



Chest Film Demonstrating Reverse Batwing Pulmonary Opacities in a Patient with COVID-19 Pneumonia

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A 55-year-old man presented with a 2-day history of fever and shortness of breath. Chest radiography on day 2 revealed a left lower lung infiltrate (Figure 1A). He tested positive for severe acute respiratory syndrome coronavirus 2 by nasopharyngeal swab. He received oxygen therapy via nasal prongs and remdesivir, dexamethasone, and tocilizumab for coronavirus disease 2019 (COVID-19) pneumonia. Chest radiography on day 6 demonstrated newly developed subpleural opacity in the right lung (Figure 1B). The next day, he developed hypoxemia requiring intubation and mechanical ventilation. Arterial blood gases revealed pH 7.268, PaO₂ 32.5 mm Hg, and PaCO₂ 53.3 mm Hg while using 100% oxygen. Immediately, he received veno-venous extracorporeal membrane oxygenation (ECMO). A chest film showed profound reverse batwing pulmonary opacities (Figure 1C). Uneventfully, the patient was liberated from ECMO 2 weeks later and ventilator 3 weeks later, when the pulmonary opacities resolved.

Peripheral pulmonary opacities with perihilar region sparing, also known as “photographic negative of pulmonary edema,” can be seen in patients with chronic eosinophilic pneumonia, organizing pneumonia, and lung adenocarcinoma¹. These conditions are characterized by subacute symptoms and poor response to antibiotics. Notably, such a reverse batwing radiographic pattern may present in patients with COVID-19 pneumonia^{2,3}, a rapidly progressive disease that has caused 4.8 million deaths since December 2019⁴. Alarmingly, 20% of COVID-19 cases have required hospitalization; of them, 33% developed acute respiratory distress syndrome⁵. The peripheral and lower-zone distribution of pulmonary infiltrates, one of the typical radiographic findings of COVID-19 pneumonia, might reflect the vulnerabilities of bronchioles and alveoli to virus-induced inflammation⁶⁻⁸. Although computed tomography can be a sensitive tool for finding COVID-19 pneumonia⁸, chest radiography is still irreplaceable in

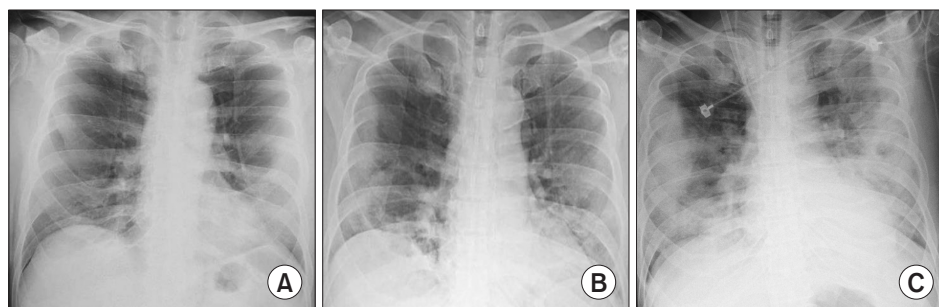


Figure 1. Chest films in a patient with coronavirus disease 2019 pneumonia showed a left lower-lung infiltrate on day 2 (A), demonstrated a new area of subpleural opacity in the right lung on day 6 (B), and disclosed profound reverse batwing pulmonary opacities on day 7 (C).

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screening for COVID-19 in resource-limited areas. In typical clinical presentation and epidemiologic features, a chest film showing reverse batwing changes may alert physicians to the diagnosis of COVID-19 pneumonia during the pandemic period.

Authors' Contributions

Conceptualization: Chang CJ, Pan SW, Chen YM. Formal analysis: Chang CJ, Pan SW, Chen YM. Writing - original draft preparation: Chang CJ, Pan SW, Chen YM. Writing - review and editing: Chang CJ, Pan SW. Approval of final manuscript: all authors.

Conflicts of Interest

No potential conflict of interest relevant to this article was reported.

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