

- ① TB is caused by tubercle bacilli, which belong to the genus *Mycobacterium*.
- ② The burden of TB in many countries is compounded in those who have co infection with the human immunodeficiency virus (HIV).
- ③ In 2006, the emergence of extensively drug-resistant tuberculosis (XDR-TB) was first reported.

### Incidence:

- ① In spite of great advances in chemotherapy and immunology, tuberculosis still continues to be worldwide in distribution.
- ② More common in developing countries of Africa, Latin America and Asia.
- ③ Other factors malnutrition. Inadequate medical care, Poverty crowding chronic debilitating conditions like uncontrolled diabetes, alcoholism and immune compromised states like AIDS.

### Etiology:

- ① These form a large group but only three relatives (*Mycobacterium tuberculosis* complex) are obligate Parasite that can cause TB disease.
- ② *M. tuberculosis* complex: *M. tuberculosis*, *M. bovis*, *M. africanum*.
- ③ *Mycobacteria* other than tuberculosis, Around 15 are recognised as pathogenic to humans and some causes

Sub:

pulmonary disease resembling TB.

① They have been found in ~~soil~~ soil, milk and water (atypical mycobacteria)

① Mycobacterium leprae. The cause of leprosy.

### Risk factors:

- ① Length of exposure time to contaminated air.
- ① Immune status of the exposed individual.
- ① Infected persons living in crowded or closed environments pose a particular risk to non infected persons.
- ① Microepidemics have occurred in closed environments such as submarines and on transcontinental flights, hospital employees, inner-city residents, nursing home residents and prisoners.

### Factors that increase risk of developing TB:

- ① HIV positive.
- ① Injecting drug users.
- ① ~~solid~~ Solid organ transplantation.
- ① Haematological malignancy for example leukaemia and lymphomas ~~sitocosis~~
- ① Silicosis.

### Risk Groups:

① certain groups are at increased risk of LTBI and possibly TB disease if exposed. These are -

- ① close contacts of patients with TB (~~so~~ sputum smear-positive pulmonary)

- casual contacts (work colleagues) if they are immunosuppressed
- ① people from countries with a high incidence of TB
  - people with certain medical conditions are at increased risk of developing active TB if they have LTBI.

### Mode of Transmission:

#### ① Inhalation:

Inhalation of organisms present in fresh cough droplets or in dried sputum from an open case of pulmonary tuberculosis.

#### ① Ingestion:

Ingestion sputum of an open ~~case~~ case of pulmonary tuberculosis or ingestion of bovine tubercle bacilli from milk of diseased cows.

#### ① Inoculation:

Inoculation of the organisms into the skin may rarely occur from infected postmortem tissue.

#### ① Transplacental:

Transplacental route results in development of congenital tuberculosis in foetus from infected mother and is a rare mode of transmission.

### Type of Tuberculosis:

Lung is the main affected in tuberculosis.

Depending upon the type of tissue response and age the infection with tubercle bacilli is of 2 main types -

Sub:

① primary tuberculosis.

① Secondary tuberculosis.

① Primary tuberculosis:

① The infection of an individual who has not been previously infected or immunised is called primary tuberculosis or Ghon's complex or childhood tuberculosis.

① The most commonly involved tissues for primary complex are lungs and lymph nodes.

① Other tissues are tonsils and cervical lymph nodes, lesions may be found in small intestine and mesenteric lymph nodes.

① progressive primary tuberculosis is particularly high in immunocompromised host.

- Eg - In patients of AIDS.

① Secondary tuberculosis:

① The infection of an individual who has been previously infected or sensitised is called secondary, or post primary or reinfection or chronic tuberculosis.

① The infection may be -

→ endogenous source such as reactivation of dormant primary complex.

→ exogenous source such as fresh dose of reinfection by the tubercle-bacilli.

① Secondary tuberculosis occurs most commonly in lungs in the region of apex. Other sites and tissues which

can be involved are tonsils, pharynx, larynx, small intestine and skin.

### Extra pulmonary Tuberculosis:

- ① Respiratory tuberculosis.
- ① Periperal lymph nodes tuberculosis.
- ① Bone tuberculosis.
- ① Joint tuberculosis.
- ① Pericardial tuberculosis.

### Signs and Symptoms:

- ① cough      ① weight loss / anorexia      ① Fever.
- ① Night sweats      ① Hemoptysis.      ① chest pain.      ① Fatigue

### Symptoms of tuberculosis meningitis:

- ① Headache
- ① Subtle mental status changes that may progress to coma.
- ① low - grade or absent fever.

### Symptoms of skeletal TB:

- ① Back pain or stiffness.
- ① lower - extremity paralysis.
- ① Tuberculous arthritis.

### Symptoms of genitourinary TB:

- ① Flank pain      ① Dysuria      ① Frequent urination.
- ① Scrotal mass, prostatitis, or chills or epididymitis.
- ① Symptoms mimicking pelvic inflammatory disease.

Sub:

## Symptoms of gastrointestinal TB:

- ① Non healing ulcers of the mouth or anus.
- ① Difficulty swallowing.
- ① Abdominal pain (peptic)
- ① Malabsorption (with infection of the small intestine)
- ① Pain, diarrhea or hematochezia (colon)

## pulmonary TB:

- ① Abnormal breath sounds.
- ① Rales or ~~br~~ bronchial breath signs (rattling sound)

## Extrapulmonary TB:

- ① confusion
- ① coma.
- ① Neurologic deficit.
- ① chorionetinitis.
- ① Lymphadenopathy.
- ① cutaneous lesions.
- ① cough for 3 weeks or more / productive cough.
- ① Sputum usually mucopurulent or purulent.
- ① Haemoptysis not always a feature.
- ① Fever may be associated with night sweats.
- ① Tiredness.
- ① weight loss variable.
- ① Anorexia variable.
- ① Malaise.

## Spread of Tuberculosis:

### Local spread:

This takes place by macrophages carrying the bacilli into the surrounding tissues.

### Lymphatic spread:

- ① Tuberculosis is primarily an infection of lymphoid tissues.
- ② The bacilli may pass into lymphoid follicles of pharynx, bronchi, intestines or regional lymph nodes resulting in regional tuberculous lymphadenitis.

### Haematogenous spread:

- ① This occurs either as a result of tuberculous bacillaemia because of the drainage of lymphatics into the venous system.
- ② This produces millet seed-sized lesions in different organs of the body like lungs, liver, kidneys, bones and other tissues and is known as miliary tuberculosis.

### By the natural passages:

- ① Lung lesions into pleura (tuberculosis pleurisy)
- ② Trans bronchial spread into the adjacent lung segments.