



PULMONARY TUBERCULOSIS

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ABSTRACT

Tuberculosis is an infectious disease usually involves the lungs, but it also occurs in the larynx, kidneys, bones, adrenal glands, lymph nodes and meninges and can be disseminated throughout the body. TB is world's second most common cause of death from infectious disease. TB is most disproportionately seen in the poor, the underserved, and minorities. Selective screening programmes in known risk groups are of value in detecting individuals with TB.

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INTRODUCTION

Tuberculosis (TB) is one of the most prevalent infection on human being and contributes considerably to illness and death around the world. It is spread by inhaling tiny droplets of saliva from the cough or sneezes of an infected person. It is the leading cause of mortality in patients with HIV infection.

Definition

Tuberculosis (TB) is an infectious disease caused by Mycobacterium tuberculosis which primarily affects the lungs but may also be transmitted to other parts of the body.

Incidence of Primary Tuberculosis

- The increased incidence of AIDS, TB has become more a problem in the U.S, and the world.
- It is currently estimated that 1/2 of the world's population (3.1 billion) is infected with mycobacterium tuberculosis
- Global emergency tuberculosis kills 5000 people a day
- 2.3 million die each year

Risk Factors for Pulmonary Tuberculosis

1. Close contact with someone who have active TB
2. Immune compromised status (elderly, cancer)
3. Drug abuse and alcoholism
4. People lacking adequate health care

5. Pre existing medical conditions (diabetes mellitus, chronic renal failure)
6. Immigrants from countries with higher incidence of TB
7. Institutionalisation (long term care facilities)
8. Living in substandard conditions
9. Occupation(health care workers)

Etiological Factors

- Mycobacterium tuberculosis
- Droplet nuclei (coughing , sneezing, laughing)
- Exposure to TB

Classification

Data from history, physical examination, TB test, chest x-ray, and microbiologic studies are used to classify TB into one of five classes.

Class 0: no exposure, no infection

Class 1: exposure, no evidence of infection

Class 2: latent infection, no disease (eg, positive PPD reaction but no clinical evidence of Active TB)

Class 3: disease, clinically active

Class 4: disease, not clinically active

Class 5: suspected disease, diagnosis pending

Stages of Tuberculosis

- Early infection
- Immune activation
- Healing of the primary lesion
- Latent period
- Secondary tuberculosis

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Pulmonary Tuberculosis

Early infection

Tubercle bacilli, when inhaled, pass through the bronchial system and implants on the bronchioles or alveoli. Initially, the host has no resistance to this infection

Immune activation

Usually a full response occurs within 2 weeks, and characteristic tissue reaction results in formation of a granuloma, referred to as the GHON TUBERCLE.

Healing of the primary lesion

Healing of the primary lesion occurs through resolution, fibrosis, and calcification.

Latent period

As the lesion heals, the infection enters a latent period that can persist for many years or even an entire lifetime without producing clinical symptoms.

Secondary tuberculosis

Secondary TB usually involves reactivation of the initial infection.

Clinical manifestations

Constitutional symptoms

- Anorexia
- Low grade fever
- Night sweats
- Fatigue
- Weight

Pulmonary Symptoms

- Dyspnea
- Non resolving bronchopneumonia
- Non productive cough
- Chest tightness
- Mucopurulent sputum with hemoptysis
- Chest pain

Extra Pulmonary Symotoms

- Pain
- Inflammation

Assessment and diagnostic findings

- History collection
- Physical examination
- Chest X- ray
- Bronchoscopy
- Sputum examinations and cultures
- Tuberculin skin test
- Chest CT scan
- Thoracentesis
- QUANTIFERON-TB gold test
- Pulmonary function tests

Medical Management

- **Isoniazid (INH):** It interferes with DNA metabolism tubercle bacilli. It is bactericidal and penetrates to all the the body tissues and fluids; including CSF.

- **Rifampicin:** It has broad spectrum effects, inhibits RNA polymerase of tubercle bacilli. It is bactericidal, penetrates all the body tissue including CSF.
- **Ethambutol:** It inhibits RNA synthesis and bacteriostatic for TB bacilli and doesn't penetrate all the body fluids except CSF.
- Streptomycin: It inhibits protein synthesis and is bactericidal. Poor penetration into body tissues and CSF.
- **Pyrazinamide:** It is bacteriostatic or bacteriocidal depending upon susceptibility of Mycobacterium.
- In addition, ethionamide, capromycine, kanamycin and para amino salicylic acid (PAS) cycloserine (Seromycin) are also used for TB treatment.

Dots

DOTS (Directly Observed Treatment, short course) is the name given to the world health organisation-recommended tuberculosis control strategy that combines five components:

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

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

Surgical Management

The advantage of minimally invasive thoracic surgery allows a wider range of TB patients to be considered effective surgical management. The surgical procedure includes:

- Wedge resection and segmental resection
- Thoracoplasty
- Lobectomy

Complications of Pulmonary Tuberculosis

- Haemoptysis
- Spontaneous pneumothorax
- Pleural effusion
- Cardio pulmonary insufficiency

CONCLUSION

Pulmonary tuberculosis is the communicable disease and its dead full condition. As a health care professional mainly giving knowledge about the proper sanitation, good ventilation. Government are giving DOTS therapy, examination and follow-up has been rendered.

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