

# A Young Man With Hemoptysis and Cavitory Lung Lesions



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**CASE PRESENTATION:** A man in his 20s presented with 2 months of mild fatigue and intermittent hemoptysis of less than a tablespoon per episode. He was previously healthy and was on no medications. He denied fevers, night sweats, weight loss, wheezing, dyspnea, musculoskeletal symptoms, and rashes. He had emigrated from a South American country to the United States 3 years earlier. He worked as a groundskeeper but had no exposures to animals, mold, or dusts. He reported rare prior cigarette smoking with no history of alcohol or drug use. He was unsure whether he had received the Bacillus Calmette-Guérin vaccine.

CHEST 2018; 153(4):e85-e88

## Physical Examination Findings

The patient was well-appearing and lungs were clear to auscultation. The remainder of the physical examination was unremarkable.

## Diagnostic Studies

Purified protein derivative (PPD) test was positive (15-mm induration), but QuantiFERON-TB Gold was negative. Three sputa were negative for acid-fast bacilli (AFB), and nucleic acid amplification testing for *Mycobacterium tuberculosis* was negative. CBC demonstrated normal WBC count with 7% eosinophils. Serum chemistry values and urinalysis were normal. Serology for coccidioides and strongyloides, histoplasma urine antigen, and HIV enzyme-linked immunosorbent assay were negative. Antinuclear, antineutrophilic cytoplasmic, and perinuclear antibodies were within normal limits. Sputum and stool were negative for ova and parasites. C-reactive protein was elevated at 6.1 mg/L (normal range, 0.1-3.0 mg/L), whereas erythrocyte sedimentation rate was normal. IgE level was elevated at 249 kU/L (normal range, 0-115 kU/L).

CT scan of the chest demonstrated a 1-cm right upper lobe (RUL) cavitory lesion, bronchiectasis, and tree-in-bud pattern.

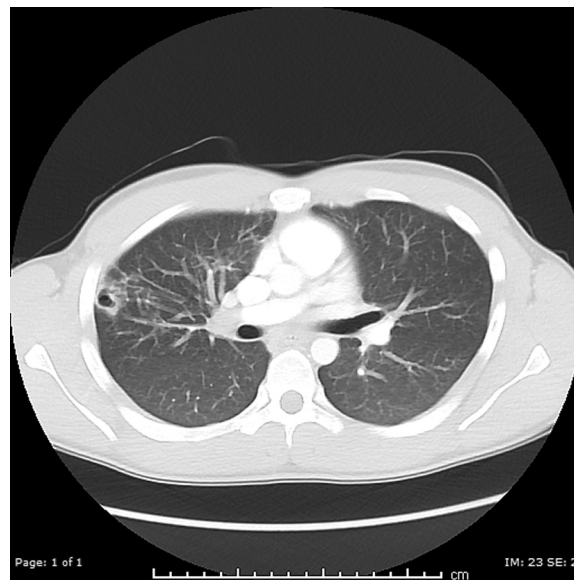


Figure 1 – Right upper lobe cavitory lesion with associated bronchiectasis and tree-in-bud pattern.

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DOI: <https://doi.org/10.1016/j.chest.2017.09.018>

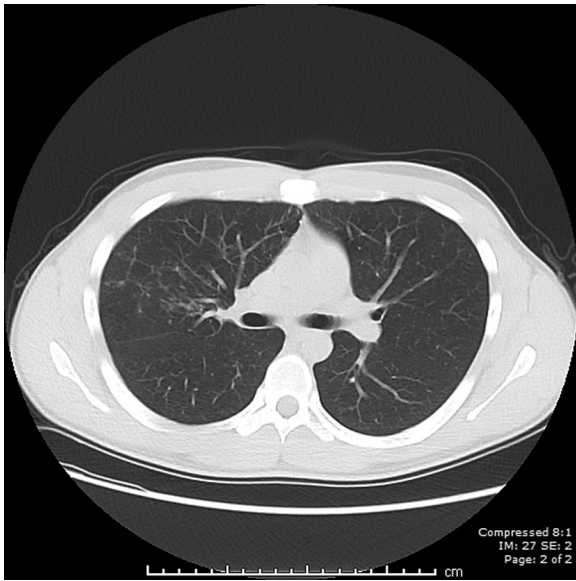


Figure 2 – Resolution of right upper lobe cavity and improvement of bronchiectasis and tree-in-bud changes after 2 months of anti-TB therapy with rifampin, isoniazid, pyrazinamide, and ethambutol. No new pulmonary lesions were identified.

bud nodular opacities (Fig 1). BAL of the RUL demonstrated normal flora, was AFB stain negative, and was unrevealing for actinomyces and nocardia.

Treatment for possible TB was initiated with rifampin, isoniazid, pyrazinamide, and ethambutol. Two months later, fatigue and hemoptysis had resolved, as had the cavitary lesion (Fig 2). AFB cultures remained negative. Given clinical and radiographic improvement, a diagnosis of culture-negative TB was inferred; he continued on isoniazid and rifampin.

He presented 1 month later with recurrent fatigue and hemoptysis despite adherence to his TB regimen. CT scan demonstrated a new right lower lobe cavitary lesion (Fig 3A). Peripheral eosinophils rose to 12% and three sputa were again negative for AFB. CT-guided biopsy revealed eosinophilic infiltrates with a fragment of a white, smooth bordered structure (Fig 3B).

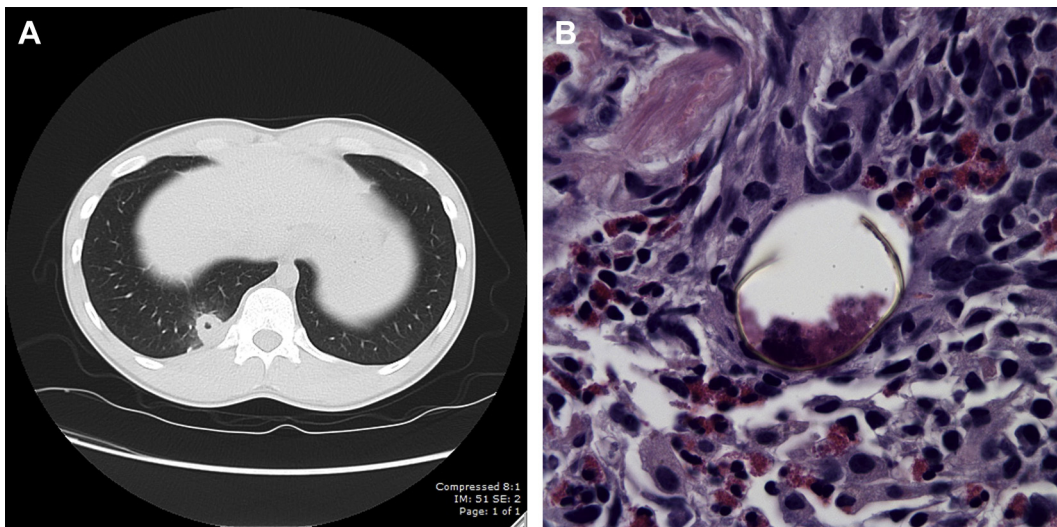


Figure 3 – A, Development of new right lower lobe thick-walled cavitary lesion with surrounding ground-glass opacities while on isoniazid and rifampin; after completing 3 months of anti-TB therapy. There were no new findings in the right upper lobe. B, Hematoxylin and eosin stain of CT-guided lung biopsy of the right lower lobe cavitary lung lesion demonstrating lung parenchyma with an eosinophilic infiltrate. A single structure with a refractile wall, roughly 30 microns in diameter was identified. Image courtesy of Robert Homer, MD, PhD, professor of pathology, Department of Pathology, Yale School of Medicine.

*What is the diagnosis?*

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