OPEN ACCESS Freely available online

Mycobacterial Diseases

ISSN: 2161-1068

Perspective

Challenges in Diagnosing Ocular Tuberculosis

Ulrik Aarnoutse*

Department of Ophthalmology, Uppsala University, Uppsala, Sweden

DESCRIPTION

Ocular tuberculosis (TB) is a form of extrapulmonary TB that affects the eyes, and it poses significant diagnostic challenges for healthcare providers. As an infectious disease caused by *Mycobacterium tuberculosis (M. tb)*, TB typically presents with respiratory symptoms. However, when the bacteria infect the eye, the manifestations can be subtle, leading to delays in diagnosis and treatment. Ocular TB can involve various structures of the eye, including the conjunctiva, sclera, uvea, and retina. The disease can present as a spectrum of conditions, such as uveitis (inflammation of the uvea), choroiditis (inflammation of the choroid), or even more severe complications like retinal detachment. Symptoms may include blurred vision, eye pain, redness, and photophobia, but these signs are often nonspecific and can overlap with other ocular conditions, complicating the diagnostic process.

Diagnostic approaches

The diagnostic challenge of ocular TB is further compounded by the limitations of current diagnostic tools. Direct microbiological evidence of TB in the eye is rare, as the bacterium is not often found in ocular tissues or fluids. Moreover, obtaining intraocular samples is invasive, making it impractical in many cases. Traditional tests such as the Tuberculin Skin Test (TST) or Interferon-Gamma Release Assays (IGRA), though helpful, cannot definitively diagnose ocular TB because they only indicate exposure to M. *tb* rather than an active infection. Imaging techniques such as Optical Coherence Tomography (OCT) and Fluorescein Angiography (FA) can provide valuable insights into retinal and choroidal involvement, but these are supportive tools rather than definitive diagnostic modalities. Chest X-rays or CT scans are often used to look for evidence of pulmonary TB, but even in cases of ocular TB, pulmonary involvement may not be evident, further complicating the diagnosis. Another challenge lies in distinguishing between active TB infection and a hypersensitivity reaction to TB antigens, referred to as paradoxical worsening. This immune-mediated response can occur even when TB is effectively treated elsewhere in the body, leading to ocular inflammation that mimics active TB infection. Laboratory investigations, including Polymerase Chain Reaction (PCR) tests on ocular fluids or tissues, can also be valuable. These tests can provide direct evidence of M. *tb* in ocular samples, significantly enhancing diagnostic accuracy. With the advent of more advanced molecular techniques, such as PCR, the sensitivity of TB detection has improved. PCR can be performed on intraocular fluids like aqueous or vitreous humour, providing a more direct method to detect TB DNA. However, the sensitivity of PCR is still variable, and a negative result does not completely rule out ocular TB. Therefore, molecular tests are used as part of a broader diagnostic framework rather than standalone tools.

Challenges in treatment and management

Even when a diagnosis of ocular TB is made, the management of the disease can be complex. Treatment typically involves prolonged courses of Anti Tubercular Therapy (ATT), similar to systemic TB treatment. However, ocular TB often requires adjunctive corticosteroid therapy to manage inflammation and prevent tissue damage. Balancing the use of steroids to control inflammation while avoiding reactivation of the infection is a delicate process that requires close monitoring. Moreover, ocular TB may present as a manifestation of drug-resistant TB, which adds another layer of complexity. Multidrug-Resistant TB (MDR-TB) or Extensively Drug-Resistant TB (XDR-TB) poses significant therapeutic challenges, as second-line drugs may be less effective, and the toxic side effects of these drugs can further complicate treatment. Managing ocular TB becomes even more challenging when dealing with drug-resistant strains like MDR-TB or XDR-TB. These forms of TB require longer, more toxic treatments with second-line drugs, often resulting in more severe side effects and a higher risk of treatment failure. Close collaboration between ophthalmologists and TB specialists is essential to navigate these complexities and optimize patient outcomes.

CONCLUSION

Ocular tuberculosis remains a diagnostic enigma due to its non-specific symptoms, varied clinical presentations, and the

Correspondence to: Ulrik Aarnoutse, Department of Ophthalmology, Uppsala University, Uppsala, Sweden, Email: ulri.arnoust@gmail.com

Received: 05-Aug-2024, Manuscript No. MDTL-24-34261; **Editor assigned:** 07-Aug-2024, PreQC No. MDTL-24-34261 (PQ); **Reviewed:** 21-Aug-2024, QC No. MDTL-24-34261; **Revised:** 28-Aug-2024, Manuscript No. MDTL-24-34261 (R); **Published:** 04-Sep-2024, DOI: 10.35248/2161-1068.24.14.496.

Citation: Aarnoutse U (2024). Challenges in Diagnosing Ocular Tuberculosis. Mycobact Dis.14:496.

Copyright: © 2024 Aarnoutse U. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

difficulty of confirming a diagnosis with current tests. The overlap with other ocular diseases and the limitations of conventional diagnostic tools contribute to delayed diagnosis and treatment. Despite advances in molecular diagnostics, early recognition and clinical suspicion remain important in managing complex condition. Collaborative efforts among ophthalmologists, infectious disease specialists, and pulmonologists are essential to ensure a timely and accurate diagnosis, reducing the risk of vision loss and systemic complications.