TB or not TB? A Unclear Diagnosis.

Alissa Schurr, DO[1], Sahlia Joseph-Pauline, DO[1], Erik Polan, DO, FACOI[2]

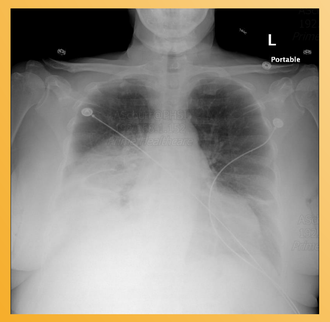
[1]Transitional Year Residency; [2]Department of Internal Medicine
Philadelphia College of Osteopathic Medicine, Philadelphia, PA USA

Introduction

- Pulmonary tuberculosis (TB) is a highly contagious bacterial disease caused by *Mycobacterium tuberculosis* and is transmitted by inhalation of aerosolized droplets.
- Risk factors include endemic areas, immunosuppression, socioeconomic factors (poverty, malnutrition), and occupational
- Primary infection is followed by a latent stage in which the infection remains dormant until reactivation years later. Patients with latent infection are asymptomatic and non-contagious.
- Symptoms of active TB include weight loss, fever, night sweats, and persistent productive cough.
- Confirmatory diagnostic testing comprises chest radiography, acid fast staining, culture, and nuclear amplification.

Case Presentation

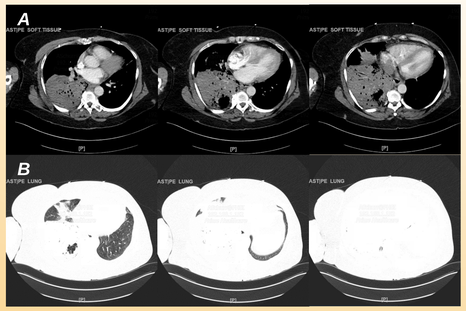
- 55-year-old female with a history of schizophrenia, viral hepatitis, polysubstance abuse, and previous incarceration presented with three weeks of shortness of breath and productive cough (orange-colored sputum). She had associated low-grade fever (T_{max} 100.0°F), headache, and musculoskeletal chest pain.
- Initial chest x-ray revealed a unilateral abnormal consolidation.
- Diagnosed with community-acquired pneumonia and was started on Cefepime and Vancomycin with Infectious Disease consult pending.
- Social history prompted the concern for TB; though imaging and presentation were not classic, appropriate isolation was initiated. Triple sputum cultures were collected and stained for acid-fast bacilli.



Chest X-Ray from day of admission. An abnormal soft tissue density is present in the left mid and lower lung without typical contour for pneumonia.

Hospital Course

Day of Stay	Events	Results	Antibiotics
1	Admitted to medicine floor	CTA negative for pulmonary embolism Influenza, Legionella, COVID (-)	Vancomycin and Cefepime
4	Infectious Disease consulted; patient placed on airborne isolation; Sputum culture collected, sent for AFB stain and culture x3	Blood cultures (-)	
7	Removed from isolation	AFB stain (-)	Ampicillin-Sulbactam
11		*M. tuberculosis* and *MAC* DNA probes (-)	
			Amoxicillin-Clavulanate
18	Placed in isolation	AFB culture (+)	
		Quantiferon Gold (-)	
22	Additional sputum culture collected	Repeat AFB stain (-)	
23	Discharged Home		
Day 2 post-D/C		Sputum culture (+) for *Klebsiella pneumoniae*	
Day 24 post-D/C		ID sequencing (+) for *M. peregrinum*	



CTA from day of admission. Negative for pulmonary embolus. A dense alveolar consolidation is present in the right lower lobe with infiltrates in the lingula and right middle lobe. No mass is identified.
A) Soft tissue window
B) Lung window

Course Resolution

- Prior to discharge, an additional sputum AFB smear and culture was collected with a negative preliminary result. This patient was ultimately discharged with pneumonia, with thought of non-tuberculosis mycobacteria as the cause.
- Antibiotic regimen was completed prior to day of discharge.
- Proper communication occurred with the regional Department of Health (DOH).
- Close follow-up with her primary care doctor was arranged with referral to Infectious Disease as needed.
- ID sequencing revealed *M. peregrinum* 42 days after sputum collection (24 days after discharge).

Discussion

- The diagnosis of TB can be somewhat complicated.
- Minimization of transmission remains of utmost importance; thus, TB should be fully ruled out prior to discharge.
- In the case presented, the patient more likely had atypical mycobacterial infection than TB; however, her social history warranted evaluation for TB.
- A multidisciplinary approach is necessary for a patient with suspected TB, including DOH notification.
- The biopsychosocial and respiratory-circulatory models of osteopathic care were relevant to this case.
- Atypical mycobacteria are acid-fast bacilli with a notably slow rate of growth in culture (at least 7 days for fast-growing strains).
- Atypical mycobacterial pulmonary infections are typically caused by three species: *M. avium* complex, *M. kansasii*, and *M. abscessus.*
- *M. peregrinum* rarely causes pulmonary infection and more commonly causes surgical site and catheter-related infections.
- Other disease processes that can mimic atypical mycobacterial pulmonary infection are TB, sarcoidosis, fungal infections, and hypersensitivity pneumonia

References

- Adigun R, Singh R. Tuberculosis. StatPearls. https://www.ncbi.nlm.nih.gov/books/NBK441916/. Published January 2023. Accessed April 2023.
- Morita Y, Kondo Y, Takeuchi E. Pulmonary mycobacteriosis caused by mycobacterium peregrinum. *Medicine*. 2022;101(6):e28809. doi:10.1097/md.0000000000028809
- Winburn B, Sharman T. Atypical Mycobacterial Disease. StatPearls. https://www.ncbi.nlm.nih.gov/books/NBK556117/. Published January 2023. Accessed April 2023.