**Tuberculosis**

 bacterium - Mycobacterium tuberculosis

**Clinical Evaluation**

*- Active pulmonary TB*: Cough >2 weeks, fever, night sweats, weight loss, hemoptysis, SOB, chest pain

*- Disseminated/extrapulmonary TB*: fevers, weight loss, organ involvement (e.g. kidneys – hematuria)

*- Latent TB:* no symptoms; + reaction to tuberculin skin test or TB blood test

**CXR**

*- Primary pulmonary TB*

CXR often normal

Pulmonary infiltrates – upper lobe infiltrate classic (may be cavitary)

Hilar adenopathy

Pleural effusions

*- Reactivation TB* (results from reactivation of a previous focus of mycobacterial containment that was seeded at the time of the primary infection)

frequently involves:

* Apical-posterior segments of upper lobes
* superior segment lower lobes
* anterior segment of upper lobes

**Diagnostic Evaluation**

- gold standard: AFB culture

- CXR

- 3 sputum specimens for AFB smear and culture + one specimen for NAA testing

 - NAA and AFB smear results + >>> TB diagnosis established

 - NAA + and AFB smear negative, repeat NAA is TB suspicion is low; if 2 or more NAA positive >>>TB can be presumed present

* TB cannot be definitively excluded in some patients even if both NAA and AFB smear results are negative.
* Sputum can be spontaneous or induced (to help patients produce sputum order nebs with aerosolized hypertonic saline)
* Tuberculin Skin Test (TST) and IGRA (QuantiFERON-Gold and T.SPOT.TB) cannot distinguish between active and latent infection

- TST cutoffs for positive test

5mm

- HIV+, close contact of TB case, fibrosis on CXR or immunosuppressed (e.g. prednisone >15 mg/d for >1 mo

10mm

- recent immigrant, injection drug user, resident/employee of prison, jail nursing home, hospital shelter, DM, renal failure, leukemia/lymphoma, weight loss, gastrectomy

15mm

* all others

**Infection Control**

- negative pressure respiratory isolation: cough >2 weeks +abnormal CXR

- discontinue when 3 three negative (AFB) sputum smear results

- AFB +; d/c after 2 wks tx, clinical improvement, AFB smear neg

**Treatment**

- 4 drugs x 8 wks then use 2-3 drugs based on susceptibilities for balance of duration

 - RIF, INH, PZA, EMB, Pyridoxine

 - duration 6 mo; 9 mo if cavitary and CX + after 2 mo

 - consult ID

**TB and HIV +**

* Risk of TB increases (doubles within first year) after HIV seroconversion
* TB accelerates HIV progression
* CXR: upper lung field involvement and cavitation typical; however, as immunity declines patients more likely to have atypical findings including noncavitary pulmonary infiltrates with no particular preference for the upper lung fields
* HIV-infected patients are more likely to have smear-negative pulmonary TB because of their lower prevalence of pulmonary cavities.
* HIV + with CD4 <50: recommended initiation of ART within 2 wks of starting TB therapy to reduce risk of AIDS –defining events and death
* HIV +: may have atypical presentation

**Other Info**

- MDR-TB: managed with expert in resistant TB infections

- HIV +: concern for drug interactions, IRIS, drug toxicity

- HIV + with CD4 <50: recommended initiation of ART within 2 wks of starting TB therapy to reduce risk of AIDS –defining events and death

**Miliary TB**

- hematogenous dissemination of Mycobacterium tuberculosis.

* Progressive primary infection
* Reactivation of latent TB with subsequent spread

**Clinical presentation**

* Acute dz : fulminant, multiorgan system failure, septic shock, ARDS
* Chronic (more common) failure to thrive, FUO, organ system dysfunction

**Extrapulmonary sites**

 - Most common: lymphatic system, bones, joints, liver

**Disease seen with miliary TB**

- Pulmonary, lymphatic, bone and joint, GI, CNS, GU, adrenal, CV, cutaneous, breast, other organ involvement – thyroid, larynx, ear

**Lab findings**

*Most common*

* 50% of pts have normocytic normochromic anemia
* hyponatremia

*less common*

* Leukocytosis, leukopenia
* Leukemoid reactions
* Monocytosis
* Thrombocytopenia thrombocytosis
* Pancytopenia

**Imaging**

- CXR: faint reticulonodular infiltrate uniformly distributed (military pattern)

- HRCT more sensitive than CXR

**Clinical Approach**

- CXR

- CT

- AFB sputum cx – if not attainable, bronchoscopy or gastric secretions

- Tuberculin skin test

- Mycobacterial blood cultures

- Dx tests based on specific site e.g. CSF fluid, biopsies of lung, bone marrow, lymph node, etc.

**Treatment**

- same as tx for pulmonary TB