

Spontaneous pneumothorax as a delayed complication after recovery from COVID-19

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DESCRIPTION

A 59-year-old man with a history of surgically treated aortic stenosis developed COVID-19 pneumonia in January of 2021 (PCR confirmed); the patient did not require hospitalisation or invasive ventilation but only supportive care.

Sixteen days from the resolution of symptoms, he presented to the emergency room (ER) with sudden shortness of breath and a stabbing pain in the right chest. His blood pressure was 120/80 mm Hg, his pulse was 130/min and his oxygen saturation on room air was 91%. Blood tests showed elevated PCR and a reverse transcription PCR (RT-PCR) nasopharyngeal swab for SARS-CoV-2 RNA was negative. A CT scan was performed, showing a massive hydropneumothorax on the right side and extensive collapsed portions of pulmonary parenchyma in all the lobes of the right lung (figure 1 axial, figure 2 coronal planes). The scan also showed a consequent mediastinum shift to the left side and some ground-glass opacities in the left lung. The patient received oxygen via a venturi mask and a right chest drainage was placed, with an improvement of clinical and radiological features.

Chest CT has a high sensitivity in suggesting pulmonary involvement from SARS-CoV-2 infection.¹ The most common and early radiological findings of COVID-19 pneumonia are ground-glass opacities with a multilobular, bilateral and peripheral distribution, at a later stage. CT also highlights consolidations, air bronchogram¹⁻⁵ and crazy paving pattern.⁶ Pericardial and pleural effusion and pneumothorax represent rare findings.¹⁵ Spontaneous pneumothorax is reported in only 1% of cases,⁵⁷ with a higher prevalence (88%) in men.⁸⁻¹⁰

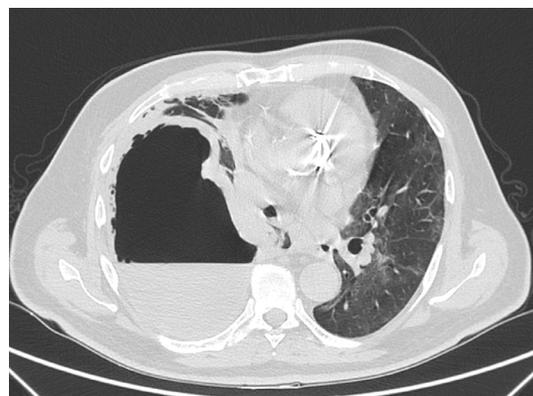


Figure 1 Non-enhanced CT, axial plane. Massive hydropneumothorax on the right side, extensive collapse of the ipsilateral pulmonary parenchyma.



Figure 2 Non-enhanced CT, coronal plane reconstruction. Mild right-sided shift of the mediastinal structures, right-sided hydropneumothorax (liquid component non-visible) and extensive ipsilateral pulmonary parenchymal collapse.

According to some authors,^{5 8-11} the main cause of pneumothorax in patients with COVID-19 are cystic lesions, which could occur as a result of barotrauma due to mechanical ventilation, and alveolar damage due to coughing, which causes an increase in chest pressure and ultimately an alveolar breach.^{1 3 5 8 12} Moreover, COVID-19 pneumonia results in alveolar swelling, inflammation of alveolar septa, fibrosis, giant bullae^{5 9 11 13} and subpleural infiltrates.⁸ All of these conditions contribute to parenchymal damage with possible alveolar rupture and pneumothorax.^{1 8 13} A review of the literature^{1 3-5 9 13} shows that pneumothorax is an uncommon complication that occurs predominantly during active SARS-CoV-2 infection and it is scarcely reported after the recovery from the disease.^{8 12 14 15} The relevance of this case lies in the absence of major risk factors for spontaneous pneumothorax in our patient's medical history: during his COVID-19 infection he had not been intubated and on his access in the ER the RT-PCR swab was negative. This means that even after the infection is overcome, severe complications are still possible.

Learning points

- ▶ CT is a useful tool not only for the diagnosis of COVID-19 infection but also of its complications.
- ▶ SARS-CoV-2 infection can induce severe and delayed complications such as pneumothorax.
- ▶ In case of sudden respiratory symptoms in a patient with previous SARS-CoV-2 infection, spontaneous pneumothorax should be excluded.



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It is therefore necessary to maintain a high level of attention in monitoring patients who have overcome active infection, and to exclude pneumothorax in case of sudden respiratory symptoms appearance.

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