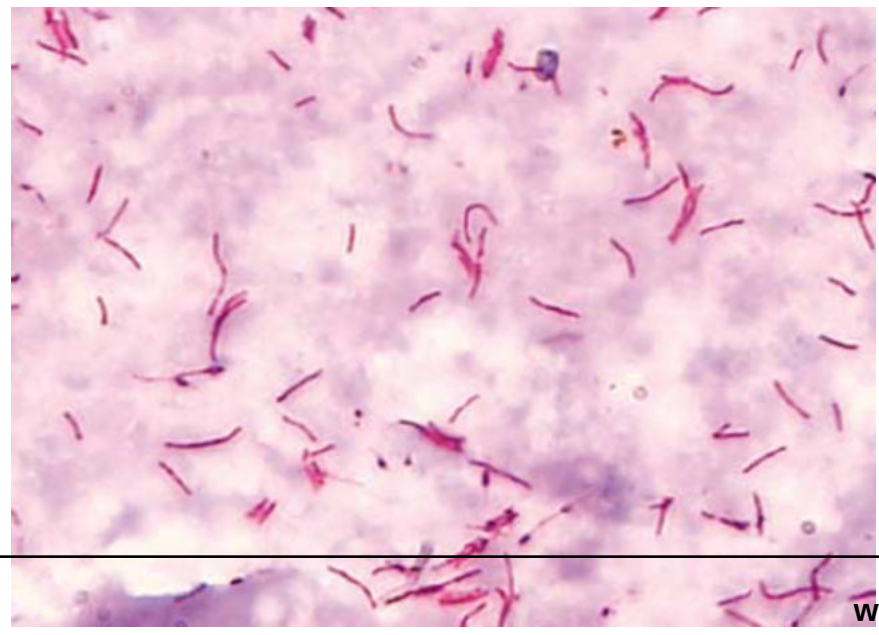
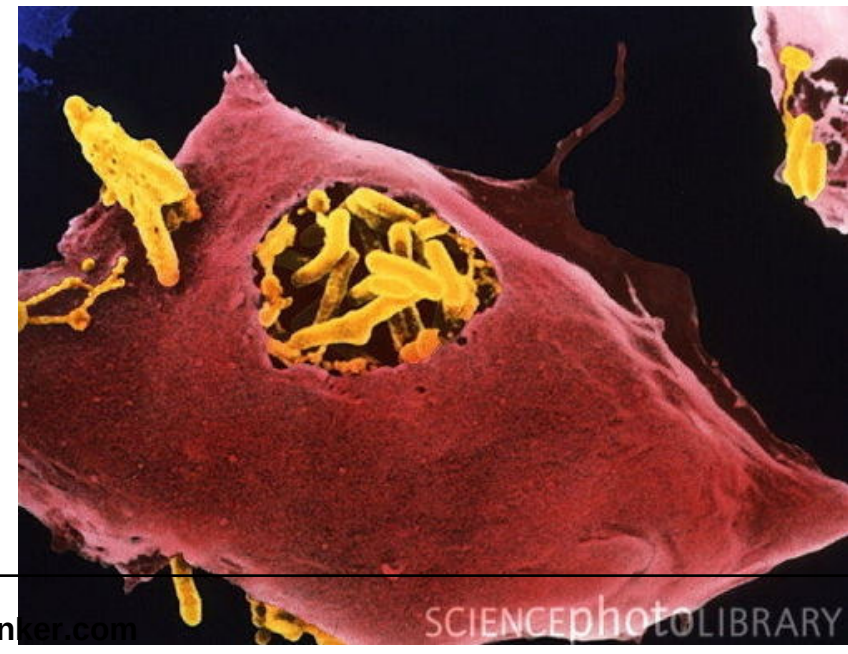
TUBERCULOSIS(Part 2)

MCQ & Revision of Part 1





OBJECTIVES

- What are complications of tuberculosis?
- What are various presentations of EPTB?
- Drug resistant tuberculosis
- DOTS & RNTCP

COMPLICATIONS

COMPLICATIONS

- **Local-**
    - ARDS/respiratory failure
    - Bronchiectasis/PTOAD
    - aspergilloma
    - haemoptysis (symp)
    - Pleural -Empyema/pneumo
    - Extensive lung destruction
    - Rt middle lobe syndrome
    - Scar ca

- **Systemic-**
    - shock
    - amyloidosis
    - disseminated tb-(laryngeal tb)
    - Cor-pulmonale

EPTB

- Common sites:LN,PE
- Any site
- Diagnosis:more difficult

LN TB

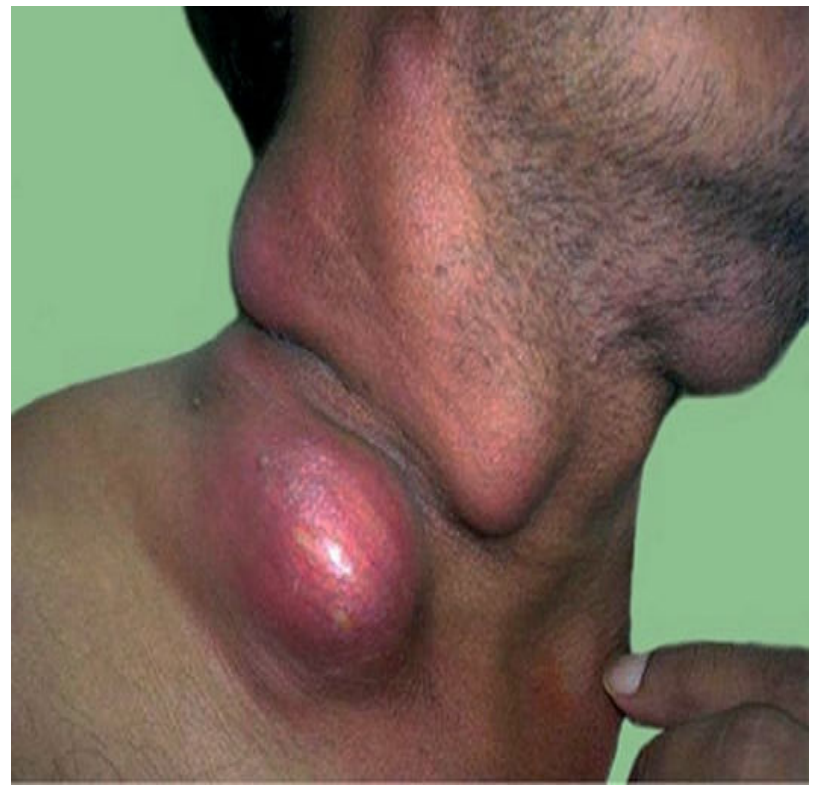
•LN-site

•painless enlargement ,systemic symptoms<50%

•Matting

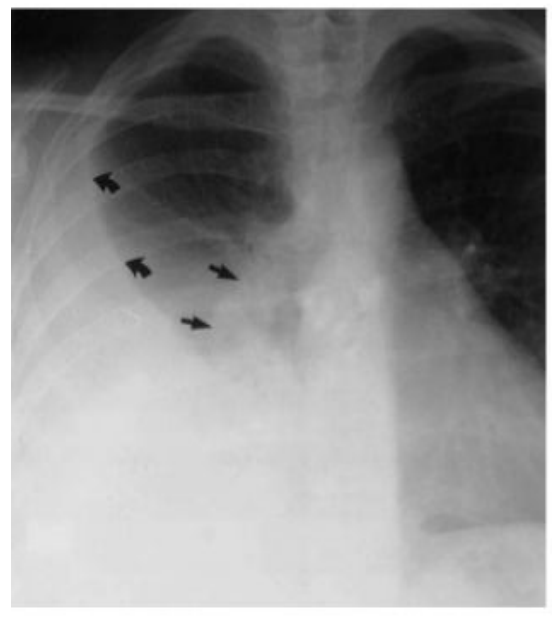
•Sinus/fistula

•FNAC/Bx/NAAT/smear/culture



Pleural Effusion

- Pain/dyspnea/cough
- Fever/dec appetite
- Radiology
- Pleural fluid analysis



Primary TB - Pleural effusion

- Pleural effusion more common with **primary** TB but can occur in post-primary disease

Exudate: Protein >3 g/dL

WCC: Lymphocytic

Glucose: Low

Usually ZN stain negative but PCR more often positive

SKELETAL TB

- Site
- Pain/joint swelling/dec range of motion.
- Draining sinuses and abscesses
- Systemic symptoms
- Radiographic changes m/b nonspecific

CNS TB

- Tuberculous meningitis(MC), intracranial tuberculomas, , cranial nerve palsies and communicating hydrocephalus , cranial vasculitis may lead to focal neurologic deficits.

- Malaise, headache, fever, or personality change,A/S,seizures/focal defects

- CSF –lymphocytic,increased protein,ADA,CB NAAT

Koch's abdomen

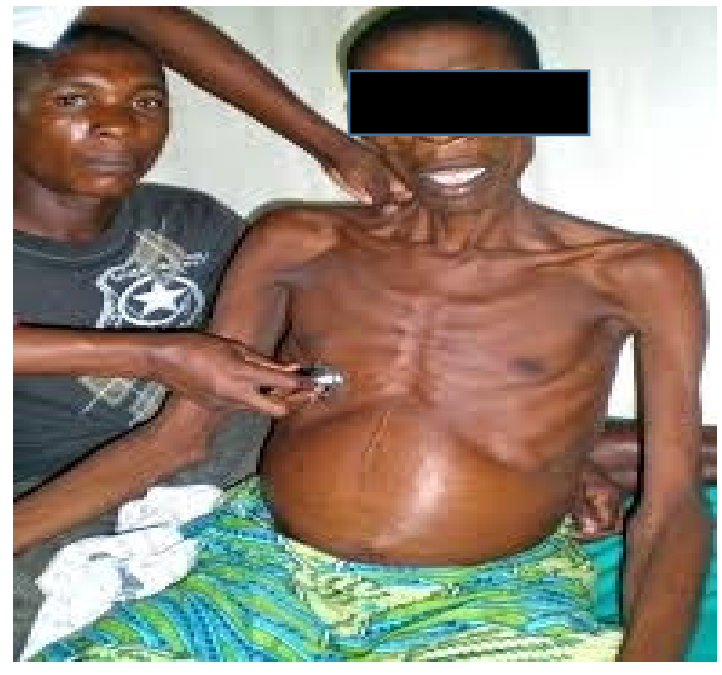
•Site-gut/peritoneum/LN

•pain,nausea/vomitting

•altered bowel habbits

•Distension

•Diagnosis:ascetic fluid analysis/LN sampling/radiology



Miliary

- Fever/dec appetite/wt loss/vague-elderly
- Haematogenous
- Fulminant disease -septic shock, ARDS,MOF
- CXR/Liver/spleen BX/BM
- Haematological-anaemia(NCNC),hyponatremia

PRESENTATION(Extra-Pulmonary)

- Genitourinary-infertility, urinary difficulties
- CVS-pericarditis(pain/dyspnea)

CLINICAL CLUES-EPTB

- **Ascites -lymphocyte predominance and negative bacterial cultures**
- **Chronic lymphadenopathy (especially cervical)**
- **CSF -lymphocytic pleocytosis / elevated protein /low glucose**
- **Pleural effusion -Exudative / lymphocyte predominance/negative bacterial cultures**
- **Joint inflammation (monoarticular) with negative bacterial cultures**
- **Persistent sterile pyuria**
- **Unexplained pericardial effusion, constrictive pericarditis, or pericardial calcification/Vertebral osteomyelitis involving the thoracic spine**

MANAGEMENT

Principles of chemotherapy

- Variable bacilli population:rapid growers,slow growers,dormant
- Longer duration
- 2 phases of treatment
- Need for multiple drugs to treat(spontaneous resistance)

TREATMENT REGIMENS

Type of TB case	Intensive Phase	Continuation Phase
New(CAT 1)	2RHEZ	4RHE
Retreatment(CAT 2)		IE

Intermittent regimens are being changed to daily regimens under RNTCP in India

R;rifampicin,H:isoniazid,E:ethambutal,Z:pyrazinamide,S:streptomycin

- **New case:CAT 1**
  - Smear positive
  - Smear negative
  - EPTB

- **Retreatment:CAT 2**
  - Relapse
  - Defaulter
  - failure

- CAT 4 :MDR

- CAT 5:XDR

- Definitions
  - MDR:R and H
  - XDR:R and H,any FQ,any injectables(kanamycin,amikacin,capreomycin)
  - Primary & acquired resistance
  - Mono/poly drug resistance:DRTB

Drug Resistance:Magnitude

- 3% Primary
- 12% Acquired
- XDR 4-20% of MDR

Dx in drug resistant Tb

- MDR-TB:
  - Rapid Molecular Test (LPA/ CB-NAAT)
  - Liquid Culture & DST
  - Solid Culture & DST
- XDR-TB:
  - Liquid Culture & DST
  - Solid Culture & DST
  - LPA(Genotypic methods)

Recommended Doses Of First-line Anti-tuberculosis Drugs For Adults

Drug	Recommended dose			
	Daily		3 times per week	
	Dose and range (mg/kg body weight)	Maximum (mg)	Dose and range (mg/kg body weight)	Daily maximum (mg)
Isoniazid	5 (4–6)	300	10 (8–12)	900
Rifampicin	10 (8–12)	600		
Pyrazinamide	25 (20–30)	–		
Ethambutol	15 (15–20)	–	30 (2[illegible])	
Streptomycin[a]	15 (12–18)		15 (12–18)	1000

Changed to daily

Common side effects of TB drugs

Side effects	Drug(s) responsible
Minor	
Anorexia, nausea, abdominal pains	Rifampicin
Joint pains	Pyrazinamide
Burning sensation in feet	Isoniazid
Orange/ red coloured urine	Rifampicin
Major	
Skin itching/ rash	Streptomycin, Rifampicin, Isonazid
Deafness (no wax on otoscopy)	Streptomycin
Dizziness (vertigo, nystagmus)	Streptomycin
Jaundice (other causes excluded)	Isoniazid, Rifampicin, Pyrazinamide
Vomiting, confusion	Isoniazid, Rifampicin, Pyrazinamide
Visual impairment/ loss	Ethambutol
Generalised purpura, shock and purpura	Rifampicin

OLD

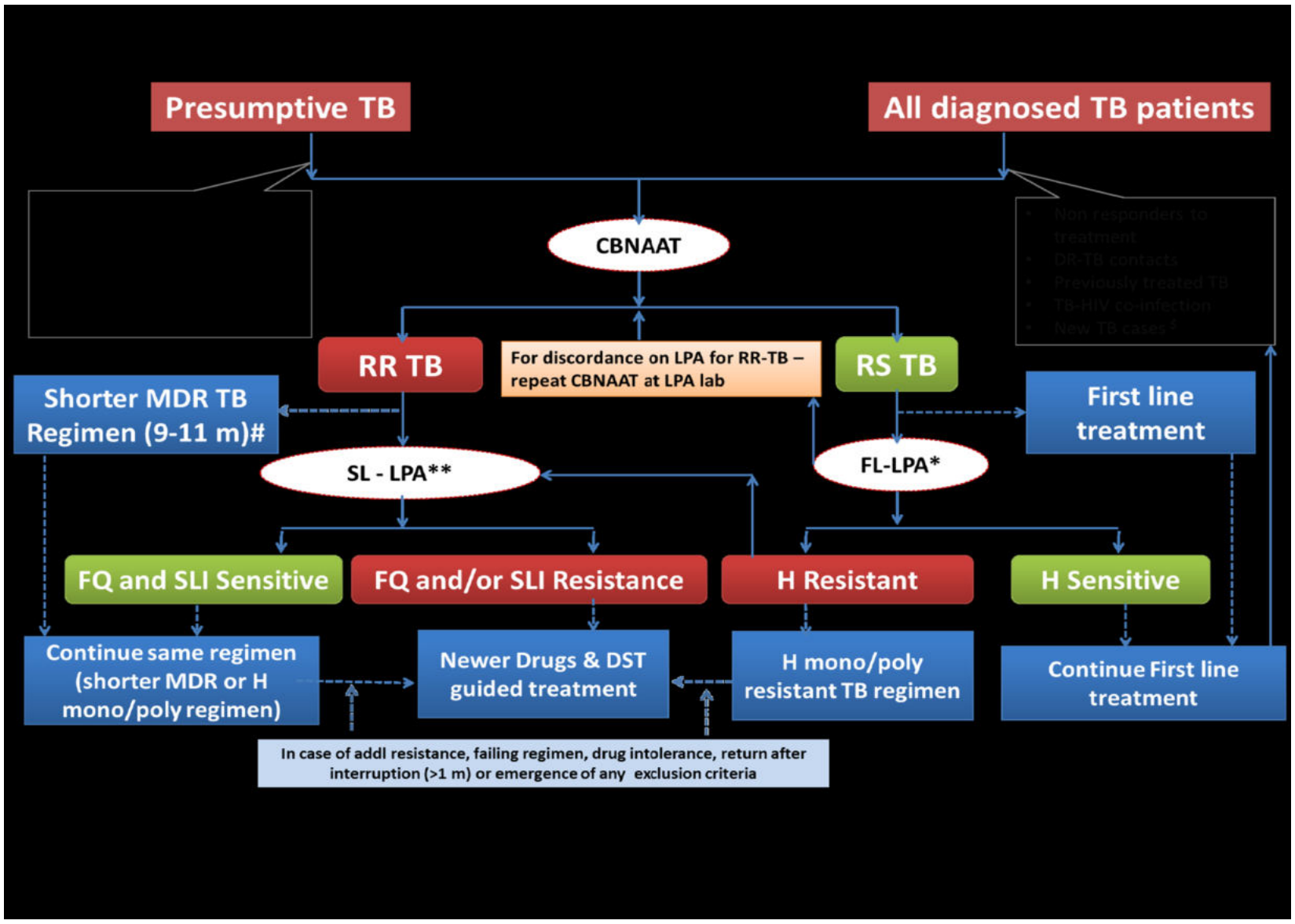
GROUPING OF ANTI-TB DRUGS

GROUPING	DRUGS
Group 1: First-line oral anti-TB agents	Isoniazid (H); Rifampicin (R); Ethambutol (E); Pyrazinamide (Z)
Group 2: Injectable anti-TB agents	Streptomycin (S); Kanamycin (Km); Amikacin (Am); Capreomycin (Cm); Viomycin (Vm).
Group 3: Fluoroquinolones	Ciprofloxacin (Cfx); Ofloxacin (Ofx); Levofloxacin (Lvx); Moxifloxacin (Mfx); Gatifloxacin (Gfx)
Group 4: Oral second-line anti-TB agents	Ethionamide (Eto); Prothionamide (Pto); Cycloserine (Cs);Terizadone (Trd); *para-aminosalicylic acid (PAS)*
Group 5: Agents with unclear efficacy (not recommended by WHO for routine use in MDR-TB patients)	Clofazimine (Cfz); Linezolid (Lzd); Amoxicillin/Clavulanate (Amx/Clv); thioacetazone (Thz); imipenem/cilastatin (Ipm/Cln); high-dose isoniazid (high-dose H); Clarithromycin (Clr)

Grouping of antiTb drugs(2017 ,RNTCP guidelines)

FQ	Levo/moxi/gati
Injectable agents	K/A/C
Other second line drugs	Etio/prothio/cycloserine/linezolid
Add on drugs	D1:Z/E/H high dose,D2:Bedaquiline/delaminid D3:PAS,Amoxy-clav,Meropenem,imipenem cilastatin

RNTCP 2017



RNTCP MDR-TB Treatment Regimen

- Standardised treatment regimen
  - 6 drugs (Km,Lvx,Eto,Z,E,Cs) during 6-9 months of an IP, 4 drugs (Lvx,Eto,E and Cs) during 18 months for CP.
  - Patient to receive drugs under direct observation on 6 days of the week. On 7th day (Sunday), the oral drug will be administered unsupervised.
  - Intolerance to E and Cs should be treated by replacing it with PAS and we need to split the dose into two (morning and evening).
  - 100 mg of Pyridoxine given to all MDR-TB.
  - Follow up schedule during Dr-TB treatment

DR TB:Principles of Treatment

- MDR:4 second line drugs /not used
- XDR:7 drugs
- Duration:24(MDR),36(XDR)

DOTS plus previously

Second line drugs

- Treatment longer
- Toxic
- Expensive

} more

- Stress:emergence rather than treatment of DRTb

Newer ATT

- Bedaquiline
- Delaminid
- protaminid

MCQ

- A pt on ATT C/O burning soles
- A pt on ATT C/O loss of appetite & vomittings
- A pt on ATT C/O dec vision

DOTS & RNTCP

Objectives

- To achieve 90% notification rate for all types of TB Cases
- To achieve 90% success rate for all new and 85% for re-treatment cases
- To significantly improve the successful outcomes of treatment of Drug Resistant TB
- To achieve decreased morbidity and mortality of HIV associated TB
- To improve outcomes of TB care in the private sector

Advantages

- Directly observed
- Standardised treatment
- Free of cost

TB & HIV

- Increased chances of reactivation/relapse
- Atypical presentations
- Higher ADR/drug interactions
- Priorty to treat Tb first and then ART

TB & DM

- Higher risk
- Glycemic control must for cure
- Higher chances of ADR