

Rare radiological feature: lung cavitation due to COVID-19 pneumonia

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A cavity is defined as an air-filled space forming within an area of lung consolidation, mass, or nodule due to the liquefaction of the lesion's necrotic part and discharge of this necrotic material via the bronchial tree. Cavities are considered an uncommon finding in patients with COVID-19 pneumonia.^{1,2} We report a rare case of a patient with COVID-19 pneumonia who developed pulmonary cavity in the early recovery stage.

A 62-year-old man was admitted to the hospital with a history of fever up to 39 °C and dyspnea in November 2020. The patient was an active smoker with a smoking history of 25 pack-years. On admission, his condition was severe; the patient had respiratory failure requiring oxygen therapy with a flow rate up to 15 l/min. Physical examination revealed bilaterally diminished breath sounds with single crackles. The nasopharyngeal swab was positive for SARS-CoV-2. Chest radiography on admission displayed extensive bilateral patchy infiltrates. Computed tomography (CT) of the chest (**FIGURE 1A**) demonstrated diffuse areas of consolidation with air bronchogram, crazy

paving pattern, and ground-glass opacities which are typical in the course of this disease.³ The patient was treated according to the current recommendations of the Polish Association of Epidemiologists and Infectiologists for the management of SARS-CoV-2 infection.⁴ Control CT examination (**FIGURE 1B**), performed 2 weeks after the first one, revealed lung tissue destruction and formation of cavities (the largest measured 62 × 75 mm) and partial regression of ground-glass opacities.

The most exhaustive analysis of cavitory lung lesions in COVID-19 pneumonia is the study by Zoumot et al.⁵ Twelve out of 178 patients with COVID-19 (all men and all treated with invasive mechanical ventilation) developed lung cavitations. The question arises whether mechanical ventilation and potential barotrauma could be a sole or contributory cause of pulmonary cavities in these patients.

Another issue to consider is whether the cavities might result from pulmonary embolism and infarction, with subsequent necrotic lesion of the lung tissue. Much like COVID-19, the prevalence

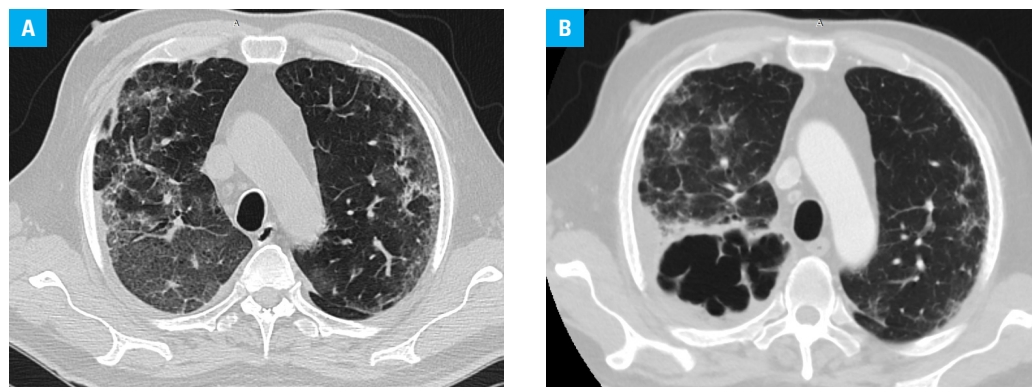


FIGURE 1 Evolution of diffuse areas of consolidation with air bronchogram, crazy paving pattern, and ground-glass opacities on admission (**A**) to bilateral areas of consolidation and fibrosis with formation of cavities 2 weeks later (**B**)

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of pulmonary embolism is high, and some patients might potentially have such an unusual presentation of pulmonary embolism and infarction during SARS-CoV-2 infection.

Our patient had no angio-CT examination, but on echocardiography performed a few days after admission, there were no signs of right ventricle overload, which is not in line with hemodynamically significant pulmonary embolism.

In the light of these data, it should be assumed that SARS-CoV-2 infection might have caused cavitory lesions in our patient's lungs.

In conclusion, although the presence of lung cavities is an atypical finding in COVID-19, which suggests alternative diagnoses, clinicians must consider that cavitation may result from processes initiated directly or indirectly by SARS-CoV-2 infection.

ARTICLE INFORMATION

CONFLICT OF INTEREST None declared.

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REFERENCES

- 1 Selvaraj V, Dapaah-Afriyie K. Lung cavitation due to COVID-19 pneumonia. *BMJ Case Rep.* 2020; 13: e237245. [↗](#)
- 2 Amaral LTW, Beraldo GL, Brito VM, et al. Lung cavitation in COVID-19: co-infection complication or rare evolution? *Einstein (Sao Paulo).* 2020 Jul 22. [Epub ahead of print]. [↗](#)
- 3 Hani C, Trieu NH, Saab I, et al. COVID-19 pneumonia: a review of typical CT findings and differential diagnosis. *Diagn Interv Imaging.* 2020; 5: 263-268. [↗](#)
- 4 Flisiak R, Horban A, Jaroszewicz J, et al. Management of SARS-CoV-2 infection: recommendations of the Polish Association of Epidemiologists and Infectiologists as of March 31, 2020. *Pol Arch Intern Med.* 2020; 130: 352-357. [↗](#)
- 5 Zoumot Z, Bonilla MF, Wahla AS, et al. Pulmonary cavitation: an under-recognized late complication of severe COVID-19 lung disease. *BMC Pulm Med.* 2021; 21: 24. [↗](#)