Spontaneous pneumothorax as a complication in COVID-19 male patient: A case report

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1INTRODUCTION

Coronavirus disease 2019 (COVID-19) infection is a global infection that affects many countries. It can be diagnosed with nasopharyngeal swab PCR and chest CT scans. It may be atypically present or complicated with pneumothorax. Here, the patient presents with pneumothorax after 21 days of initial symptoms of COVID-19 infection and negative PCR.

Coronavirus disease 2019 is a serious infectious disease causing a worldwide pandemic problem which burdens the healthcare services. It affects many organs especially the lung. The common clinical features of affected patients were fever, dry cough, dyspnea, diarrhea, abdominal pain, sore throat, loss of smell, and myalgia. It can be diagnosed by using real-time reverse transcription-polymerase chain reaction (rRT-PCR) from nasopharyngeal swab. The patient CT scan of the chest is characteristic for COVID-19 infection as it may show bilateral ground-glass appearance with peripheral distribution, and the other features may be present but they are uncommon like lung cavity, pneumomediastinum, subcutaneous emphysema, pleural effusion, pericardial effusion, and pneumothorax. There are many cases of pneumothorax diagnosed as an initial presentation for COVID-19 infection, but in our case,
we report diagnosis and treatment of pneumothorax case after about 21 days of initial symptoms of COVID-19 infection and after the result of PCR was negative.

2 | CASE PRESENTATION

Fifty-six-year-old male patient developed new right-sided chest pain and more severe shortness of breath than before for 6-hour duration. Before 21 days, he suffered from fever, dry cough, malaise, and shortness of breath, so he was diagnosed with using of nasopharyngeal PCR and CT scan chest as COVID-19 patient then, he was isolated in infectious isolated ward and after 16 days from symptoms onset, the PCR was negative for COVID-19 infection and gradually his symptoms were decreased apart from some shortness of breath. The patient kept just on mask oxygen without the use of mechanical ventilation and some supported medications. He had a history of diabetes mellitus and hypertension without smoking or past surgical history. He takes captopril tablet 50 mg once daily for hypertension and amaryl tablet 2 mg/500 mg once daily and glibenclamide tablet 5 mg once daily for diabetes.

On examination, the patient was discomfort, cyanosed, afebrile, decrease air entry in the right-sided chest with hyper-resonance on percussion. The blood pressure was 145/65 mm Hg, heart rate was 99 beats/min, oral temperature was 37.6°C, oxygen saturation was 85%, and respiratory rate was 25 breath/min. We send him for basic blood investigations and chest radiograph.

The blood investigation results were hemoglobin 13.9 g/dL (normal value is 12-16 g/dL), WBC 8200/uL (normal value is 3700-11000/uL), lymphocyte 1060/uL (normal value is 1090-2990/uL), platelet counts 111 000/uL (normal value is 155 000-450 000/uL), blood urea 42.98 mg/dL (normal value is 15-45 mg/dL), serum creatinine 0.52 mg/dL (normal value is 0.57-1.25 mg/dL), and blood sugar 320.56 mg/dL (normal value is 70-120 mg/dL). The chest radiograph shows hyper-lucency of right hemithorax with clear lung line and multiple shadows in left hemithorax as seen below in Figure 1, so diagnosis of pneumothorax is confirmed.

Tube thoracostomy was inserted in right hemithorax under local anesthesia and aseptic technique through the right 5th intercostal space midaxillary line as seen in Figure 2. Then, the patient gradually becomes comfort and kept in an infectious isolated ward. He kept on mask oxygen, paracetamol injection 1 g thrice daily, ceftriaxone injection 1 g twice daily, his previous medications for hypertension, and change for soluble regular insulin for diabetes six hourly and according to his blood sugar level readings.

The next day, the patient was sent for a new chest radiograph that shows fully expanded right lung with parenchymal shadows as seen in Figure 3 and basic blood investigations that were normal. In the day two postintervention, he was sent for a chest CT scan and shows the correct position of thoracostomy tube and mild pneumothorax with multiple shadows of previous COVID-19 infection as seen below in Figure 4.

In the 5th postoperative day, the patient sends for a new chest radiograph and shows fully expanded lung without pneumothorax and after clamping of thoracostomy tube for 12 hours so, the tube was removed and the patient discharged home.
Coronavirus disease 2019 infection is a serious and pandemic global infection spread in many countries including Iraq from December 2019 till now. As we know, it affects mainly the lung due to its access smoothly to cells through angioten- 
sin-converting enzyme two receptors that are present com-
monly in type II alveolar cells in the lung.\textsuperscript{1} In most cases of COVID-19 infection, the patients may have mild symptoms of fever, dry cough, dyspnea, sore throat, and myalgia. One of the rarest presentations for this infection is pneumothorax. Pneumothorax can be developed with primary or secondary spontaneous causes. It occurs mainly in patients with a history of smoking, COPD, pneumonia, or inpatient on mechanical ventilation with preexisting lung disease. It is easy to diagnose by clinical presentation and chest radiograph. In this case, spontaneous pneumothorax was developed after 21 days of initial COVID-19 symptoms and after the result of PCR was negative. This is like a Luke flower et al study in which 36-year-old man was diagnosed with tension pneumothorax of 4-hour duration following a 3-week history of cough, fevers, and dyspnea with positive PCR for COVID-19 infection.\textsuperscript{3} Also, it likes Weiyi et al study in which 62-year-old man developed features of pneumothorax after about 20 days of admission for COVID-19 infection.\textsuperscript{4} While in Burcin et al and Suphi et al case reports, both patients were present with spontaneous pneumothorax in addition to other features of COVID-19 infection initially.\textsuperscript{1,5}

Here, there are no identified risk factors for developing a pneumothorax. He was with a negative history of smoking, COPD, or mechanical ventilation. This is like Luke et al, Weiyi et al, and Suphi et al cases, and they have had no smoking and not underwent a mechanical ventilation trial.\textsuperscript{3-5} In Taha et al study, three cases were reported with pneumo-
thorax and only one case has a smoking history without underly-
ing lung disease in all cases.\textsuperscript{2}

Pneumothorax may be increased in cases of COVID-19 due to parenchymal lung and alveolar damages that may increase the mortality of infection.\textsuperscript{5} So, COVID-19 infection may be present or complicated as pneumothorax with or without preexisting lung disease or risk factors.

\section*{CONCLUSION}

Coronavirus disease 2019 infection may be complicated with pneumothorax after a period of initial symptoms of pneumonia infection.

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None.

\section*{CONFLICT OF INTEREST}
None.

\section*{AUTHOR CONTRIBUTIONS}
AMF: involved in data curation, formal analysis, methodology design, supervision, validation, visualization, and writing, reviewing, and editing the original draft and provided software. AAM: involved in formal analysis, project administration, and writing, reviewing, and editing the original draft and provided resources and software. HAA-K: involved in data curation, formal analysis, methodology, validation, and visualization. ASA: provided software and involved in writing, reviewing, and editing the original draft.
ETHICAL APPROVAL
Not required.

INFORMED CONSENT
Informed consent was obtained from the patient to publish the case report.

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