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Medical Imagery

Concurrent COVID-19 and *Pneumocystis jirovecii* pneumonia in a severely immunocompromised 25-year-old patient

ARTICLE INFO

Article history:

Received 14 July 2020

Received in revised form 20 July 2020

Accepted 23 July 2020

Keywords:

SARS-CoV-2

Pneumocystis jirovecii

Acquired immune deficiency

HIV

COVID-19

Case presentation

A 25-year-old male presented with profound hypoxemia despite use of a non-rebreather mask during the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic. Chest X-ray showed a large right pneumothorax and extensive interstitial disease (Figure 1a). Hypoxemia continued despite chest tube placement, necessitating emergent intubation. Computed tomography (CT) of the chest (Figure 1b–d) was obtained and nasopharyngeal SARS-CoV-2 PCR was positive. HIV serology was positive and his absolute CD4+ count was 32 cells/mm³. Given his severe acquired immunodeficiency, radiographic findings were concerning for a life-threatening co-infection with *Pneumocystis jirovecii*, and treatment with trimethoprim–sulfamethoxazole, prednisone, and remdesivir was started. Four days later,

Pneumocystis pneumonia (PCP) was confirmed by bronchoscopic *Pneumocystis* antigen. The patient improved clinically and was successfully extubated 21 days later.

Discussion

Multifocal ground-glass opacities are the principal finding in both PCP and SARS-CoV-2 infection, making radiographic differentiation potentially difficult, especially in the immunocompromised host (Shi et al., 2020; Zu et al., 2020; Thomas and Limper, 2004; Kanne et al., 2012). Cystic lesions can occur in one third of patients with advanced PCP (Kanne et al., 2012). In the absence of these cystic radiographic findings, the diagnosis of *Pneumocystis jirovecii* co-infection would have been arduous. Therefore awareness of co-infections is critically important in the current SARS-CoV-2

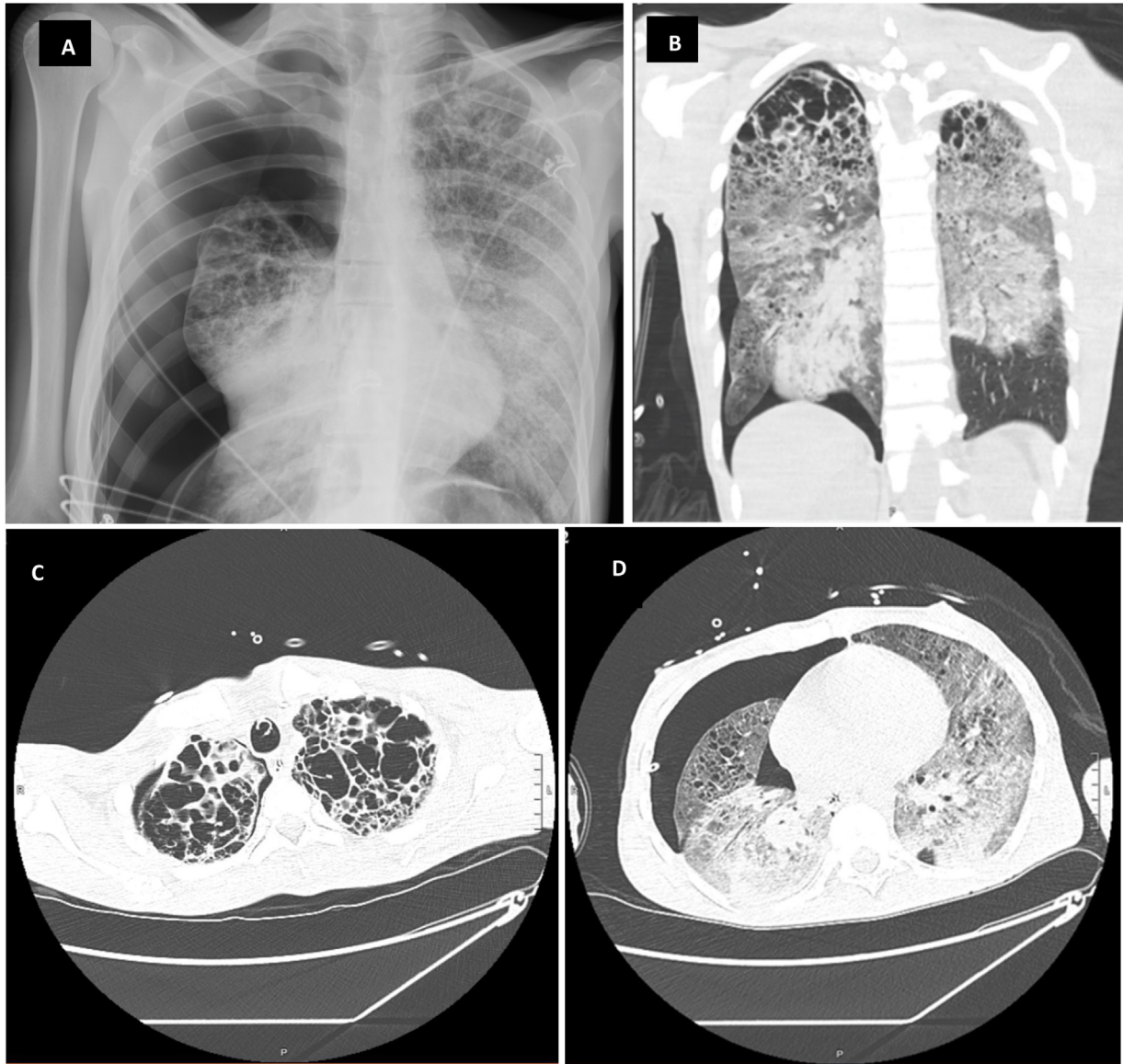


Figure 1. Chest X-ray and CT of the chest on presentation. (A) Chest X-ray showing a large right pneumothorax and extensive interstitial disease. (B) CT chest coronal view showing apical cystic changes, diffuse ground-glass opacities, dense consolidation, and pneumothorax. (C) Axial view of predominant apical cystic changes. (D) Axial view showing diffuse ground-glass opacities and right pneumothorax with the chest tube present.

pandemic to properly diagnose and subsequently treat these co-infections, thereby reducing morbidity and mortality.

Funding

None.

Patient consent

Written consent was obtained from the patient.

Conflict of interest

None.

Author contributions

All authors contributed to the care of the patient and participated in writing the manuscript.

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Received 14 July 2020

Received in revised form 20 July 2020

Accepted 23 July 2020