

# Anti- Leprotic agents

- Also known as **Hansen's** disease
- It is a chronic granulomatous infection caused by **Mycobacterium leprae**
- Attacks superficial tissues e.g. skin & peripheral nerves
- Organism grow very slowly ( org.s can not be cultured in artificial media but grows in foot pad of **Armedillon.**)

# Anti- Leprotic agents

- Disease is still considered as social stigma but it needs a change in the attitude of public to consider it just like any other disease .
- Important is early diagnosis & Tt. which makes it non infectious & prevents compl.s

# Anti- Leprotic agents

**Anti- Leprotic drugs :**

**Classification-**

**-Sulfone-**

**Dapsone (DDS)**

**-Phenazine derivatives-**

**Clofazimine**

**-Antitubercular drugs-**

**Rifampicin**

**Ethionamide**

**-Other Antibiotics -**

**Ofloxacin , Minocycline & Clarithromycin**

# Anti- Leprotic agents

## Sulfones -

Derivative of 4-4' diamino diphenyl sulfone  
(DDS)

## Dapsone:

-Bacteriostatic

-High risk of resistance if used alone

# Anti- Leprotic agents

## Mechanism:

Similar to sulfonamide i.e. ↓ of dihydrofolate synthase enzyme. ( Anti-inflammatory effect occurs via ↓ of tissue damage by neutrophils by ↓ neutrophil myeloperoxidase activity , ↓ activity of neutrophil lysosomal enzyme , free radical scavenger , ↓ of migration of neutrophils to the inflammatory sites )

## ADRs:

- Nausea , vomiting , anorexia
- Allergic reaction
- Hemolysis in pts with G6PD deficiency
- Methemoglobinaemia

# Anti- Leprotic agents

- Neurotoxicity & Psychosis

## Sulphone Syndrome:

After 5/6 wks of Tt. in malnourished patients there may be **exacerbation of Lepromatous Leprosy** similar to Jerisch Hexheimer reaction (seen with Penicillin ) ,characterized by fever, malaise , exfoliative dermatitis , lymphadenopathy, Jaundice etc.

# Anti- Leprotic agents

## Indication –

- Leprosy
- Resistant Malaria ( with pyrimethamine)
- Toxoplasma encephalitis in AIDS
- Pneumocystis jirovecii in AIDS

# Anti- Leprotic agents

## Clofazimine :

It is a dye , weak bactericidal by ↓ the function of DNA.

activity so prevents **Lepra reaction**.

-used for common skin ulcers & MAC

**S/E**- Red discolouration of skin

- Eosinophilic enteritis

# Anti- Leprotic agents

## Rifampicin :

- Important antiTb drug also bactericidal to *M. Leprae*.
  - Rapidly make leprosy Pts noncontagious
  - However not satisfactory if used alone- some bacilli persist after prolonged Tt –can cause resistance .
- ( The congener of Rifampicin - Rifabutin is

# Anti- Leprotic agents

also bactericidal against *M. leprae* but not superior to Rifampicin)

**Ethionamide** - Has significant **antileprotic activity but is hepatotoxic**. It can be used as an alternative to Clofazimine but other substitutes are preferred.

# Anti- Leprotic agents

## Other Antibiotics:

- Fluoroquinolones** : **Ofloxacin** , **Pefloxacin**, **Gatifloxacin** are highly active against *M. leprae* ( **but not Ciprofloxacin** )
- Minocycline**: due to high lipophilicity, it is active against *M. leprae*. , antibacterial activity is less than Rifampicin but more than that of Clarithromycin .

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## Clarithromycin :

Only macrolide antibiotic having significant activity against *M. leprae* . It is being **included in alternative MDT regimens.**

# Anti- Leprotic agents

## Diagnosis of Leprosy:

Diagnosed with any of the following-

- Skin lesions ( hypopigmented patches )
- Impaired or loss of sensation
- Acid fast bacilli in skin smears
- Nerve thickening

# Treatment of Leprosy

- India achieved elimination of Leprosy as a public health problem .
- Incidence is less than 1 case/ 10,000 population .

# Treatment of Leprosy

## Classification:

1. Indeterminate
2. Tuberculoid
3. Borderline
4. Lepromatous
5. Pure neuritis ( no skin lesion )

## Tuberculoid:

Well defined skin lesion

# Treatment of Leprosy

- anesthetic patches
- Organism may or may not be found in skin lesions.
- Lepromine test is positive (diagnostic for Leprosy. It evaluate the immune system of the patient & classify the type of disease.)
- prolonged remission occurs

# Treatment of Leprosy

## Lepromatous:

- Ill defined skin lesions
- Skin is thickened , glossy & corrugated
- Disease progresses – large nerve trunks get involved – anesthetic patches
- Atrophy of skin & muscles & absorption of small bones e.g. phalanges of extremities, ulceration & spontaneous amputation occurs

# Treatment of Leprosy

-Lepromine test is –ve ( as cell mediated immunity is absent )

-Smear is +ve for organism .

For treatment purpose –leprosy is classified as-

**Multibacillary** - It includes lepromatous, borderline cases with +ve skin smear test

Tt- **Rifampicin** - 600 mg / month supervised

# Treatment of Leprosy

**Dapsone**-100 mg / day self administration

**Clofazimine** – 300 mg/ month supervised

+ 50 mg/ day self administration

X 2 years- relapse – repeat

**Paucibacillary** : ( small no. of organism)-

It includes indeterminate & tuberculoid

**Tt- Rifampicin** – 600 mg / month supervised

**Dapsone** – 100 mg / day self administration

X minimum for 6 months-repeat if relapse

# Treatment of Leprosy

**Single lesion paucibacillary –single dose**

**ROM- Rifampicin-600 mg + Ofloxacin - 400mg + Minocycline-100 mg**

(MDT was introduced by the WHO in 1981 & was implemented under the **NLEP ( National Leprosy Eradication Programme)**. It includes Dapsone, Rifampicin & Clofazimine . The WHO in 1994 recommended a fixed duration therapy( FDT) of 2 years for MBL & 6 months for PBL . WHO expert committee On Leprosy in 1995 recommended shortening of MDT in MBL to 12 months & this was implemented in our country since 1999 . The purpose of this is to render the **Pts noncontiguous & therefore cut down transmission**

# Treatment of Leprosy

## Alternative regimens :

Incorporating newer antileprotic drugs , but these are used only in case of Rifampicin resistance or when MDT is not advisable e.g.-

**Clofazimine** + any two of **Ofloxacin / Minocycline/ Clarithromycin** for 6 months followed by **Clofazimine** + any one of **Ofloxacin / Minocycline** x additional 18 months .

(**PBL** cases having few bacteria in the body & only one Skin lesion can be treated with **single dose of Rifampicin** -600 mg + **Ofloxacin**-400 mg + **Minocycline** -100 mg. This has been recommended by the **WHO** for **solitary lesion of PBL.**)

# Treatment of Leprosy

Two types of reactional state may occur with therapy

1. **Type I** : Lepra reaction (reversal reaction)

In **borderline leprosy** due to increased in host immunity- skin lesion & nerves become swollen & tender without systemic manifestation –

Tt. –

**Prednisolone** (**Thalidomide not effective**)

# Treatment of Leprosy

**Type II** :Lepra reaction ( erythema nodosum leprosum) –observed in **lepromatous leprosy** – there is skin & nerve manifestation with fever & systemic involvement.

Tt.- by analgesic /antipyretic for mild cases,  
in severe cases-**Prednisolone** or **Thalidomide**.  
-**Chloroquine** & cytotoxic drugs are also effective.

# Treatment of Leprosy

- **Clofazimine** require 3-4 wks so not suitable for acute cases, **but useful in chronic cases & prevention of this reaction** .
- **No need to stop the anti-leprotic drugs** .

## WHO Recommended Regimen

- ❖ Tuberculoid - Dapsone 100mg/d and rifampicin 600mg (6 months)
  
- ❖ Lepromatus - dapsone 100mg/d , Clofazimine 50mg/d and Rimfampicin 600mg\_ (12 months)

# Bibliography

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