

Lung Abscess in a COVID-19 Patient: A Case Report

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Abstract

Coronavirus disease 2019 (COVID-19) has many complications and also atypical presentations. Here, we reported a 60-year-old female who was admitted to our center complaining of headache and dyspnea. The initial high-resolution computed tomography (HRCT) scan revealed an abscess in the middle lobe of the right lung and also patchy pleural base ground-glass opacity consistent with COVID-19 infection. A treatment regimen, including dexamethasone, enoxaparin, piperacillin/tazobactam, and famotidine intravenous remdesivir was started. The HRCT scan was repeated on the 6th day of admission and showed the same ground-glass opacity as before but the lung abscess had become smaller in size. Altogether, we should be aware of lung abscess as one of the COVID-19 manifestations and complications.

Keywords: COVID-19, dyspnea, lung abscess

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INTRODUCTION

In late 2019, a novel virus belonging to the coronavirus family known as coronavirus disease 2019 (COVID-19) spread globally. The main clinical manifestations of COVID-19 include fever, cough, fatigue, myalgia, diarrhea, and dyspnea.^[1] All of the clinical characteristics, laboratory data, and imaging studies can help diagnose the disease.^[2] Age over 60 years, male gender, hypertension, Chronic obstructive pulmonary disease (COPD), and diabetes are the most common risk factors for severe disease or death.^[3] Besides, corticosteroid therapy can also act as an immunosuppressive factor for secondary infections.^[4]

Despite its great incidence, there are still many deficiencies in our information about the complications and also atypical presentations of this disease and their treatment. The need to know how to diagnose and manage such complications among medical workers is not hidden from anyone. Therefore, here we reported a lung abscess as a complication of COVID-19 in a 60-year-old patient.

CASE REPORT

A 60-year-old female was admitted to our center complaining of headache and dyspnea. She had been suffering from headaches and sore throat for 10 days. In addition, in the last 4 days, she had coughs accompanied by nasty sputum and halitosis. The patient also complained of dysuria and fever without frequency. Past medical history showed hypothyroidism, which was under treatment with 100 µg of levothyroxine daily. She had contacted all family members who had been infected with COVID-19 (polymerase chain reaction-positive) a week before admission. Initial vital signs include blood pressure of 110/80 mmHg, pulse rate of 101 beats per minute, respiratory rate of 21 breaths per minute and temperature of 37°C. Her oxygen saturation level was 88% without external oxygen supplement and 98% with the nasal cannula.

Real-time polymerase chain reaction (RT-PCR) for COVID-19 virus was positive. The initial high-resolution computed tomography (HRCT) scan revealed an abscess in the middle lobe of the right lung and also patchy pleural base

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ground-glass opacity that was consistent with COVID-19 infection [Figure 1]. Laboratory data at the initial hours of hospitalization is represented in Table 1.

Due to COVID-19 infection and lung abscess, a treatment regimen including 8 mg of dexamethasone, 40 mg of enoxaparin (for venous thromboembolism prophylaxis), 12 g piperacillin/4.5 g tazobactam every 8 hours, and famotidine 40 mg per day was started. On the 2nd day, intravenous remdesivir with a loading dose of 200 mg was initiated and then this medication continued with a dose of 100 mg per day that continued for a total of 5 days.

The HRCT scan was repeated on the 6th day of admission and showed the same ground-glass opacity as before but the lung abscess had become smaller in size. It also indicated mild-to-moderate pleural effusion. Laboratory data on the 6th day in comparison to the 1st day is demonstrated in Table 1. Urine analysis was completely normal on both 1st and 6th days. After all, she was discharged in a clinically well situation.

Discussion

We report the development of an abscess in the lung of a patient with COVID-19. It seems that there are a lot of complications, which can induce by COVID-19 infection that require special attention.

In the early 21st century, the world faced one of the most terrifying factors that have ever affected human beings. Severe-acute-respiratory-syndrome-related coronavirus

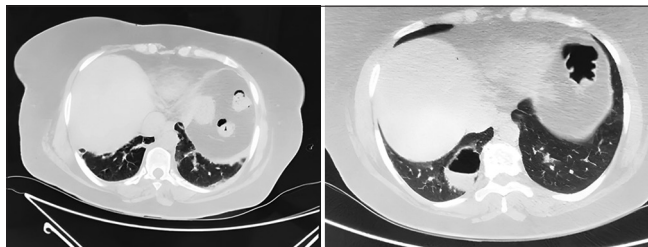


Figure 1: High-resolution computed tomography (HRCT)

Table 1: Laboratory tests results		
Laboratory factor	1 st -day level	6 th -day level
White blood cell count	$3000 \times 10^3/\mu\text{L}$	$7100 \times 10^3/\mu\text{L}$
Red blood cell count	$4.72 \times 10^6/\mu\text{L}$	$4.81 \times 10^6/\mu\text{L}$
Hemoglobin level	13.5 g/dL	12.9 g/dL
Platelet count	$102 \times 10^3/\mu\text{L}$	$168 \times 10^3/\mu\text{L}$
Sodium level	138 mEq/L	140 mEq/L
Potassium level	4.3 mmol/L	4.1 mmol/L
AST level ¹	41 U/L	33 U/L
ALT level ²	39 U/L	46 U/L
CRP level ³	33 mg/L	8 mg/L
ESR level ⁴	21 mm/hr	12 mm/hr
Creatinine level	1.2 mg/dL	1.0 mg/dL

1. Aspartate transaminase, 2. Alanine transaminase, 3. C-reactive protein, 4. Erythrocyte Sedimentation Rate

2 (SARS-Cov-2) is not only a respiratory virus but also has cardiovascular, neurological, hematologic, and renal effects.^[5,6] Complication like liver damage, shock, and multi-organ failure was also manifested by COVID-19.^[7]

The lung abscess is a circumscribed formation of pus, necrotic debris, or fluid in lung parenchyma caused by an infection. The primary abscess is caused by lung disorders but the secondary abscess is due to conditions such as pulmonary thromboembolism (PTE). Primary lung abscesses are mostly treated by empiric antibiotic therapy successfully and secondary abscesses need treatment of underlying causes.^[8] Bacterial coinfection in the COVID-19 pandemic was 7–14% compared with 11–35% in the influenza pandemic.^[9,10] Long-duration corticosteroid therapy is one of the possible reasons that expose COVID-19 patients to develop coinfections, including lung abscesses.^[11] Pulmonary microthrombi can cause a lung abscess, leading to excessive need for prescription of anticoagulation.^[12]

Previous studies all referred to the lung abscess as a complication after COVID-19 infection^[13,14] and even after recovery.^[15,16] Our patient had coryza symptoms at the beginning and then presented with coughs and sputum. Ten days have passed since the patient's symptoms began and appear to have occurred due to a lack of proper treatment. The patient denied any alcohol or intravenous drug consumption, gastroesophageal reflux symptoms, a history of loss of consciousness or seizures. We also did not find any risk factors of immunosuppression or oral hygiene. So, it seems that the current lung abscess was caused by the COVID-19 infection only.

Finally, considering the initial symptoms of the patient, laboratory, and imaging data, being aware of differential diagnosis and ruling out other factors in COVID-19 patients, lung abscess could be diagnosed and treated in a timely manner.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that her name and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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