

TUBERCULOSIS

- ▶ Tuberculosis is a chronic infectious disease caused by mycobacterium tuberculosis.
- ▶ The disease also affects animals like cattle and this is known as 'bovine tuberculosis'
- ▶ Current estimates suggest that around 1/3rd of the world's population has latent tb and that between 2002 and 2020 an estimated 1000 million people will become newly infected, 150 million will contract disease and 36 million will die. Due to improved standard of living and better sanitation, the incidence of tb has steadily declined in the affluent and highly developed countries.

Reasons for increasing incidence of TB

- ▶ Developed countries:
 - immigration from high prevalence areas
 - HIV
 - social deprivation
 - increasing proportion of elderly
 - drug resistance
- ▶ Developing countries
 - ineffective control programmes
 - lack of access to health care
 - poverty
 - HIV
 - population increase
 - drug resistance

PATHOGENESIS

- ▶ All patients of pul tb and most cases of extrapul disease are caused by mycobacterium tuberculosis. The infections is spread by the tuberculous patient, who discharge tubercle in his sputum during bouts of coughing and sneezing. M. bovis infection arises from drinking of non-sterilized milk from the infected cows.
- ▶ Primary tuberculosis: The tubercle bacilli enter the periphery of the lung and are engulfed by macrophages. In response to antigen presentation T lymphocytes drive the recruitment of monocytes and direct the formation of granulomas limiting the replication and spread of the organism. Classical tuberculous granuloma display central caseous necrosis. The formation of a mass of granulomas surrounding an area of caseation leads to the appearance of the primary lesion in the lung known as GHON FOCUS. The combination of the primary lesion and the regional L.N involvement is termed as GHON COMPLEX.

▶ Miliary tuberculosis:

In overwhelming infections, the caseous node may erode blood vessels or lymphatic channels and secondary foci may be established in different organs including L.N, meninges, bone, liver, kidney and lungs. These foci resolve once an immune response is mounted and the organisms gradually lose viability. However, latent bacilli may persist for many years.

Cryptic miliary tuberculosis...

- ▶ At any time, when the host defences are poor and the conditions are unfavourable, then reactivation of the latent bacilli occurs leading to Post-primary pul tb.

Clinical features

- ▶ Chronic cough often with hemoptysis
- ▶ Evening rise of temperature
- ▶ Night sweats
- ▶ Anorexia
- ▶ Weight loss
- ▶ Hepatosplenomegaly
- ▶ Headache-tuberculous meningitis
- ▶ Incubation period- 3-8 weeks

Immunosuppressive states

- ▶ HIV
- ▶ Pts under high dose corticosteroids
- ▶ Cytotoxic drugs
- ▶ Malignancy
- ▶ Type 1 diabetes mellitus
- ▶ Chronic renal failure
- ▶ Gastrointestinal disease associated with malnutrition
- ▶ Deficiency of vitamin D and A.

Extrapulmonary tuberculosis

- ▶ Lymphadenitis
- ▶ Bone and joint disease
- ▶ Pericardial disease
- ▶ Gastrointestinal tuberculosis
- ▶ Central nervous system disease

Diagnosis

- ▶ Clinical
- ▶ Laboratory
 - blood count, ESR
 - sputum examination (3 early morning samples)
 - tuberculin skin test
 - chest x-ray
 - CT scan, fluid tapping and laparoscopy in case of extrapulmonary tuberculosis....

Specimens

- ▶ Respiratory
 - sputum
 - gastric washing, mainly used for children
 - bronchoalveolar lavage
 - transbronchial biopsy
- ▶ Nonrespiratory
 - fluid examination (CSF, ascitic, pleural, pericardial, joint)
 - tissue biopsy (bone marrow, liver)

Tuberculin test

- ▶ A positive reaction to the test is generally accepted as evidence of past or present infection by M.tb.
- ▶ There are 3 main tests:
 - the Mantoux intradermal test
 - the Heaf and
 - the Tine multiple puncture test
- ▶ The Mantoux test is carried out by injecting intradermally on the flexor surface of the forearm 1 TU of PPD in 0.1 ml. The result of the test is read after 72 hrs.
- ▶ Tuberculin reactions consist of erythema and induration. Induration is measured.
 - > 10 mm - positive
 - < 6 mm - negative
 - 6 - 9 mm - doubtful
- ▶ A positive reaction indicates that the person is infected with M.tb, it does not prove that the person is suffering from the disease.
- ▶ It may be associated with false positive in those who have had BCG and in areas where non-tuberculous mycobacteria exposure is high.

Control and prevention

- ▶ BCG vaccination: