

Tropical Diseases Conference 2019: Tuberculosis and its management: Challenges in ophthalmology- Rubeena N Shaffi- Cork University Hospital, Ireland**Rubeena N Shaffi***Cork University Hospital, Ireland*

Tuberculosis (TB) is an infectious disease usually caused by the bacteria *Mycobacterium tuberculosis* (MTB). Tuberculosis usually affects the lungs but other parts of the body may also be affected. Most infections do not exhibit any symptoms, in which case they are considered latent tuberculosis. Approximately 10 per cent of latent infections develop to an active disease that destroys about half of those infected if left untreated. A chronic cough with blood-containing mucus, fever, night sweats and weight loss are the main signs of active TB. Because of the weight loss it was historically called "consumption." [8] Infection of other organs can cause a wide range of symptoms. Tuberculosis is transmitted through the air from one person to the next because people with active TB do not transmit the disease in their lungs cough, spit, chat or sneeze. For people with HIV / AIDS and others who smoke, severe infection happens more frequently. Diagnosis of active TB is based on X-rays in the abdomen, as well as microscopic examination and body fluid culture. Latent TB diagnosis is based on a tuberculin skin test (TST) or blood test. Preventing TB involves screening those at high risk, early detection and case management, and vaccination with the Calmette-Guérin (BCG) bacillus vaccine. Many at high risk include the family, job, and social networks of people with active TB. Care includes the long-term use of several antibiotics. Antibiotic resistance is a growing issue with increasing levels of multiple drug-resistant tuberculosis (MDR-TB) and tuberculosis that is extremely drug-resistant (XDR-TB). *Mycobacterium tuberculosis* (MTB), a small, aerobic, non-motile bacillus, is the principal cause of TB. This pathogen's high lipid content accounts for many of its unusual clinical traits. It divides every 16 to 20 hours compared to other bacteria, which usually divide in less than an hour. Mycobacteria have a lipid bilayer external to the membrane. When a Gram stain is performed, MTB either stains "Gram-positive" very weakly or does not retain dye due to the high content of lipid and mycolic acid in its cell wall. MTB can tolerate poor

disinfectants and live for weeks in a dry state. In nature the bacterium can only grow within a host organism's cells, but *M. tuberculosis* may be cultivated. Scientists can identify MTB under a microscope using histological stains on expectorated samples from the phlegm (also called "sputum"). Since MTB retains certain stains even after acidic solution has been treated it is classified as an acid-fast bacillus. The Ziehl – Neelsen stain and the Kinyoun stain are the most common acid-fast staining techniques, which dye acid-fast bacilli a bright red that stands out against a blue background. Auramine-rhodamine staining microscopy and fluorescence are also used. There are several factors that make people more susceptible to TB infections. Globally, HIV is the most significant risk factor; 13 per cent of all people with TB are infected with the virus. This is a particular concern in sub-Saharan Africa, where HIV levels are high. In comparison, about 5–10% of people without HIV who are diagnosed with tuberculosis grow active disease during their lifetimes, 30% of those who are co-infected with HIV.

Tuberculosis is closely related to overcrowding and malnutrition, making it one of the major diseases of poverty. Thus, those at high risk include: people who inject illegal drugs, residents and health workers where vulnerable people meet medically deprived and resource-poor populations, high-risk ethnic minorities, children in close contact with high-risk patients. Chronic pulmonary disease is another major risk factor. Silicosis raises the risk by about 30 times greater. People who smoke cigarettes have about twice the risk of developing TB relative to non-smokers. When people with active pulmonary TB cough, sneeze, talk, sing or spit, they expel droplets of 0.5 to 5.0 µm in diameter from infectious aerosols. A single sneeze can release up to 40,000 droplets. Because the infectious dose of tuberculosis is very small, each of these droplets can transmit the condition. People with prolonged, frequent or close contact with people with TB are at a particularly high risk of infection, with an estimated infection rate

of 22 per cent. A person suffering from active but untreated tuberculosis may infect another 10–15 (or more) people per year. Also people with active TB should be spread-those with latent infection are not considered to be contagious. The likelihood of transmission from one person to another depends on several factors, including the number of infectious droplets expelled by the carrier, ventilation efficacy, exposure duration, the M virulence. Of those infected with M, about 90 percent. Tuberculosis has asymptomatic, latent TB infections (sometimes referred to as LTBI), with just 10 per cent lifetime risk of progression of latent infection to overt, active tuberculosis. In HIV patients, the risk of developing active TB rises to almost 10 per cent a year.

Purpose: To highlight the diversity of clinical presentation of ocular tuberculosis in a non-endemic setting and discuss an effective approach towards its diagnosis and management. Also to emphasize on close monitoring of patients as anti-tuberculous treatment itself can further complicate and prolong the course of the disease due to its ocular and extraocular complications. **Method:** Descriptive Case Series

Results: Three cases of varied presentation of ocular tuberculosis and one case of extrapulmonary TB associated with ocular complications due to treatment were diagnosed over a period of eight months at Dept. of Ophthalmology, CUH, Cork. Presentations included recurrent blephroconjunctivitis with chlazion, recurrent granulomatous anterior and posterior uveitis, choroidal tuberculoma, recurrent vitreous haemorrhage and pan uveitis. All patients had normal X-ray chest and negative Tuberculin Skin test (Monteux). Diagnoses were presumptive and assisted with positive Interferon Gamma Release Assay (IGRA); Quantiferon. Complications associated with treatment of tuberculosis included optic neuritis, ocular cranial nerve palsy and extra ocular complications including worsening liver functions.

Conclusion: A high index of suspicion helps diagnosis of ocular TB in areas of low-prevalence of the disease. It forms part of differential diagnosis of chronic, recurrent blephroconjunctivitis and uveitis especially in at-risk patients. Anti-tuberculous treatment seems

highly effective, yet close monitoring is important to pinch up treatment related complications early on, a prompt referral to the related medical specialities can lead to favourable outcome without prolonging course of the disease.