

POSTERS IN THE PARK

A Tale of Two Mycobacteria: Pulmonary Tuberculosis and Leprosy Co-Infection

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History of Present Illness: A 70 year old male with remote history of leprosy presents with a 4-week history of fever, night sweats, weight loss, decreased appetite, and new cutaneous ulcerations involving his arms, legs, and abdominal wall. He additionally reported numbness and paresthesia in all extremities and cough productive of yellow sputum with no hemoptysis.

Additional History:
 - History of multibacillary leprosy treated with dapsone and rifampin 30 years prior
 - Insulin-dependent diabetes
 - Worked in healthcare in Colombia for the last several decades

Physical Exam:
 Vitals: Blood pressure 160/80, pulse 88, respiratory rate 22, temperature 102.2°F (39°C)
 General: Well-appearing, no acute distress
 Lungs: Bibasilar crackles and coarse breath sounds anteriorly
 Abdomen: Negative for hepatosplenomegaly
 Skin: Multiple ulcerated lesions with surrounding erythema on elbows, abdomen, and chest wall (Figures 1 and 2). Multiple hypopigmented confluent macules on bilateral lower limbs (Figure 3).
 Extremities: Charcot ankle and feet joints (Figure 3).
 Neurological: Decreased sensation and reflexes in all extremities. Thickened palpable nerves in bilateral epitrochlear fossae and neck.
 Lymphatic: No cervical, axillary, or submandibular lymphadenopathy

Labs/imaging:
 - Chest x-ray revealed a miliary pattern (Figure 4)
 - Negative HIV and HTLV-1 testing

Pathology/Molecular Testing:
 - Sputum smear positive for 3+ acid-fast bacilli (AFB)
 - Molecular PCR and culture of sputum positive for *M. tuberculosis*, no resistance detected
 - Histopathology of skin biopsies consistent with type 2 leprosy reaction
 - High bacillary index and AFB were present in histiocytes, cutaneous nerves, and epithelial cells (Figures 5 and 6)
 - PCR of skin biopsy specimen positive for *M. leprae* (sent to National Hansen's Disease Program, Carville, Louisiana)



Figure 1. Non-healing ulcerated lesions on chest wall



Figure 4. CXR demonstrating a miliary pattern



Figure 3. Hypopigmented confluent macules and Charcot joints in bilateral lower extremities

Figure 2. Non-healing ulcerated lesion on right elbow associated with thickened nerves and hypoesthesia

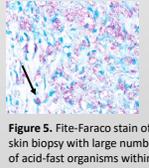


Figure 5. Fite-Faraco stain of skin biopsy with large number of acid-fast organisms within perineurium, bacillary index 6+

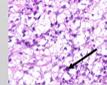


Figure 6. Large amount of neutrophils in H&E stain of skin biopsy consistent with erythema nodosum leprosum

Treatment/Follow-Up:

- Treated with rifampin, isoniazid, pyrazinamide, ethambutol (RIPE) plus monthly clofazimine via directly observed therapy plus dapsone daily.
- Sputum remained positive for tuberculosis at 2 months.
- Pyrazinamide and ethambutol discontinued after AFB smear and PCR of sputum converted to negative.
- Isoniazid (with rifampin) continued for a total of 7 months to complete treatment for tuberculosis
- Rifampin, dapsone, and clofazimine will be continued for a minimum of 2 years for treatment of leprosy, with repeat skin biopsy to assess for decreasing bacillary load at that point.
- The patient is also receiving a prednisone taper for type 2 leprosy reaction treatment.

Major Teaching Points:

- The immunological milieu of the host appears to influence susceptibility to mycobacterial infections and therefore, mycobacterial co-infections are biologically plausible in the same host
- There is no evidence that having one mycobacterial infection provides immunological protection against other mycobacterial species, with the exception of *Bacille-Calmette-Guérin* vaccine, a live-attenuated form of *M. bovis*, which protects against *M. ulcerans* and *M. leprae*
- Co-infection of *M. leprae* with other mycobacterial infections is a rare phenomenon: 16 cases of pulmonary tuberculosis and leprosy co-infection and 3 cases of *M. fortuitum* and leprosy co-infection documented in the literature
- Recent evidence suggests that the occurrence of severe leprosy reactions or forms of leprosy including Lucio's leprosy may be due to co-infection between *M. leprae* and other mycobacteria including *M. lepromatosis*
- Leprosy reactions can occur at any point in the disease course
- Prospective monitoring of patient with previously treated leprosy and those with a recent diagnosis may prove useful in elucidating if mycobacterial co-infections have an impact on the spectrum of disease and severity of leprosy

References:

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NAME: 03.13_66_Tobolowsky		WO Ref#	SUBSTRATE:		ADDITIONAL REQUIREMENTS	
SIZE: 24"x12"	QUANTITY: 1		<input type="checkbox"/> SINTRA	<input type="checkbox"/> 1/8"	<input type="checkbox"/> 1/4"	<input type="checkbox"/> DETACHABLE ARROWS
			<input type="checkbox"/> FOAMCOR	<input type="checkbox"/> 1/8"	<input type="checkbox"/> 3/16"	<input type="checkbox"/> SPIDER FEET
			<input type="checkbox"/> ULTRABOARD	<input type="checkbox"/> 3/16"	<input type="checkbox"/> 1/2"	<input type="checkbox"/> ADHESIVE
			<input type="checkbox"/> GATORFOAM	<input type="checkbox"/> 3/16"	<input type="checkbox"/> 1/2"	<input type="checkbox"/> EASEL BACK
			<input type="checkbox"/> COROPLAST	<input type="checkbox"/> 1/8"		<input type="checkbox"/> VELCRO
			<input type="checkbox"/> ACRYLIC	<input type="checkbox"/> 3/16"	<input type="checkbox"/> CLEAR	<input type="checkbox"/> DIE CUT
			<input type="checkbox"/> 1mm KOMATEX (NexttWall)	<input type="checkbox"/> MILKY	<input type="checkbox"/> BRONZE	
			<input checked="" type="checkbox"/> POSTER PAPER	<input type="checkbox"/> IDRY ERASE		
				<input type="checkbox"/> ADDITIONAL DETAILS		
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