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Pharmacology – Pulmonary TB

Respiratory Block

430 Pharmacology team

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Etiology:

Mycobacterium tuberculosis, an acid fast bacillus with three types known to infect man causing pulmonary TB:

- The human type, commonest
- The bovine type (cow milk)
- The africanum type

Recently, the three are identified as the mycobacterium tuberculosis complex

Epidemiology:

Each year, 1% of the global population is infected

Tuberculosis:

Common sites of infections are sites where oxygen tension is high:

- Apical areas of lung.
- Renal parenchyma.
- Growing ends of bones.

Treatment Of Tuberculosis:

- Tuberculosis remains the primary cause of death due to infectious disease.
- Periods of treatment (minimum 6 months)
- Drugs are divided into two groups:
- First line
- Second line

Antimycobacterial drugs

1 st line	2 nd line
<u>Isoniazid (INH)</u>	<u>Ethionamide</u>
<u>Rifampin</u>	<u>Cycloserine</u>
<u>Ethambutol</u>	<u>Fluoroquinolones (Ciprofloxacin & Levofloxacin)</u>
<u>Streptomycin</u>	
<u>Pyrazinamide</u>	

N.B.: Never use a single drug therapy, why? To avoid developing resistance.

Use combinations, such as:

- **Isoniazid –Rifampin:** administered for 9 months will cure 95-98% of cases .
- Addition of **Pyrazinamide** for this combination for the first 2 months allows total duration to be reduced to 6 months._

2nd line drugs:

e.g.:

Ethionamide, Cycloserine, Fluoroquinolones.

Indication:

- Resistance to the 1st line drugs.
- Failure of clinical response (the patient is not responding).
- There is contraindication for 1st line drugs.
- Patient is not tolerating the drugs 1st line drugs.

	<u>Ethionamide</u>	<u>Cycloserine</u>	<u>Fluoroquinolones</u>
MOA	Inhibits the synthesis of <u>mycolic acid</u>	Inhibitor of cell wall synthesis	Block DNA bacterial synthesis
Uses	As a secondary line agent	-----	Effective against multidrug- resistant tuberculosis.
Adverse effects	<ul style="list-style-type: none">▪ Severe gastric irritation▪ Neurological manifestations	peripheral neuropathy and CNS dysfunction	<ul style="list-style-type: none">▪ Nausea , vomiting , diarrhea▪ Prolong QT interval▪ Damage growing cartilage (<u>arthropathy</u>)▪ Headache, dizziness.
N.B.	-----	<ul style="list-style-type: none">▪ Pyridoxine should be given.▪ Contraindicated in epileptic patients	<ul style="list-style-type: none">▪ Contraindication:▪ Pregnancy, lactation, children under age of 16 years.

TB & Pregnancy:

- Untreated TB represents a great risk to the pregnant woman & her fetus than the treatment itself.
- First line drugs are given for 9 months in normal doses
- Streptomycin is the last alternative in treatment

TB & Breast Feeding:

It is not a contraindication to receive drugs , but caution is recommended