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 multidrug-resistant leprosy treated with clofazimine and rifampin for 30 years prior
- Results independent diabetes
- Worked in healthcare in Columbia for the last several decades

Physical Exam:
- Bilateral epiglottic eritemma, no acute rhinorrhea
- Lesions present on chest wall, back, and legs
- No cervical, axillary, or submandibular lymphadenopathy
- Decreased sensation and reflexes in all extremities
- Thickened perineurium, bacillary Index 6+
- Coagulase-negative staphylococci on skin biopsy

Pathology/Molecular Testing:
- Fite-Faraco stain of skin biopsy consistent with erythema nodosum leprosum
- Large amount of neutrophils in H&E
- Bacille-Calmette-Guerin (BCG) vaccination

Additional Details:
- Pulmonary tuberculosis and leprosy co-infection documented in the literature
- Recent evidence suggests that the occurrence of severe leprosy reactions or forms of leprosy including tuberculoid leprosy may be due to co-infection between M. leprae and other mycobacterial infections
- 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

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-Guerin (BCG) vaccine, a live-attenuated form of M. bovis, which protects against M. ulcerans and M. avium
- Co-infection of M. avium with other mycobacterial infections is a rare phenomenon: 26 cases of pulmonary tuberculosis and leprosy co-infection and 3 cases of M. fortuitum and leprosy co-infection documented in the literature
- Mycobacterial co-infections are biologically plausible in the same host
- 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

Laws of Medicine:
- The number of cases of pulmonary tuberculosis and leprosy co-infection between M. leprae and M. tuberculosis is unknown
- The number of cases of pulmonary tuberculosis and leprosy co-infection between M. leprae and other mycobacterial infections is unknown

References: