

Pulmonary Infection By A Novel *Nocardia* Species In A Patient With Advanced HIV Disease

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Case Presentation

- A 35-year-old African American male with untreated HIV (CD4 count of 14/mm³ (2%) and viral load of 41,000 copies/mL) was admitted with several months of weight loss, night sweats, fatigue, and productive cough.
- On physical examination, he was significantly cachectic with a body mass index of 12. On pulmonary examination, the patient had crackles in the right upper lung field. He also had oral candidiasis and diffusely diminished strength.
- CT chest revealed a right upper lobe necrotizing cavitory lesion with adjacent tree-in-bud nodularity. MRI brain revealed diffuse cerebral and cerebellar atrophy, but no focal abnormality.
- Patient was placed on airborne precautions and treated with empiric vancomycin, cefepime, and metronidazole. He underwent bronchoscopy for bronchioalveolar lavage (BAL) and tissue biopsy.
- On hospital day 9, sputum AFB cultures revealed gram positive branching filamentous bacteria, which was later identified as *Nocardia niwae*. BAL and lung tissue culture also yielded the same bacterium.
- Empiric antibiotics were discontinued and directed therapy with IV imipenem and trimethoprim-sulfamethoxazole (TMP-SMX) was initiated. TMP-SMX was subsequently replaced with oral linezolid due to concern for acute drug-induced liver injury indicated on inpatient laboratory studies.
- The patient completed a 6-week course of IV imipenem and linezolid with clinical improvement and resolution of liver injury. He was transitioned to oral TMP-SMX and minocycline. Combination antiretroviral therapy (cART) was initiated as well.

Figures

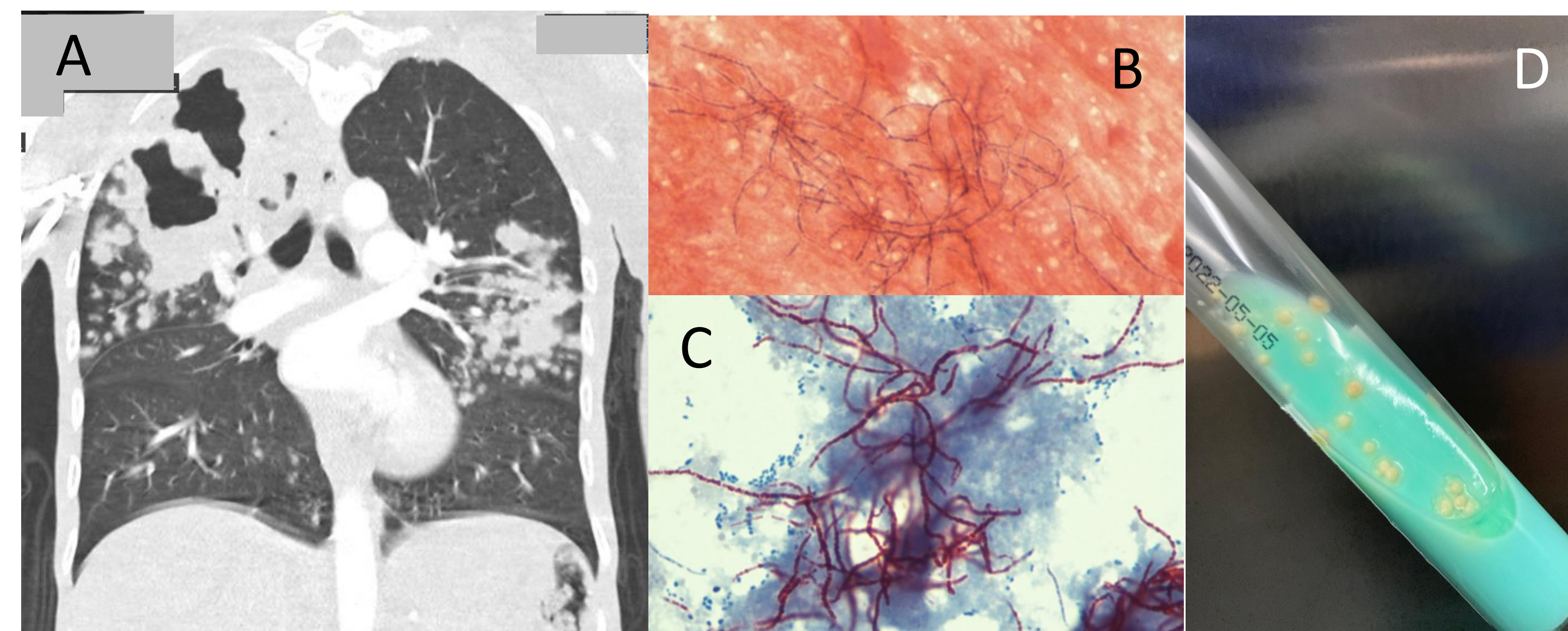


Figure A. Right upper lobe cavitory lesion on CT chest.

Figure B-D: *Nocardia niwae* in routine sputum smear (figure B), modified acid-fast bacilli (AFB) smear (figure C), and Lowenstein-Jensen medium (figure D)

Discussion

- *Nocardia* species are ubiquitous in the environment and cause pulmonary infection in those with chronic lung disease or opportunistic infection in immunocompromised hosts. Pulmonary nocardiosis often clinically resembles tuberculosis or atypical mycobacterial infection. [1,3]
- *Nocardia niwae*, identified in our case, is a novel species associated with isolated pulmonary disease, first described from taxonomic analysis of isolated human pulmonary sources in 2011. [2]
- Clinicians should have high suspicion of nocardiosis in patients presenting with pulmonary infection in the setting of immunocompromise.

Reference

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2. Moser BD, Klenk HP, Schumann P, Pötter G, Lasker BA, Steigerwalt AG, Hinrikson HP, Brown JM. *Nocardia niwae* sp. nov., isolated from human pulmonary sources. Int J Syst Evol Microbiol. 2011 Feb;61(Pt 2):438-442. doi: 10.1099/ijs.0.020370-0. Epub 2010 Mar 26. PMID: 20348315.
3. Pupaibool J, Limper AH. Other HIV-associated pneumonias. Clin Chest Med. 2013 Jun;34(2):243-54. doi: 10.1016/j.ccm.2013.01.007. Epub 2013 Apr 8. PMID: 23702174; PMCID: PMC3913173