Challenges and the way forward in diagnosis and treatment of Tuberculosis infection

ABSTRACT

Globally, it is estimated that one-quarter of the world's population is latently infected with Mycobacterium tuberculosis (Mtb), also known as latent tuberculosis infection (LTBI). Recently, this condition has been referred to as tuberculosis infection (TBI), considering the dynamic spectrum of the infection, as 5–10% of the latently infected population will develop active TB (ATB). The chances of TBI development increase due to close contact with index TB patients. The emergence of multidrugresistant TB (MDR-TB) and the risk of development of latent MDR-TB has further complicated the situation. Detection of TBI is challenging as the infected individual does not present symptoms. Currently, there is no gold standard for TBI diagnosis, and the only screening tests are tuberculin skin test (TST) and interferon gamma release assays (IGRAs). However, these tests have several limitations, including the inability to differentiate between ATB and TBI, false-positive results in BCG-vaccinated individuals (only for TST), false-negative results in children, elderly, and immunocompromised patients, and the inability to predict the progression to ATB, among others. Thus, new host markers and Mtb-specific antigens are being tested to develop new diagnostic methods. Besides screening, TBI therapy is a key intervention for TB control. However, the long-course treatment and associated side effects result in non-adherence to the treatment. Additionally, the latent MDR strains are not susceptible to the current TBI treatments, which add an additional challenge. This review discusses the current situation of TBI, as well as the challenges and efforts involved in its control