A Novel Viral Epidemic Collides with an Ancient Scourge: COVID-19 Associated with Tuberculosis

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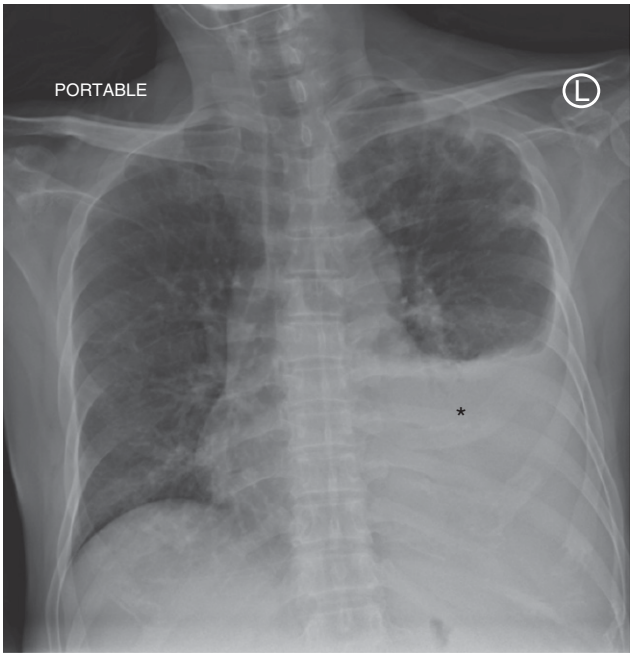

Figure 1. Portable anteroposterior chest radiograph on hospital Day 1 demonstrating left lower lung opacities and moderate effusion with atelectasis/consolidation (*).

A 61-year-old man with a history of Parkinson's disease presented with a history of 4 days of cough and fever to an emergency department in New York City. He described acute high-grade fever and cough with a background of 4 months of cough with occasional blood-streaked sputum. He was a New York City resident originally from China; he reported no known sick contacts or recent travel. Chest radiograph demonstrated a dense left basilar opacity (Figure 1), and point-of-care ultrasound revealed a left pleural effusion with compressive atelectasis (Video E1 in the online supplement). Patient was placed in respiratory and contact isolation because of concern about coronavirus disease (COVID-19) as well as tuberculosis (TB). Initial workup included a nasal pharyngeal swab, which tested positive by RT-PCR for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Complete blood count revealed lymphopenia (absolute lymphocyte count 935 cells/μl), and other routine laboratory values were within normal limits. A thoracentesis was performed, and 1.5 L of bloody, lymphocyte-predominant pleural fluid was removed. Sputum stained for acid-fast bacilli revealed moderate mycobacteria, and Gene-Xpert MTB/RIF sputum assay confirmed *Mycobacterium tuberculosis*.

The patient was initiated on hydroxychloroquine for putative antiviral activity against SARS-CoV-2 and started on standard isoniazid, rifampin, ethambutol, and pyrazinamide for TB treatment. Initially, he required nasal canula oxygen supplementation at 2 L/min to maintain a normal oxygen saturation. Over time, the patient improved clinically: his supplemental oxygen requirements resolved, sputum acid-fast stain for bacilli converted to negative ×3, repeat nasopharyngeal swab RT-PCR for SARS-CoV-2 was negative, and he was successfully discharged to home to complete his TB treatment course.

*N.S. is Associate Editor of *AJRCCM*. His participation complies with American Thoracic Society requirements for recusal from review and decisions for authored works.

Author Contributions: Conception: T.C., D.S., W.L., and M.O'D. Analysis and interpretation: T.C., D.S., W.L., N.S., and M.O'D. Drafting the manuscript: T.C., D.S., W.L., N.S., and M.O'D.

This article has an online supplement, which is accessible from this issue's table of contents at www.atsjournals.org.

Am J Respir Crit Care Med Vol 202, Iss 5, pp 748–749, Sep 1, 2020

Originally Published in Press as DOI: 10.1164/rccm.202003-0828IM on July 1, 2020
Internet address: www.atsjournals.org

Chronic lung disease is a risk factor for severe disease and mortality from COVID-19 (1), and more data is needed to determine whether it increases risk of infection. SARS-CoV-2 infection induces severe lymphopenia, with preferential effects on $CD4^+$ (cluster of differentiation 4–positive) T cells (2), whose depletion may increase the risk of reactivation of TB. In addition, limited data suggests that active TB or TB infection may be associated with more severe COVID-19 presentation (3). Clinicians should maintain an active index of suspicion for TB in COVID-19 guided by clinical presentation potentially inconsistent with COVID-19 (e.g., chronicity of symptoms, weight loss, or pleural effusions) and epidemiologic risk factors identifying increased TB risk. ■

Author disclosures are available with the text of this article at www.atsjournals.org.

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