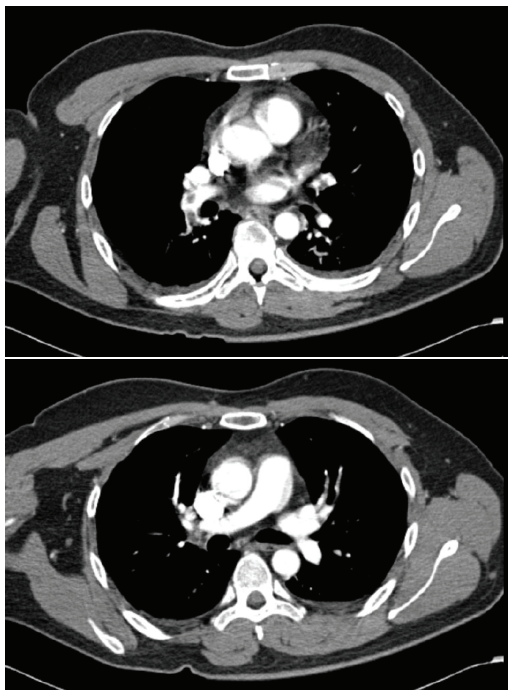


Figure 2: Computed tomographic (CT) angiography of the chest revealed pulmonary embolism

was tachycardic, with normal first (S1) and second (S2) heart sounds. There was no evidence of a heart murmur or rub. The lungs were clear on auscultation. There was no leg swelling. The remainder of the examination was normal. An electrocardiogram showed sinus tachycardia at a rate of 112 beats per minute and was otherwise normal.

The white-cell count, platelet count and hemoglobin level were normal as were levels of sodium, potassium, carbon dioxide, urea nitrogen, creatinine, and calcium. Troponin I and B-type natriuretic peptide level were normal. D-dimer level was elevated, 4.54 mg/L FEU (reference range, <0.50). Testing to detect SARS-CoV-2 infection was negative. Systemic inflammation markers like C-reactive protein (CRP), ferritin and lactate dehydrogenase (LDH) were not obtained.

Radiography of the chest revealed atelectasis in right and left lower lobes. No evidence of pulmonary infiltrates or cardiomegaly (Figure 1). Computed tomographic (CT) angiography of the chest

(Figure 2) revealed pulmonary embolism involved middle lobe and lower lobe branches of the right pulmonary artery as well as lower lobe and upper lobe branches of the left pulmonary artery. Intravenous infusions of heparin were administered, and the patient was admitted to the hospital.

Next day, patient's tachycardia was resolved. Patient oxygen saturation was 96% on room air. Other vital signs remained stable. Patient was started on apixaban 5 mg twice daily and discharged home.

Discussion

We present a case with pulmonary embolism diagnosed 5 months after resolution of COVID-19. To our knowledge, only two cases of venous thromboembolism reported after COVID-19 hospitalization. Beckman M [7] reported widespread pulmonary embolism in a middle-aged male 7 weeks after COVID-19. Di Tano G [8] reported pulmonary embolism 4 weeks after COVID-19 despite adequate rivaroxaban treatment. These cases raise the following questions: Is COVID-19 an independent long-term risk factor for venous thromboembolism? How long this risk lasts? Is there a high-risk subgroup? How we identify this group? Large research studies are needed to address these questions and if we find a long-term risk for venous thromboembolism in COVID-19, clinical trials are needed to test the efficacy of extended post-discharge thromboprophylaxis.

In summary, this case suggests that the risk for venous thromboembolism in hospitalized patients with COVID-19 may persist after discharge. Large studies are needed to confirm this risk.

Patient Consent

Patient consent to publish this case study was obtained.

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