



Case Report

Spontaneous pneumothorax and subcutaneous emphysema in COVID-19 patient: Case report



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ABSTRACT

Coronavirus disease 2019 (COVID-19) is an infectious disease caused by severe acute respiratory syndrome virus coronavirus 2 (SARS-CoV-2). As known, COVID-19 has become a global pandemic and serious health problem. Disease mainly affects lungs and common findings are fever cough and shortness of breath. Computerized tomography (CT) has an important role in initial evaluation and follow up of COVID-19. Main (CT) finding of the disease is bilateral extensive ground-glass opacification (GGO) with a peripheral or posterior distribution, mainly involving the lower lobes. In this case report, we present a pneumothorax and subcutaneous emphysema case in a patient with COVID-19. To the best of authors' knowledge, it is the first illustrated case of pneumothorax accompanying COVID-19 pneumonia.

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Introduction

Coronavirus disease 2019 (COVID-19) is an infectious disease caused by severe acute respiratory syndrome virus coronavirus 2 (SARS-CoV-2). The disease was first seen in December 2019 in Wuhan, and has been spreading globally, resulting in a global pandemic [1]. At hospital admission, most common symptoms of COVID-19 are fever, cough and shortness of breath. Abdominal pain, myalgia, diarrhea, sore throat, fatigue and loss of smell are other possible symptoms. The diagnosis is made by real time–reverse transcription polymerase chain reaction (rRT-PCR) from a nasopharyngeal swab [2].

Even not used as routine screening, imaging with computerized tomography (CT) is strongly recommended especially in COVID-19 suspected cases on either initial evaluation and follow-up. Known radiologic hallmarks of COVID-19 pneumonia on CT are bilateral extensive ground-glass opacification (GGO) with a peripheral or posterior distribution, mainly involving the lower lobes. Uncommon features can be listed as pleural and pericardial effusion, lymphadenopathy, cavitation, CT halo sign, and pneumothorax [3]. In descriptive study of Chen et al. which reported the characteristics of 99 patients with COVID-19, they reported that a patient presented with pneumothorax on CT in first admission [4]. In this

report, we describe a case of female patient diagnosed as COVID-19 pneumonia with pneumothorax as an initial presentation apparently due to persistent cough. To the best of authors' knowledge, it is the second reported case and first radiologically illustrated case of pneumothorax accompanying COVID-19 pneumonia.

Case report

Informed consent of the patient was obtained from herself. An 82-year-old female patient was admitted to emergency department with shortness of breath, fever and persistent cough. On physical examination, temperature of the patient was 38.5 °C, heart rate and respiration rate were 106 and 27 per minute, respectively. Blood pressure was 100/70 mmHg. The initial SpO₂ (saturation of peripheral oxygen) was 80 without oxygen and 92 with nasal oxygen mask. The past medical history was unremarkable. Complete blood count and biochemical analysis were obtained. Due to current ongoing pandemic, COVID-19 was suspected and real-time reverse transcriptase polymerase chain reaction test was performed from the nasopharyngeal swab.

A chest computerized tomography (CT) was obtained, due to elderly age of the patient. The CT scan revealed widespread bilateral ground-glass opacities (GGO), predominantly in lower lobes, coherent with COVID-19 lung involvement. Additionally, pneumomediastinum, left sided massive pneumothorax and subcutaneous emphysema in the neck posterior thoracic wall were identified (Fig. 1a,b). Chest tube insertion to the left pleural space was done to drain the excess air in emergency setting. The patient was admitted

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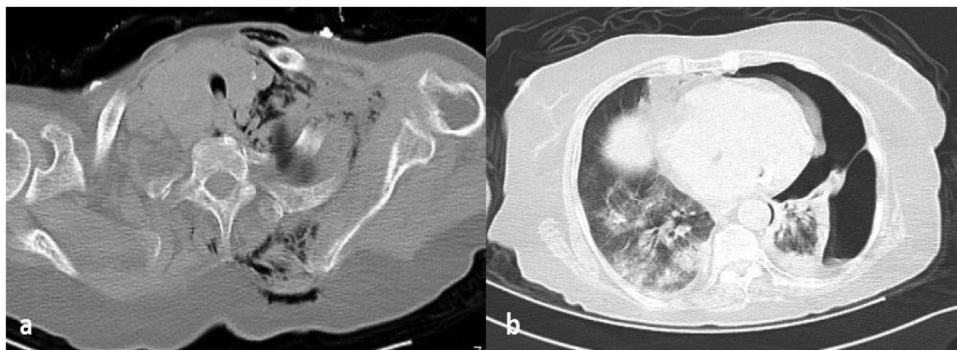


Fig. 1. Axial CT scan of the level of superior thoracic aperture in mediastinal window: (a) subcutaneous emphysema between the deep structures of neck and posterior thoracic wall. Axial CT scan of the thorax in lung window; (b) massive left-sided pneumothorax. Bilateral ground glass patchy opacities are also seen representing COVID-19 lung involvement.

to the inpatient COVID-19 clinic with a pre-diagnosis of COVID-19 pneumonia. Appropriate treatment with hydroxychloroquine, oseltamivir and ceftriaxone was started. Multiple X-rays of the lungs were obtained to evaluate the lung involvement, pneumothorax and subcutaneous emphysema. General condition of the patient improved day by day. On the following 11th day, pneumothorax and pneumonic infiltrations were totally resolved. Chest tube was removed and the patient was discharged from hospital.

Discussion

An outbreak of pneumonia with an undefined origin emerged from Wuhan, China and was declared to world health organization in and COVID-19 is a serious health problem concerning every country in nowadays. The disease characteristics and clinical spectrum are still being defined and diagnosis and treatment protocols of the disease are currently evolving with the collaboration of the healthcare workers across the world. COVID-19 primarily spreads by small droplets during close contact [2]. The median incubation period was reported as 4 days [5]. Even the majority of cases result in mild symptoms, some cases develop viral pneumonia and multiorgan failure [2]. It is reported that the virus access the cells via angiotensin-converting enzyme-2 which is most plenty in type II alveolar cells of the lungs. Thus, the lungs are the most affected organs by COVID-19 [6].

In patients with COVID-19, chest CT is recommended in suspected patients for both initial diagnosis and follow up [3]. Moreover, CT findings has found to be diagnostic in cases with initial rRT-PCR test was false-negative [3,7]. Most common lung involvement pattern is bilateral GGO mostly seen in lower lobes with peripheral distribution, as seen in our patient. Atypical imaging features have been reported as bronchial wall thickening, pleural effusion and lymphadenopathy [3]. Li et al. reported CT Halo sign as an atypical imaging finding in COVID-19 pneumonia which was classically seen in hemorrhagic nodules [8]. In the report of Chen et al. that consists of characteristics of 99 patients with COVID-19, 1 case of pneumothorax was firstly mentioned as an atypical imaging feature of disease [4]. Our case report further supports the probability of spontaneous pneumothorax in COVID-19 patients with lung involvement. In this way, this case report highlights a rare clinical scenario of the COVID-19 and emphasizes the importance of initial CT imaging.

Pneumothorax is a clinical entity which defined as presence of air between visceral and parietal pleura, which can impair oxygenation and ventilation. Pneumothorax can be classified into three categories as spontaneous (primary or secondary), traumatic and iatrogenic, with spontaneous pneumothorax being the most common type. Secondary spontaneous pneumothorax occurs due to

preexisting lung disease, like pneumonia [9]. Severe strain during persistent cough in COVID-19 pneumonia can be the causative factor for pneumothorax.

Conclusion

The present case highlights a rare clinical scenario of spontaneous pneumothorax accompanying COVID-19 pneumonia with CT illustrations. Clinicians should be aware of that pneumothorax can be observed within the radiologic manifestations of COVID-19 pneumonia.

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Competing interests

None declared.

Ethical approval

Not required.

Contributions

CS and UY contributed to the study conception and design. Data collection and analysis were performed by BAU and UY. The first draft of the manuscript was written by BAU and CS AND UY commented on previous versions of the manuscript. All authors read and approved the final manuscript.

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