Mycobacterium *xenopi* in an Immunocompromised Liver Transplant Recipient

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INTRODUCTION

Mycobacterium *xenopi* is a nontuberculous mycobacterium (NTM) first described in 1959 after isolating the bacterium from skin lesions of a South African toad species, Xenopus laevis[7]. To date, there is only one reported case in the literature of M. *xenopi* infection among liver transplant recipients[1]. M. *xenopi* pulmonary infections are rare in the United States but common in Canada, United Kingdom, and other parts of Europe[7]. Risk factors include immune deficiency, chronic obstructive pulmonary disease (COPD) and history of smoking[3]. Mortality from this pathogen is high, thought to be related to underlying comorbidities[2]. M. *xenopi* infection is acquired mainly through ingestion, inhalation, and less commonly, cutaneous exposure[7]. Among the NTM, M. *xenopi*, requires the longest growth time in culture, which makes the organism more difficult and time-consuming to diagnose[4]. We present a case of M. *xenopi* in a patient with a liver transplant on immunosuppressive medication.

CASE DESCRIPTION

History

A 67-year-old male with history of liver cirrhosis secondary to alcohol and chronic hepatitis C status post orthotopic liver transplant in 2014 on everolimus, former smoking history (31 pack-years), and COPD presented to the emergency room for evaluation of anemia, chronic productive cough for years, generalized weakness, dark stool, decreased appetite, and unintentional weight loss of 20 pounds in the last four months. Denied international travel.

Relevant Physical Exam

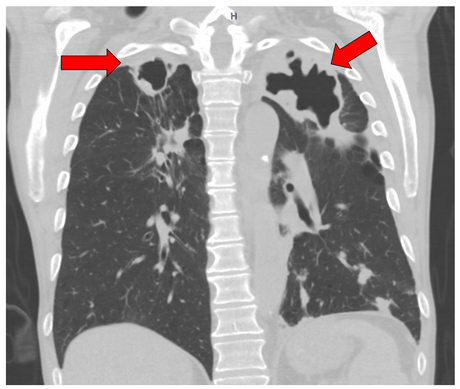
- **Vitals**: T 98.1º, HR 95, RR 16, BP 123/70, spO^2 100%
- **Respiratory**: Decreased breath sounds diffusely
- **Cardiovascular**: Normal rate and regular rhythm
- **Extremities**: Fingernail clubbing bilaterally

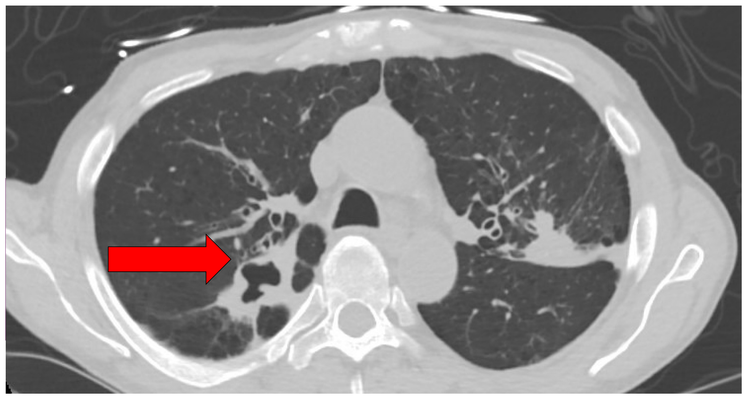
Relevant Hospital Course Findings

- **CT chest**: bilateral upper lobe and right lower lobe thick-walled cavities, numerous spiculated nodules in the left lower lobe and left upper lobe, and moderate left lower lobe airspace consolidation.
- **Bronchoscopy with bronchoalveolar lavage (BAL)** performed.
- Acid-Fast Bacilli sputum and bronchoscopy with BAL cultures: Mycobacterium *xenopi* time to detection: **68 and 119 days**, respectively.

IMAGING

- **Chest CT**





Labs/Microbiology

Labs

Component	Value	Reference Range
White blood cell count	8.5 x 10^3/uL	4.0-10.9 x 10^3/uL
Hemoglobin	6.8 g/dL	13.5-18.0 g/dL

Microbiology

Component	Time to Detection (days)	Value
Acid-Fast Bacilli Sputum Culture	68	**Light growth Mycobacterium *xenopi***
Acid-Fast Bacilli BAL culture	119	**Light growth Mycobacterium *xenopi***

DISCUSSION

- Little is known about the organism M. *xenopi*, but several clinical causes demonstrate the all-cause mortality is higher than all other NTM infections[6]. One study found a 3-year mortality rate of 69.1% and the time to death of nine months on average[2].
- The treatment success rate in patients with M. *xenopi* is higher than M. avium complex due to increased sputum conversion[8]. The clinical manifestations are unclear, but immune deficiency, COPD, and smoking history are known risk factors[3]. Radiologically, M. *xenopi* is associated with cavities and nodules[3].
- Antimicrobial therapies for M. *xenopi* have not been well established. The suggestion is three agents including: rifamycin, ethambutol, and either a macrolide or fluoroquinolone with the addition of parenteral amikacin for cavitary or severe bronchiectatic disease per Infectious Diseases Society of America/American Thoracic Society guidelines from 2020[6].

CONCLUSION

- Mycobacterium *xenopi* is a rare non-tuberculous bacterium with high mortality and should be considered in patients who are immunocompromised, have underlying pulmonary disease, and have a history of smoking.
- Mycobacterium *xenopi* requires a longer incubation period compared to other human pathogenic nontuberculous mycobacterium. To improve the yield of diagnosis and to allow for susceptibility testing when suspecting M. *xenopi*, it would be prudent to extend the incubation period beyond the 56 days typically recommended[4].

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