

Tuberculosis

Video: TB : The Forgotten Plague

Causative organism: *Mycobacterium tuberculosis*

Characteristics: LRT infection, rod, obligate aerobe, slow grower

- does not gram stain but is acid-fast **Why?**
- resists drying and most antimicrobials **Why?**
- immunity is cell mediated - macrophages and T-cells

Mode of Infection (simplified):

- tubercle bacilli inhaled
- Tb travels to alveoli, usually phagocytized by macrophages
- sometimes Tb survives inside macrophages → dormant
- dormancy = latent infection, can remain dormant >80 yrs
- accumulation of macrophages and other cells around infected macrophage → formation of tubercle
- host induced inflammation damages lung tissue
- over time tubercle may heal becoming calcified (seen in X-rays)
- if does not heal, lesion enlarges, Tbs multiply → active infection ⇒ highly contagious
- dormant tb can be reactivated **How?**

Statistics

- estimated 10-15 million infected in US
- **How many infected worldwide?**
- 3 million die worldwide = currently most deadly infectious disease

Video

1. What sub-populations are particularly susceptible to TB?
2. Who was the first person to isolate the bacilli and when?
3. Why is using only one or two anti-TB drugs usually not effective?

4. What is the typical ratio of infected people who develop active TB?

5. What is the relationship between HIV infection and TB infection? What role does HIV play in TB infection?

6. What is a “superbug”?

7. Why must chemotherapy be continued for months using multiple drugs?

8. Why is patient compliance a problem for chemotherapy? What is / can be done about it?

9. A vaccine, BCG, exists. How effective is it? Why is it not administered routinely in the US? (from book)

10. Why is it important to manage, treat, or even care about diseases in the third world when they are not problems in developed countries?