

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

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A 61 year old man with a history of Parkinson's disease presented with a history of 4 days 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 although originally from China; he reported no known sick contacts or recent travel. Chest radiograph demonstrated a dense left basilar opacity (Image) and point of care ultrasound revealed a left pleural effusion with compressive atelectasis (Video file). Patient was placed in respiratory and contact isolation with concern for Coronavirus disease 2019 (COVID-19) as well as tuberculosis (TB). Initial work up included a nasal pharyngeal swab which tested positive by RT-PCR for SARS-CoV-2. Complete blood count revealed lymphopenia (absolute lymphocyte count 935 cells/ μ L), other routine laboratory values were within normal limits. A thoracentesis was performed and 1.5 liters of bloody, lymphocyte predominant pleural fluid was removed. Sputum stained for acid fast bacilli revealed moderate mycobacteria and Gene-Xpert MT/RIF sputum assay confirmed *M. tuberculosis* (MTB).

The patient was initiated on hydroxychloroquine for putative antiviral activity against SARS-CoV-2, and started on standard isoniazid, rifampin, ethambutol, pyrazinamide for TB treatment.

Initially he required nasal canula oxygen supplementation at 2 liters per minute 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 x 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.

This is the first case report of COVID-19 TB disease of which we are aware. Chronic lung disease is a risk factor for severe disease and mortality from COVID-19¹, and more data is needed to determine whether it increases risk of infection. SARS-CoV2 infection induces severe lymphopenia, with preferential effects on CD4+ T -cells², whose depletion may increase the risk of re-activation of TB. In addition, limited data suggests that active TB or TB infection may be associated with more severe COVID-19 presentation³. 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, pleural effusions) and epidemiologic risk factors identifying increased TB risk.

References

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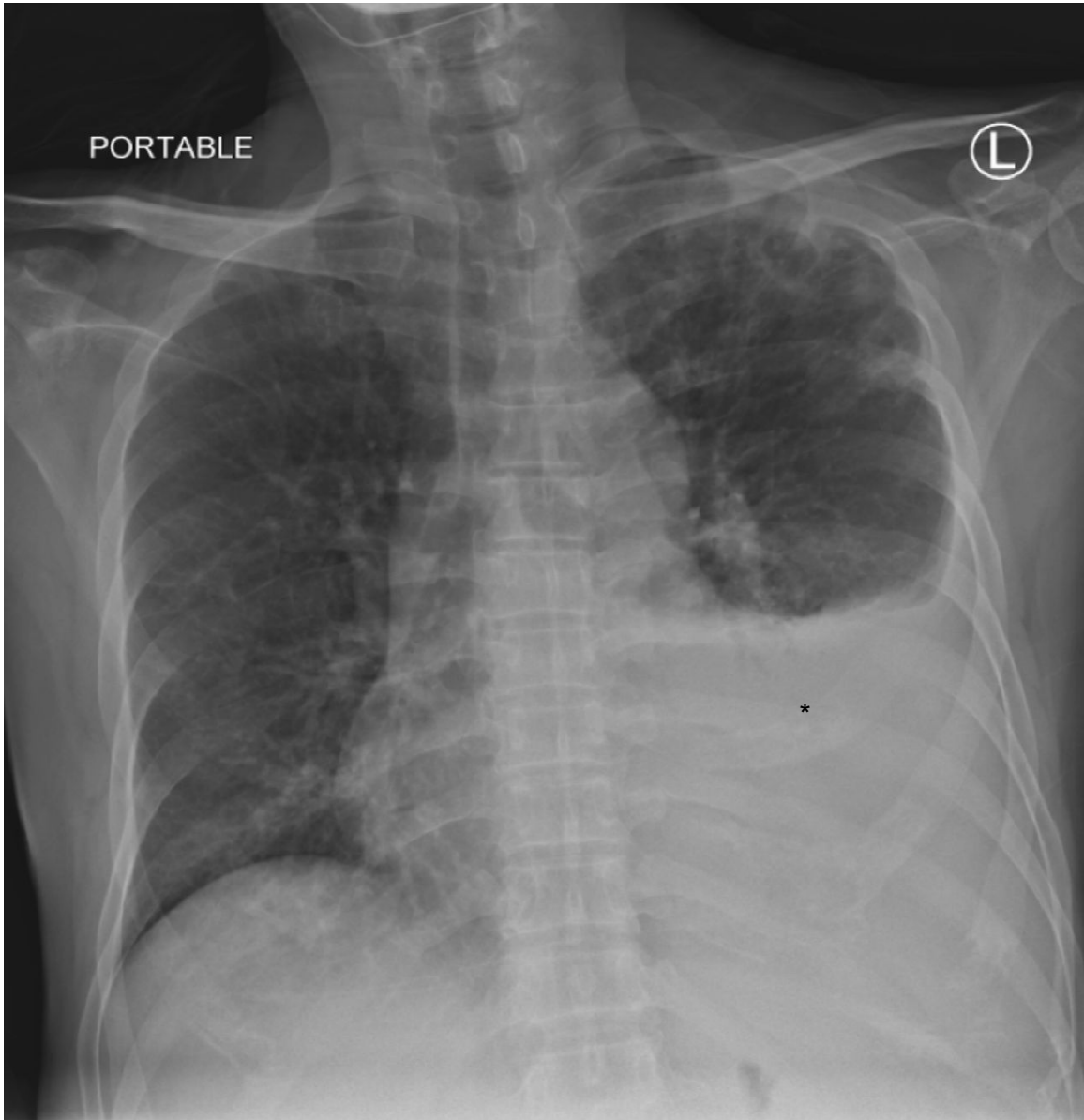
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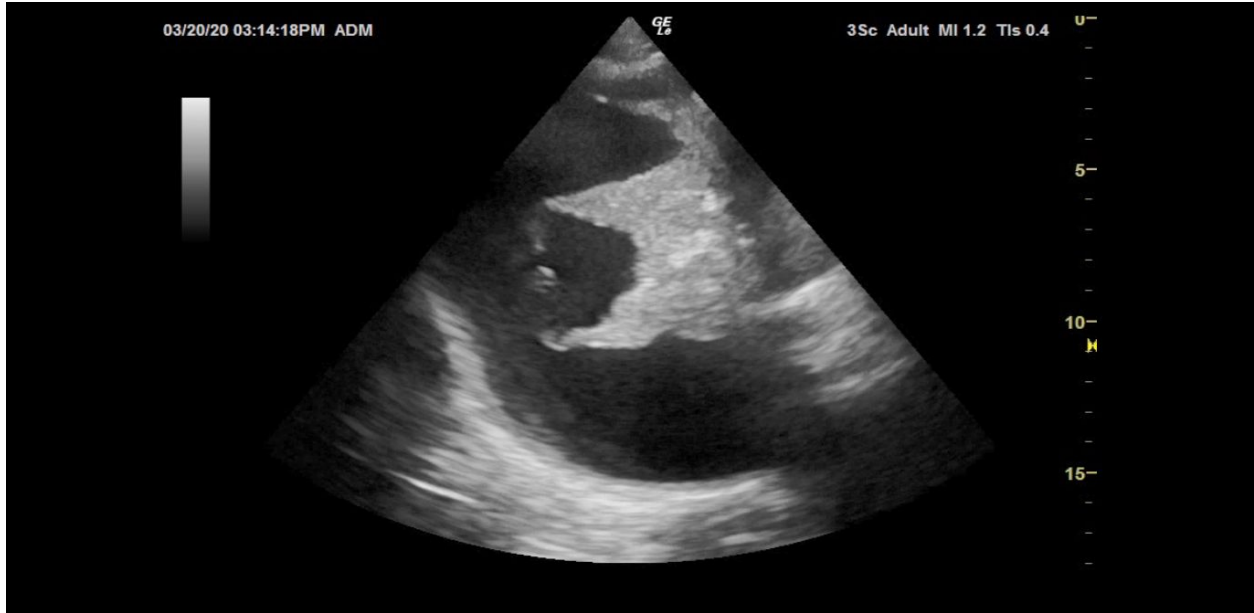
3. Yu Chen, MD; Yaguo Wang, PhD; Joy Fleming, PhD; Yanhong Yu, MD; Ye Gu, MD; Chang Liu, MD; Lichao Fan, MD; Xiaodan Wang, BSN; Moxin Cheng, MD; Lijun Bi, PhD; Yongyu Liu, MD . Active or latent tuberculosis increases susceptibility to COVID-19 and disease severity
medRxiv preprint doi: <https://doi.org/10.1101/2020.03.10.20033795>.

Legends

Image. Portable anteroposterior chest radiograph hospital day one demonstrating a left lower lung opacities, moderate effusion with atelectasis/consolidation (*).

Supplementary Video. Bedside point of care ultrasound video demonstrating moderate pleural effusion with compressive atelectasis.





Still of Video