

# Acute Pulmonary Embolism as an Important Differential Diagnosis of COVID-19: A Case Report

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## Abstract

An emerging pneumonia known as coronavirus disease 2019 (COVID-19) became pandemic and global public health emergency. We are reporting a female who presented with atypical manifestations of pulmonary embolism (PE) and she was misdiagnosed and treated for COVID-19. Physicians should be aware of the differential diagnosis of coronavirus disease because it could mimic other conditions, which may postpone the diagnosis.

**Keywords:** SARS-CoV-2; COVID-19; Acute pulmonary embolism

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## Introduction

An outbreak of the novel coronavirus (SARS-CoV-2) that emerged in late 2019 caused the coronavirus disease 2019 (COVID-19), which spread worldwide quickly within a few months [1-3]. Patient's clinical manifestations are variable, from asymptomatic to acute respiratory distress syndrome (ARDS) [4]. COVID-19 patients are more likely to present with thromboembolic events such as Pulmonary embolism (PE) [5]. The clinical presentations of PE are dyspnea, tachypnea, pleuritic chest pain, cough, fever, substernal chest pain and syncope [6]. PE manifestations are nonspecific and have overlap with COVID-19 signs and symptoms and sometimes it may be a presentation of both [7]. As a result, evaluation of PE in the COVID-19 pandemic is challenging.

## Case Presentation

We are reporting a healthy 40-year-old non-smoking, female, who presented with myalgia, malaise, anorexia, diaphoresis, low-grade fever and cough. She was evaluated for COVID-19 due to the SARS-CoV-2 pandemic and her signs, symptoms and laboratory data (WBC: 6300/ $\mu$ L, ESR: 91 mm/hour, CRP: 24 mg/dL). For this evaluation, throat swab samples were sent for SARS-CoV-2 by real-time reverse-transcriptase–polymerase-chain-reaction assay (RT-PCR) and high-resolution computed tomography (HRCT) was done for her in the outpatient clinic. HRCT showed airspace filling opacities with air bronchogram and surrounding ground-glass opacification in posterior basal segment of right lower lobe in favor of lung consolidation.

According to her clinical manifestations, suspicious HRCT and laboratory findings, she was hospitalized in a COVID-19 center. Hospital course physical examination showed O<sub>2</sub> saturation was 95% in ambient air, temperature: 37.8°C, blood pressure: 110/80 mmHg, the pulse rate: 88 beats/minute, respiratory rate: 20 breaths/minute. Crackle sound was heard from the base of both lungs. Patient had no tachycardia and heart examination was normal. ECG and echocardiography were normal. Procalcitonin, blood culture and sputum culture were negative. The first RT-PCR test for SARS-CoV-2 found out to be negative 3 days after her admission. During hospitalization, she had been receiving unfractionated heparin as a venous thromboembolism prophylaxis. After 5 days of admission, despite standard

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management for COVID-19, the patient's condition was not improving, and she still had persistent low-grade fever, malaise and dry cough. According to two other negative RT-PCR tests for SARS-CoV-2 during her hospital course and high D-Dimer level (1609 µg/ml, normal < 500 µg/ml). she was evaluated for pulmonary embolism (PE).

Spiral chest CT with intravenous contrast was done and showed filling defect in posterior basal segment branch of the right pulmonary artery with an air space opacity of lung parenchyma in the right lower lobe. Also, there was evidence of scattered ground-glass opacities in the right lower lung with progression in comparison with previous HRCT. As PE was diagnosed, the patient was transferred to internal service.

Treatment with Enoxaparin 1mg/kg subcutaneous twice a day and subsequently, Rivaroxaban started for her and sign and symptoms improved dramatically.

In her post discharge follow up, antinuclear antibody (ANA), antithrombin III, protein C and S, anticardiolipin, beta-2 glycoprotein I (β2GPI), and lupus anticoagulant revealed negative.

## Discussion

We reported a patient who sought care for myalgia, malaise, anorexia, diaphoresis, low-grade fever and cough. Despite her clinical manifestations and HRCT which were in favor of COVID-19, pulmonary emboli was diagnosed. This case is contrary to our previous patient that presented with PE and COVID-19 postpartum [7]. In this case, the CT manifested airspace filling opacities and ground-glass opacification in the right lower lobe. Ground glass can result from the pathology of alveolar damage filling with blood, pus, water or cell in bacterial and viral infections, including COVID-19 [8]. As a result, it is important to consider all differential diagnosis and differentiated them from other respiratory illnesses in patients with specific signs

and symptoms of viral pneumonia in the COVID-19 pandemic. Patients who are suspected COVID-19 should be quarantined under medical surveillance, followed by at least two RT-PCR tests according to the newest edition of guidelines [8]. In this case, repeated samples for SARS-COV-2 were negative. Because of the lack of pathognomonic signs and symptoms, the diagnosis of pulmonary emboli remains vague. The classic symptoms of dyspnea, tachycardia, and decreased oxygen saturation may occur in up to 92% of PE cases [9]. Hence, because of numerous atypical presentations of PE, physicians must consider this as a possible differential diagnosis. Our patient stated that she did not have dyspnea, pleuritic chest pain, hemoptysis or palpitation. Physicians, based on clinical assessment, were more consistent in their ability to exclude PE than they were in the ability to make the diagnosis of PE.

## Conclusion

In conclusion, physicians should be aware of differential diagnosis for COVID-19. As this patient illustrated, atypical presentation of PE could mimic the COVID-19, which may postpone the diagnosis.

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## Conflicts of Interest

The authors declare that they have no competing interests.

## Consent for Publication

The patient gave written consents for publishing their personal or clinical details in this study.

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