Article title: Chest film demonstrating reverse batwing pulmonary opacities in a patient with COVID-19 pneumonia

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Main text

A 55-year-old man presented with a 2-day history of fever and shortness of breath. Chest radiograph on day 2 revealed 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 COVID-19 pneumonia. Chest radiograph on day 6 demonstrated newly developed subpleural opacity at right lung (Figure 1B). The next day, he developed hypoxemia requiring intubation and mechanical ventilation. Arterial blood gases revealed pH 7.268, PaO2 32.5mmHg, PaCO2 53.3mmHg while using 100% oxygen. Immediately, he received veno-venous extracorporeal membrane oxygenation (ECMO). Chest film showed profound reverse batwing pulmonary opacities (Figure 1C). Uneventfully, the patient was liberated from ECMO two weeks later and ventilator three 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 adenocarcinoma. These conditions are characterized by indolent symptoms and poor response to antibiotics treatment. Notably, such reverse batwing radiographic pattern may present in patients with COVID-19 pneumonia, a rapidly progressive disease causing 4.8 million deaths since December 2019. Alarmingly, 20% of COVID-19 cases required
hospitalization, in whom 33% developed acute respiratory distress syndrome\textsuperscript{5}. 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 inflammation\textsuperscript{6,7,8}. Although computed tomography can be a sensitive tool to find COVID-19 pneumonia\textsuperscript{8}, chest radiograph remains the irreplaceable one to screen for COVID-19 in resource-limited areas. In the context of 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.

\textbf{Reference}


Comparison to RT-PCR. Radiology. 2020;296(2):E115-E117.

Figure legends

Figure 1. Chest films in a patient with COVID-19 pneumonia showed left lower lung infiltrate on day 2 (A), demonstrated a new area of subpleural opacity at right lung on day 6 (B), and disclosed profound reverse batwing pulmonary opacities on day 7 (C).