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Opinion Article

Etiology and Clinical Pathology of *Mycobacterium szulgai*

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DESCRIPTION

Mycobacterium szulgai is a rare and relatively unknown member of the *Mycobacterium tuberculosis* complex. It is a slow-growing, acid-fast bacterium that has the potential to cause respiratory and extra pulmonary infections in humans. Despite its rarity, infections caused by *Mycobacterium szulgai* are clinically significant and require special attention. This article aims to provide an overview of *Mycobacterium szulgai*, its characteristics, clinical manifestations, diagnosis, and treatment options.

Characteristics of *Mycobacterium szulgai*

Mycobacterium szulgai was first identified in 1982 and is named after Professor Szulc, a Polish microbiologist. It is a non-chromogenic, photochromogenic, or weakly chromogenic bacterium. *Mycobacterium szulgai* is a slow-growing organism and takes several weeks to form colonies on solid media. It is an acid-fast bacterium, meaning it retains the dye when subjected to acid washes during staining procedures. *Mycobacterium szulgai* is an environmental organism found in water, soil, and various animals. Although it is less commonly encountered compared to other mycobacterial species, it has been isolated from respiratory samples, lymph nodes, and wounds. Immuno compromised individuals, such as those with HIV/AIDS or organ transplant recipients, are more susceptible to *Mycobacterium szulgai* infections.

Clinical manifestations

Mycobacterium szulgai infections primarily affect the lungs, but extra pulmonary infections have also been reported. Pulmonary infections can present as chronic pneumonia, bronchitis, or cavitary disease. Symptoms may include a persistent cough, sputum production, chest pain, and shortness of breath. Extra pulmonary infections typically involve the skin and soft tissues, lymph nodes, bones, and joints. Due to its slow growth and nonspecific symptoms, diagnosing *Mycobacterium szulgai* infections can be challenging. The clinical presentation of *Mycobacterium szulgai* infections is often similar to other mycobacterial infections, such as *Mycobacterium avium* Complex (MAC) or *Mycobacterium tuberculosis*, requiring a thorough evaluation and laboratory testing for accurate diagnosis.

Diagnosis

Laboratory diagnosis of *Mycobacterium szulgai* infections involves a combination of microbiological, histopathological, and molecular techniques. Acid-fast staining of respiratory specimens, such as sputum or bronchoalveolar lavage fluid, may reveal acid-fast bacilli, indicating mycobacterial infection. However, acid-fast staining alone cannot differentiate *Mycobacterium szulgai* from other mycobacterial species. Culture is the gold standard for the diagnosis of *Mycobacterium szulgai* infections. Isolation of the organism from respiratory or extra pulmonary samples on specialized mycobacterial media, such as Lowenstein-Jensen or Middlebrook agar, is essential. Molecular techniques like Polymerase Chain Reaction (PCR) can be employed to confirm the species. Histopathological examination of affected tissues may reveal granulomas and acid-fast bacilli, providing valuable diagnostic information. However, this method is invasive and not always possible or conclusive.

Treatment

The treatment of *Mycobacterium szulgai* infections typically involves a multidrug regimen similar to that used for treating other mycobacterial infections. The choice of antibiotics depends on susceptibility testing, which should be performed to guide therapy. *In vitro* susceptibility testing can help identify the most effective drugs, such as clarithromycin, rifampicin, ethambutol, and streptomycin. The duration of treatment varies but generally lasts for several months to a year.

CONCLUSION

Mycobacterium szulgai, although rare, is a significant pathogen that can cause respiratory and extra pulmonary infections in humans. Its slow growth and nonspecific symptoms make diagnosis challenging, often requiring a combination of microbiological, histopathological, and molecular techniques. While it shares similarities with other mycobacterial infections, proper identification is crucial for effective treatment. Treatment

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involves a multidrug regimen based on susceptibility testing, with antibiotics such as clarithromycin, rifampicin, ethambutol, and streptomycin being commonly used.