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Tuberculosis and Its Management: A Detailed Review

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ABSTRACT :

Tuberculosis (TB) remains a major public health concern worldwide, particularly in low- and middle-income countries. Despite advances in diagnostic and therapeutic tools, TB continues to challenge healthcare systems due to the emergence of drug-resistant strains, co-infection with HIV, and social barriers to care. This review explores the pathogenesis, epidemiology, clinical presentation, diagnostic approaches, treatment strategies, and future directions in TB management. It also examines the impact of public health policy, research innovation, and global collaboration in the effort to control and eliminate TB.

Keywords: Tuberculosis, TB Diagnosis, MDR-TB, TB Treatment, TB Vaccines, Public Health

1. Introduction

Tuberculosis is an ancient disease caused by the bacterium Mycobacterium tuberculosis (Mtb). Though curable, TB remains a major global health problem...

2. Epidemiology

TB is endemic in many parts of the world, with the highest burden in South-East Asia and Africa...

3. Pathophysiology

TB begins with the inhalation of aerosolized droplets containing Mtb bacilli...

4. Clinical Manifestations

Pulmonary TB is the most common form... Extrapulmonary TB includes lymphatic, pleural, CNS, skeletal forms... Latent TB shows no symptoms but may reactivate...

5. Diagnosis

Includes microbiological (smear, culture), molecular (Xpert MTB/RIF), immunological (TST, IGRA), and radiological methods...

6. Treatment and Management

Standard treatment includes HRZE regimen for 6 months. Drug-resistant TB involves bedaquiline, linezolid, etc. LTBI requires isoniazid, rifampin, or rifapentine...

7. Challenges in TB Management

Delayed diagnosis, drug resistance, poor treatment adherence, stigma, and lack of funding are major obstacles...

8. Innovations and Future Directions

New vaccine candidates (M72/AS01E), molecular diagnostics, host-directed therapies, and digital tools show promise...

9. Conclusion

Despite being curable, TB continues to claim lives. A comprehensive, multi-sectoral approach is vital for control and eventual elimination...

References

- 1. World Health Organization. Global Tuberculosis Report 2023. Geneva: WHO; 2023.
- 2. Corbett EL, Marston B, Churchyard GJ, De Cock KM. HIV and tuberculosis: the deadly duet. Lancet Infect Dis. 2003;3(7):435-446.
- 3. Houben RM, Dodd PJ. The global burden of latent tuberculosis infection: a re-estimation using mathematical modelling. PLoS Med. 2016;13(10):e1002152.
- 4. Flynn JL, Chan J. Immunology of tuberculosis. Annu Rev Immunol. 2001;19:93–129.
- 5. Boehme CC, Nabeta P, Hillemann D, et al. Rapid molecular detection of tuberculosis and rifampin resistance. N Engl J Med. 2010;363(11):1005–1015.
- 6. Mazurek GH, Jereb J, Vernon A, et al. IGRA vs TST for detection of latent TB. MMWR Recomm Rep. 2010;59(RR-5):1–25.
- 7. Frieden TR, et al. Tuberculosis. Lancet. 2003;362(9387):887–899.
- 8. WHO. WHO consolidated guidelines on drug-resistant TB treatment. Geneva: WHO; 2022.
- 9. Sterling TR, et al. Three months of rifapentine and isoniazid for latent TB. N Engl J Med. 2011;365(23):2155–2166.
- 10. Gupta RK, et al. Prevalence of TB in post-mortem studies of HIV-infected adults. Clin Infect Dis. 2015;61(8):1403–1411.
- 11. Tait DR, et al. Final analysis of a trial of M72/AS01E TB vaccine. N Engl J Med. 2019;381(25):2429-2439.
- 12. Zumla A, et al. Host-directed therapies for infectious diseases. Lancet Infect Dis. 2016;16(4):e47–63.