

## CASE REPORT

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## Sudden cardiac arrest after severe lung bleeding in a COVID-19 patient

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## Abstract

Covid-19 is a disease with clinical symptoms such as fever, cough, fatigue, and lung involvement. Patients with lung involvement may be mortal and cause some fatal complications. In this case report, the management of cardiac arrest following sudden and severe pulmonary hemorrhage in a patient with a lung mass was presented.

**Keywords:** Cardiac arrest, lung bleeding, Covid-19, pandemic, intensive care unit

## Introduction

Coronavirus 2019 disease (COVID-19), which causes severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and coagulation problems, has caused millions of cases and deaths or health problems of many people around the world for about 2 years [1]. With the progression of the COVID-19 process, many changes in clinical and laboratory results have emerged and are still occurring. Although cough, fatigue, and fever are the most frequently reported clinical symptoms among COVID-19 patients, some bleeding-related symptoms such as hemoptysis have also begun to appear [2]. Moreover, clinical symptoms, patient population and affected systems change due to mutations in the virus.

Although COVID-19 affects the respiratory tract more frequently, cardiovascular diseases such as myocardial injury or myocarditis have been reported in the literature. Cardiac arrhythmias – tachy or brady arrhythmias – often resulting in cardiac arrest have been observed after respiratory failure and cardiac failure caused by hypoxia [3].

To our knowledge, our case is the first case reported in the literature as sudden cardiac arrest after severe lung bleeding according

to solid lesion of lung surrounding the left pulmonary artery in patient with COVID-19. Here, we report a sudden cardiac arrest after life-threatening severe pulmonary haemorrhage in a patient recovering from COVID-19.

## Case Report

A 49-year-old male patient with moderate dyspnea, mild haemoptysis and hematemesis admitted to the emergency department of our hospital. He reported no fever, chills and chest pain. The patient was no smoker and he was professional swimmer, and also he worked in the furniture industry. In his medical story, it was learned that he was taking anticoagulant therapy (prophylactic dose of enoxaparin (40 mg sc)) due to atrial arrhythmia and using insulin for diabetes mellitus. It was reported that bloody expectoration and nausea-vomiting started 3 days before hospitalization. In the anamnesis taken from the relatives of the patient in the emergency room, it was learned that the treatment with favipiravir and moxifloxacin was started because because the patient was diagnosed with COVID-19, 5 days ago.

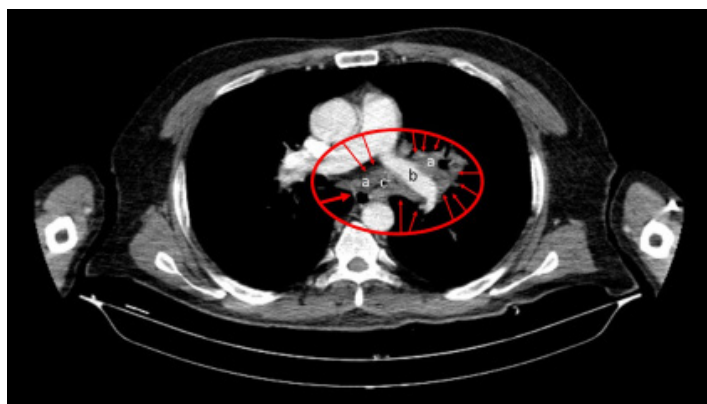
At patient's admission to the emergency department, non-invasive blood pressure was 145/86 mmHg, peripheral oxygen saturation on pulse oximetry 85% at ambient air, the patient's body temperature 36,7°C, and heart rate 129 beats per minute. He had no other respiratory signs other than shortness of breath. Heart rate was arrhythmic and the patient was agitated.

In laboratory analysis, a normal level of blood glucose, ferritin,

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Interleukin-6(IL-6) and procalcitonin(PCT) were detected. C-reactive protein (CRP) and haemoglobin levels were 22,4mg/dl (reference range 0-0,3) and 9,3g/dL, respectively. Blood platelet count was 424000/uL and fibrinogen level was 632 mg/dL. Coagulation parameters (activated partial thromboplastin time(aPTT) (25,7 sec – reference range 23-35 sec), prothrombin time (13,7 sec - reference range 10-14 sec) and prothrombin time-INR (1,15 - reference range 0,8-1,2) were normal ranges. D-dimer elevated to 1,3 mg/L (reference range 0-0,5). Renal and liver functions were normal. In arterial blood gas analysis, pH, partial pressure of oxygen (PaO<sub>2</sub>), and partial pressure of carbon dioxide (PaCO<sub>2</sub>) were 7.5, 68,2mmHg (reference range, 75–100mmHg), and 30,5mmHg(reference range, 32–45mmHg), respectively.

On computed tomography (CT) angiography of the chest, a 9x5 cm solid lesion surrounding the left pulmonary artery and the left main bronchus, causing significant narrowing of the bronchus, with an air bronchogram in the left lower lobe, and reticular infiltrates with ground glass densities in the entire left hemithorax and right middle lobe were observed. No thrombus was detected in the main pulmonary artery and its branches (Figure 1).



**Figure 1.** CT scan of the chest with contrast with solid lesion surrounding the left pulmonary artery and the left main bronchus. a. lung mass (9x5cm) surrounding the left pulmonary artery, b. left pulmonary artery, c. bronchus in which the lung mass causes significant narrowing

Nasopharyngeal swab (NPS) sample was obtained and tested for SARSCoV-2 using real-time polymerase chain reaction (RT-PCR), which was positive. According to the institutional guidelines, the patient was admitted to the COVID-19 intensive care unit for close follow-up and medical support treatment. The anticoagulant treatment administered due to arrhythmia was discontinued due to the risk of bleeding. No hematemesis or hemoptysis was observed on the first day of the intensive care follow-up of the patient, whose anticoagulant treatment was not started. It was decided not to perform bronchoscopy due to the risk of bleeding. For antibiotic therapy, meropenem (3x1 g), clarithromycin (2x500 mg) and dexamethasone (6 mg/day) iv was started. For respiratory support, 30L/min, 100% high flow oxygen and continue positive airway pressure(CPAP) support (6x2 hours) were started. In arterial blood gas analysis during respiratory support, pH, PaO<sub>2</sub>, and PaCO<sub>2</sub> were detected 7.4, 80 mmHg, and 35 mmH, respectively.

Respiratory support was reduced in 3 days, and on the 4th day, nasal oxygen (5 L/min) and saturation values remained in the range of 95-97%. The patient, who started oral feeding and whose hemodynamics was stable, was planned to discharge to the ward.

Coagulation tests were within the normal range on the day of planned to discharge. During the transfer from the intensive care unit to the ward, the patient developed sudden respiratory arrest and then cardiac arrest after a sudden onset of severe coughing attacks in the patient. The patient was quickly intubated and it was seen that blood came from the intubation tube, which was difficult to aspirate with an aspirator. Cardiopulmonary resuscitation (CPR) was started and continued for 45 minutes. The patient who did not respond to CPR was accepted as dead after 45 minutes.

## Discussion

Although many non-specific symptoms can be seen in the diagnosis of COVID-19, cough, fever, dyspnea, cough, myalgia and fatigue are more prominent [4]. Since a mild cough can be seen even during recovery periods, the first of the symptoms that lasts for a certain period of time seems to be a cough. Especially, hemoptysis due to severe cough is important in terms of both causing obstruction in the respiratory tract and causing hypotension due to bleeding. Massive hemoptysis is a life-threatening condition that requires attention. There are many reports regarding the management of massive hemoptysis [5,6]. Although many causes of massive hemoptysis such as bronchiectasis, malignancies, post-tuberculosis sequelae were reported, our patient did not have any of these [7].

Coagulopathy, an increased incidence of thromboembolism, has proven to be a common complication of the COVID-19. Thromboembolism-bleeding tendency balance may be disturbed due to uncontrolled use of anticoagulant therapy or some specific reasons related to the patient. For this reason, the tendency to hemorrhage as well as the susceptibility to embolism have some risks. Patell and et al [8] declared that high incidence of thrombosis and bleeding among patients admitted with COVID-19 with active cancer. Although the pathology of our patient has not been examined yet, there was a possible malignant mass image in the radiological image.

Although it has been reported that cough is rarely seen in the early days of the COVID-19 pandemic, it has been reported that cough with massive hemoptysis is seen in patients with the progression of the pandemic. There are publications reporting that the prevalence of cough increased from 0.2% to 2 [9,10]. In fact, a wide patient profile stands out, ranging from patients reported to be the only clinical symptom of cough to patients reported to have cough causing hemoptysis [11,12].

Normally, survival after cardiac arrest in the hospital is expected to be higher. However, Shao et al [13] reported that the 30-day survival in patients with COVID-19 pneumonia was rather poor. They claimed that the reason for this was related to initial rhythm and location of arrest. But, cardiac arrest in our patient occurred in the COVID-19 intensive care unit and the patient could not be saved due to the severity of the bleeding, despite the rapid intervention.

In this case, although the anticoagulant treatment administered due to arrhythmia was discontinued 4 days ago, it is thought that the lung damage caused by covid pneumonia and the solid mass in the lung adjacent to the left pulmonary artery caused sudden and spontaneous lung bleeding due to the opening of the left pulmonary artery to the trachea by means of a mass during severe coughing.

## Conclusion

In summary, cough is frequently seen in patients diagnosed with COVID-19, and it can cause life-threatening massive hemoptysis. It should be kept in mind that the lung mass, which is adjacent to the large vessels, may cause the vessels to open into the trachea. In these patients, it should be considered that invasive procedures such as bronchoscopy may cause similar situations, and therefore care should be taken.

## Conflict of interests

*The authors declare that there is no conflict of interest in the study.*

## Financial Disclosure

*The authors declare that they have received no financial support for the study.*

## Ethical approval / Informed Consent

*We complied with the guidelines for human studies and our research was conducted ethically in accordance with the World Medical Association Declaration of Helsinki. Information revealing the subject's identity was avoided. Consent for the publication of the clinical case has been obtained through the patient's immediate family."*

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