TUBERCULOSIS

DEFINITION

- Tuberculosis is the infectious disease primarily affecting lung parenchyma is most often caused by **Mycobacterium Tuberculosis**. It may spread to any part of the body including meninges, kidney, bones and lymph-nodes.

TYPES

1. PULMONARY TUBERCULOSIS
2. AVIAN TUBERCULOSIS (Micobacterium avium; of birds)
3. BOVINE TUBERCULOSIS (Mycobacterium bovis; of cattle)
4. MILIARY TUBERCULOSIS /DISSEMINATED TUBERCULOSIS (Invade the blood stream and spread to all body organs.

INCEDENTS

- With the increased incidence of AIDS, TB has become a great problem in the U.S., and the world.
- India is the highest TB burden country in the world, home to 20 percent of cases occurring globally.
- Each year 1.8 million develop TB.
- In India 0.37 million people die because of TB every year.

Risk factors

- Close contact with some one who have active TB.
- Immuno compromised status (elderly, cancer)
- Drug abuse and alcoholism.
- People lacking adequate health care.
- Pre existing medical conditions (diabetes mellitus, chronic renal failure).
- Immigrants from countries with higher incidence of TB.
- Institutionalization (long term care facilities)
- Living in substandard conditions.
- Occupation (health care workers)

PATHOPHYSIOLOGY

- (Initial infection or primary infection)

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- Entry of micro organism through droplet nuclei

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- Bacteria is transmitted to alveoli through airways

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- Deposition and multiplication of bacteria

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- Bacilli are also transported to other parts of the body via blood stream and phagocytosis by **neutrophils and macrophages**

PATHOPHYSIOLOGY

Mycobacteriam

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Pulmonary alveoli

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Immune system has lodged in (Alveolar Macrophages)

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Detects presence of pathogen and engoulph the bacteria

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Mycobacterium bacteria inhibits the Macrophages (phagosome+ Lysosome) to forms phagolysosome and remains protected inside the macrophages.

PATHOPHYSIOLOGY

Starts replication inside macrophages.

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Primary infection occurs.

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Cell mediated immunity gets activated, surrounds the cell to forms granuloma (3weeks)

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Leads to necrosis of tissues at infection site(TERMINUS GONE FOCUS)

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Involve nearby lymph nodes (CONE COMPLEX)

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Calcification of cone complex(LATENT T.B.)

CLINICAL MENIFESTATION

CONSTITUTIONAL SYMPTOMS

- Anorexia
- Low grade fever
- Night sweats
- Fatique
- Weight loss

CONT…

PULMONARY SYMPTOMS

- Dyspnea
- Non resolving bronchopneumonia
- Chest tightness
- Non productive cough
- Mucopurulent sputum with hemoptpysis
- Chest pain
- EXTRA PULMONARY SYMPTOMS
- Pain
- Inflammation

ASSESSMENT AND DIAGNOSIS

- HISTORY COLLECTION
- PHYSICAL EXAMINATION
- Clubbing of the fingers or toes (in people with advanced disease)
- Swollen or tender lymph nodes in the neck or other areas
- Fluid around a lung (pleural effusion)
- Unusual breath sounds (crackles)

- IF MILIARY TB;
- Physical exam may show:
- Swollen liver
- Swollen lymph nodes
- Swollen spleen

Tests may include:

- Biopsy of the affected tissue (rare)
- Bronchoscopy
- Chest CT scan
- Chest x-ray
- Interferon-gamma release blood test such as the QFT-Gold test to test for TB infection
- Sputum examination and cultures
- Thoracentesis
- Tuberculin skin test (also called a PPD test)

COMPLECATION

- **Bones.** Spinal pain and joint destruction may result from TB that infects your bones(TB spine or pot's spine)
- Brain(meningitis)
- Liver or kidneys
- Heart(cardiac tamponade)
- Pleural effusion
- Tb pneumonia
- Serious reactions to drug therapy(hepato-toxicity; hypersentivity)

MEDICAL MANAGEMENT

PULMONARY TB is treated primarily with antituberculosis agents for 6 to 12 months.

- ***Pharmacological management***
- **First line antitubercular medications**
- **Streptomycin** 15mg/kg/day.
- **Isoniazid** or INH (Nydrazid) 5 mg/kg (300 mg max/day)
- **Rifampicin** 10 mg/kg/day.
- **Pyrazinamide** 15 – 30 mg/kg/day.
- **Ethambutol** (Myambutol) 15 -25 mg/kg daily for 8 weeks and continuing for up to 4 to 7 months

Second line medications

- Capreomycin 12 -15 mg/kg
- Ethionamide 15mg/kg
- Para-aminosalycilate sodium 200 - 300 mg/kg
- Cycloserine 15 mg/kg
- **Vitamin b(pyridoxine) usually adminstered with INH**

DOTS

DOTS (directly observed treatment, short-course), is the name given to the World Health Organization-recommended tuberculosis control strategy that combines five components:

1. Government commitment (including both political will at all levels, and establishing a centralized and prioritized system of TB monitoring, recording and training)
2. Case detection by sputum smear microscopy
3. Standardized treatment regimen directly observed by a healthcare worker or community health worker for at least the first two months
4. A regular drug supply
5. A standardized recording and reporting system that allows assessment of treatment results

- **DOT** is especially critical for patients with drug resistant TB, HIV-infected patients, and those on intermittent treatment regimens (i.e., 2 or 3 times weekly).

Multiple-drug therapy

- Means taking several different antitubercular drugs at the same time.
- The standard treatment is to take isoniazid, rifampin, ethambutol, and pyrazinamide for 2 months. Treatment is then continued for at least 4months with fewer medicines