

Rare and Resident: Mycobacterium gordonae challenges immunocompetence

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Introduction

Mycobacterium gordonae (*M. gordonae*) is a common, rarely pathogenic organism found in water and soil that is often regarded as a colonizer or contaminant when isolated in patients. While considered opportunistic in immunocompromised hosts, its pathogenicity in immunocompetent hosts is exceedingly rare and only described in case reports. Clinical presentation of these cases varies by site of infection and degree of immunocompetence but has been involved in skin and soft tissue, pulmonary, and disseminated infections. We describe a case of disseminated *M. gordonae* in an immunocompetent host to add to this disease's limited literature.

Case Description

Our patient is a 69-year-old female former nurse without significant medical history admitted for three months of progressive generalized weakness and two weeks of ambulatory dysfunction with hypervolemia. Blood work demonstrated acute renal failure requiring hemodialysis. Renal biopsy showed necrotizing granulomatous interstitial inflammation with rare non-tuberculous acid-fast bacilli in areas of suppurative granulomatous inflammation. Left optic neuropathy was diagnosed on ophthalmologic examination. Chest x-ray was without cavitation. Further workup excluded Lyme disease, syphilis, B12 and folic acid deficiencies. She was discharged on rifampin, isoniazid, pyrazinamide, and ethambutol therapy.

The patient was readmitted two weeks later for encephalopathy with left facial nerve deficits. MRI brain/orbits revealed diffuse, smooth pachymeningeal and leptomenigeal enhancement and optic nerve sheath enhancement with right-sided proptosis. Cerebrospinal fluid analysis, blood cultures, HIV, cryptococcal antigen, RPR, FTA-ABS, HSV 1/2 PCR, Lyme Ab, Legionella urine antigen, and Prion panel returned negative. Neurosurgery performed a right temporal craniotomy with dural and brain biopsy given nonspecific MRI findings. Pathological findings demonstrated chronic meningitis with necrotizing granuloma and mycobacteria in AFB stain consistent with mycobacterial meningitis.

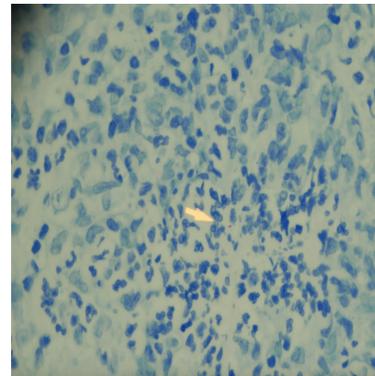


Figure 1. Renal biopsy with Fite stain showing a rare non-tuberculous acid fast bacilli

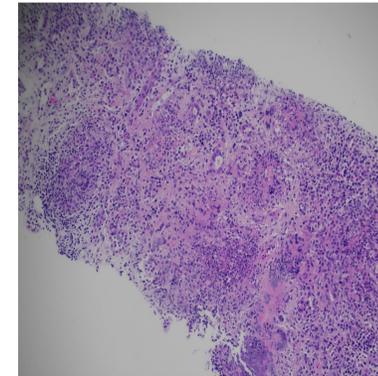


Figure 2. Renal biopsy slides showing necrotizing granulomatous interstitial inflammation

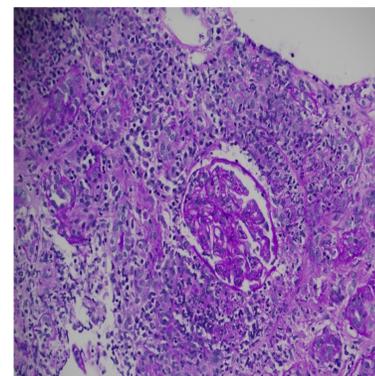


Figure 3. Renal biopsy slide showing shrunken glomeruli, but without evidence of glomerulonephritis

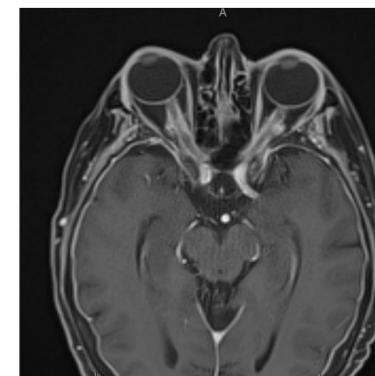


Figure 4. MRI image showing smooth enhancement and thickening enhancement extending along the optic nerve sheaths

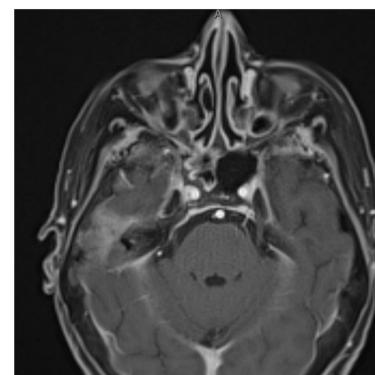


Figure 5. MRI image showing diffuse smooth enhancement along the cisternal portion of the left trochlear nerve.

Discussion

This case showcases disseminated *M. gordonae* in an immunocompetent host with biopsy proven nephritis, meningitis, and pulmonary infection. We identified only two disseminated infections with neurologic symptoms, though both had VP shunts present. Despite our patient's remote healthcare background, she lacked renal, pulmonary, or neurological factors felt to increase her risk.

The sparse pathogenicity of *M. gordonae* makes studying its infectivity, predisposing factors and elusive diagnosis in healthcare settings challenging. As most reports of this organism affect isolated organ systems and immunocompromised hosts, this presentation suggests that additional research may be warranted to investigate the pathogenicity of *M. gordonae* and targeted host susceptibilities.

DATE	TESTS	RESULT DATE	RESULT
3/24/23	QuantIFERON TB; serum sample		Negative
3/25/23	AFB Culture; Sputum	4/20/23	Positive for Mycobacterium species
		5/25/23	Positive for Mycobacterium Gordonae by DNA probe
3/26/2023	AFB Culture; Urine sample	7/6/23	Positive for Mycobacterium species
3/30/23	RPR		Negative
4/26/23	CSF analysis with lumbar puncture specimen; HSV1,2 PCR, FTA-ABS, Cryptococcal antigen, AFB culture		Negative
4/26/23	HIV, Lyme		Negative

Table 1. Table showing the timeline of various tests ordered and results

References

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