Volume 5 | Issue 6 | 2025

ISSN | 2771-019X

Journal of
Clinical & Medical Images
Case Reports

Open Access |Short Report

A case of organizing pneumonia secondary to COVID-19

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Received: Oct 10, 2025

Accepted: Nov 11, 2025

Published Online: Nov 18, 2025

Cite this article: Wang L, Li R, Yu Y. A case of organizing pneumonia secondary to COVID-19. J Clin Med Images Case Rep. 2025; 5(6): 1815.

Short report

A 78-year-old male was admitted to the hospital with "fever and dry cough for 2 weeks, 5 weeks after COVID-19 recovery". Five weeks prior to this admission, the patient was diagnosed with COVID-19 via PCR testing, complicated by respiratory failure. He was treated with Nirmatrelvir/Ritonavir and intubation with mechanical ventilation, followed by improvement and discharge. Two weeks before the current admission, he developed a fever (peak temperature: 38.5°C daily) and non-productive dry cough. Physical examination revealed inspiratory crackles. Pulmonary function tests showed reduced diffusing capacity. Laboratory tests demonstrated elevated C-Reactive Protein (CRP) and Erythrocyte Sedimentation Rate (ESR). Chest CT revealed right lung consolidation with air bronchograms, partially subpleural, consistent with the original COVID-19 lesion distribution (Figure 1A-1D).

Fiberoptic bronchoscopy showed clean airways without purulent secretions. Bronchoalveolar Lavage Fluid (BALF) predominantly contained eosinophils, with negative bacterial and fungal cultures. CT-guided right lung biopsy demonstrated patchy loose connective tissue formation and polypoid intraluminal plugs (Figure 2), confirming a diagnosis of COVID-19-associated Organizing Pneumonia (OP). The patient was treated with methylprednisolone at 1 mg/kg/day, and follow-up chest CT showed gradual resolution of the lesions.

The incidence of COVID-19-associated OP is approximately 5-20%, yet it often receives insufficient attention [1]. OP is more prevalent in moderate to severe COVID-19 cases, particularly among patients requiring mechanical ventilation or prolonged hospitalization. A multicenter study revealed that about 12% of COVID-19 survivors exhibited features of OP on follow-up CT scans, especially those with high viral loads or intense inflammatory responses (e.g., markedly elevated IL-6 levels). OP typically occurs 2-8 weeks after the acute phase of COVID-19, though some cases may overlap with viral pneumonia during the acute phase [2]. Clinical symptoms may include persistent dry cough, exertional dyspnea, and low-grade fever. Overlapping symptoms with the acute phase can lead to misdiagnosis as "long COVID". Characteristic chest CT findings include multifocal patchy consolidations (predominantly subpleural or peribronchial), reverse halo signs (central consolidation surrounded by ground-glass opacity), and migratory lesions (changing locations after corticosteroid therapy). The diagnostic gold standard remains Transbronchial Lung Biopsy (TBLB) or surgical lung biopsy demonstrating fibroblast plugs (Masson bodies) and inflammatory cell infiltration within alveolar spaces [3]. Current recommendations emphasize a combined Clinical-Radiological-Pathological (CRP) triad for evaluation. A diagnosis can be supported if corticosteroid therapy proves effective after excluding other etiologies [4]. Early recognition of COVID-19-associated OP is critical for improving prognosis. Future research should explore biomarkers (e.g., KL-6, SP-D) to predict OP risk and conduct long-term follow-up to determine whether OP progresses to irreversible pulmonary fibrosis.

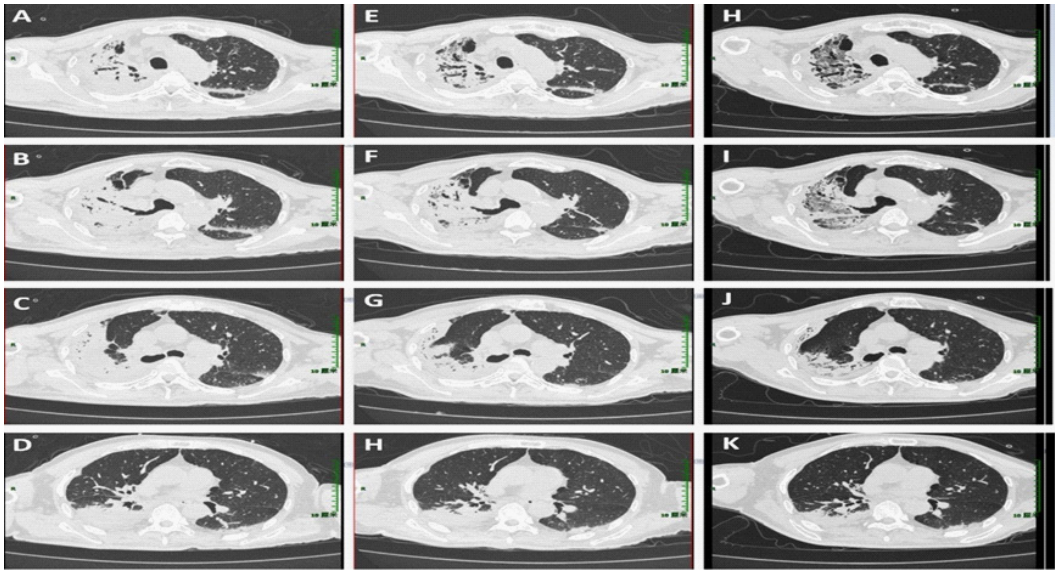

Figure 1: Imaging of the lung Computed Tomography (CT). Multifocal mass-like consolidations in the peribronchovascular regions of the right lung, which gradually resolved following glucocorticoid therapy. **(A-D)** Chest CT images on December 5th; **(E-H)** Chest CT images on December 15th; **(H-K)** Chest CT images on December 25th.

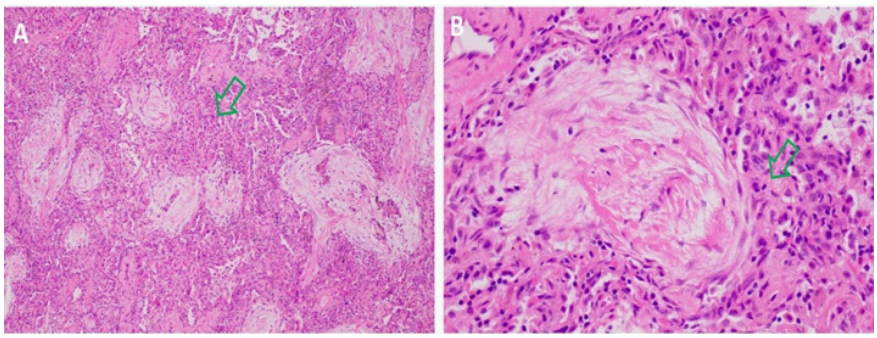

Figure 2: Pathological image of lung tissue biopsy. (A) Medium-power view highlights OPP lesions at the lobular margins (green arrows, HE 100×). (B) High-power view demonstrates polypoid plugs of loose connective tissue protruding into distal airspaces (green arrow, HE 400×).

Declarations

Acknowledgment: This work was supported by the Project of the Key Laboratory of Multiple Organ Failure, Ministry of Education (2023KF07, 2024KF03), the Key Laboratory of Intelligent Pharmacy and Individualized Treatment in Huzhou City (HZKF-20240101).

Conflicts of Interest: The authors have no conflicts of interest to declare.

Informed Consent: Informed consent was obtained for the use of information and images. The patient's identity has been kept confidential.

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