LEPROSY

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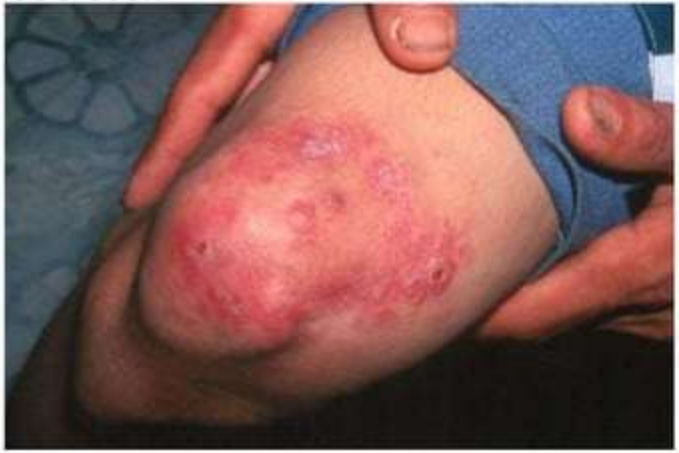
LEPROSY Definition

- It is a contagious skin disease, causing serious and permanent damage of the body, including loss of fingers, nose etc..



- Leprosy is a infectious disease derived from the French word LEPER and from the Greek word LEPROS which means SCALY.

- The disease is common in South-East-Asia , Africa and other tropical and sub tropical countries.
- Leprosy bacillus was discovered by Hansen in 1873 ,almost 12years before the discovery of Tubercle bacillus , the progress in the chemotherapy of leprosy has been much slower than in that of T.B.
- Unlike T.B. ,human leprosy cannot by transmitted to animals so easily.About 70% of people are effected by M.leprosy disease.

For the purpose of categorizing patients for chemotherapy ,leprosy may be classified clinically into THREE main types:-

a)Indeterminate Leprosy (IL) ,

b)Borderline Tuberculoid Leprosy (BT) and

c)Borderline lepromatouS Leprosy(BL)

These are determined by the degree of CMI (Cell Mediated Immunity) in the host against the Leprea bacilli.

a) Indeterminate (IL):

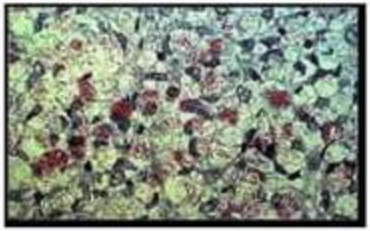
IL or confusing form is an early stage where the lesions are slight and do not give a clue about the type of disease .

b) Borerline Tuberculoid Leprosy(BT);

In this the CMI is intact, the organisms are few nerves are predominantly affected first , and the progress of the disease is slow . The typical TL lesion is a large , flat , atrophic , hairless, hypopigmented skin area . Peripheral nerves are thickened . Histologically, the lesion consists of focal masses of epitheloid cells and gaint cells with lymphoyctic in filtration.

C) Borderline lepromatous Leprosy (BL)

In this , the CMI is low , the lesions abound in Lepra bacilli and the disease progresses rapidly .The disease mainly the face, nose, ears,eyes and lymph glands . Eventually the skin becomes furrowed and nodulated , giving a pecular 'Leonine facies ' . Eyelashes fall off . Later , ulceration occurs with marked tissue destruction involving eyes,nose,larynx.The nerves are affected late in the disease.



ETIOLOGY

- Mycobacterium leprae, has been classified separately from the other mycobacteria because of the failure to grow it on artificial culture media.
- Mycobacterium leprae grows at 30-330C, and divides every 12-13 days.

SIGNS&SYMPTOMS

- Skin lesions are the primary external sign.
- Left untreated, leprosy can be progressive, causing permanent damage to the skin, nerves, limbs, and eyes.
- Contrary to folklore, leprosy does not cause body parts to fall off, but tissues can become numb and other microbes can invade them as secondary infections when the disease weakens the body's defences.

PATHO PHYSIOLOGY

- The mechanism of transmission of leprosy is prolonged close contact and transmission by nasal droplet.
- The bacterium can also be grown in the laboratory by injection into the footpads of mice.

- It is estimated that due to genetic factors, only 5% of the population is susceptible to leprosy
- In leprosy, both the reference points for measuring the incubation period and the times of infection and onset of disease are difficult to define.
- Even so, several investigators have attempted to measure the incubation period for leprosy.
- The maximum incubation period reported is as long as 30 years, or over, as observed among war veterans known to have been exposed for short periods in endemic areas but otherwise living in non-endemic areas.
- It is generally agreed that the average incubation period is between three and five years.

MANAGEMENT OF LEPROSY

Leprosy, which was once considered to be an incurable disease can now be cured completely. As incase of T.B. ,the main difficulty in the treatment of leprosy is in persuading the patient to continue the drug therapy regularly for a prolonged period .

- In many countries adequate facilities are still not available for detecting , treating and following such cases in various villages.
- The medical treatment of leprosy can be wholly undertaken by practitioners in the majority of patients.
- The disease transmitted by prolonged and multiplication time of M.T.B. Is 18hours whereas that of M.L eprae is 12days .

- Rifampicin has to be given twice a week in T.B. whereas in leprosy even once a month administration is effective .
- A single dose of 600mg rifampicin kills over 95% of lepra bacilli within 4 days and hence there is no public health problem after 4 days in such patients.
- Majority of the patients can be treated as outdoor patients , in mobile clinics or in primary health centres .Only a few may need hospitalization.

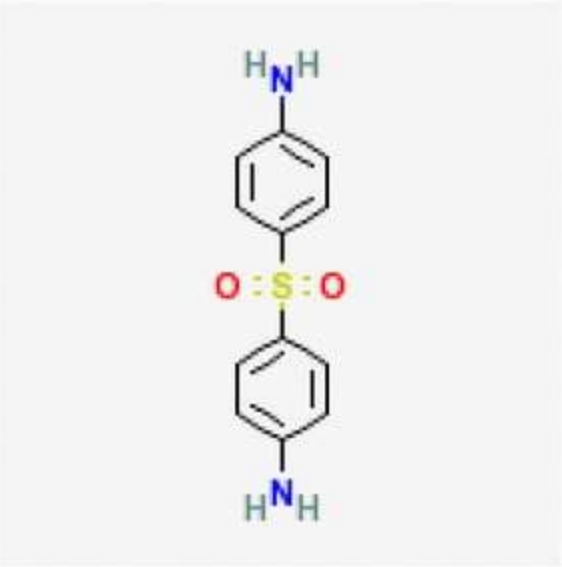
Classification Of Drugs used in the treatment of LEPROSY.

1) Sulfone
   - Dapsone(DDS)
2) Phenazine derivatives
   - Clofazimine
3) Antitubercular drugs
   - Rifampin ,
   - Ethionamide
4) Other antibiotics
   - Ofloxacin ,
   - Minocycline and
   - Clarithromicin.

DAPSONE (DDS):

- It is Diamino diphenyl sulfone ,the simplest ,oldest , cheapest , most active and most commonly used . All other sulfones are converted in the body to DDS .

Structure Of DAPSONE (DDS)

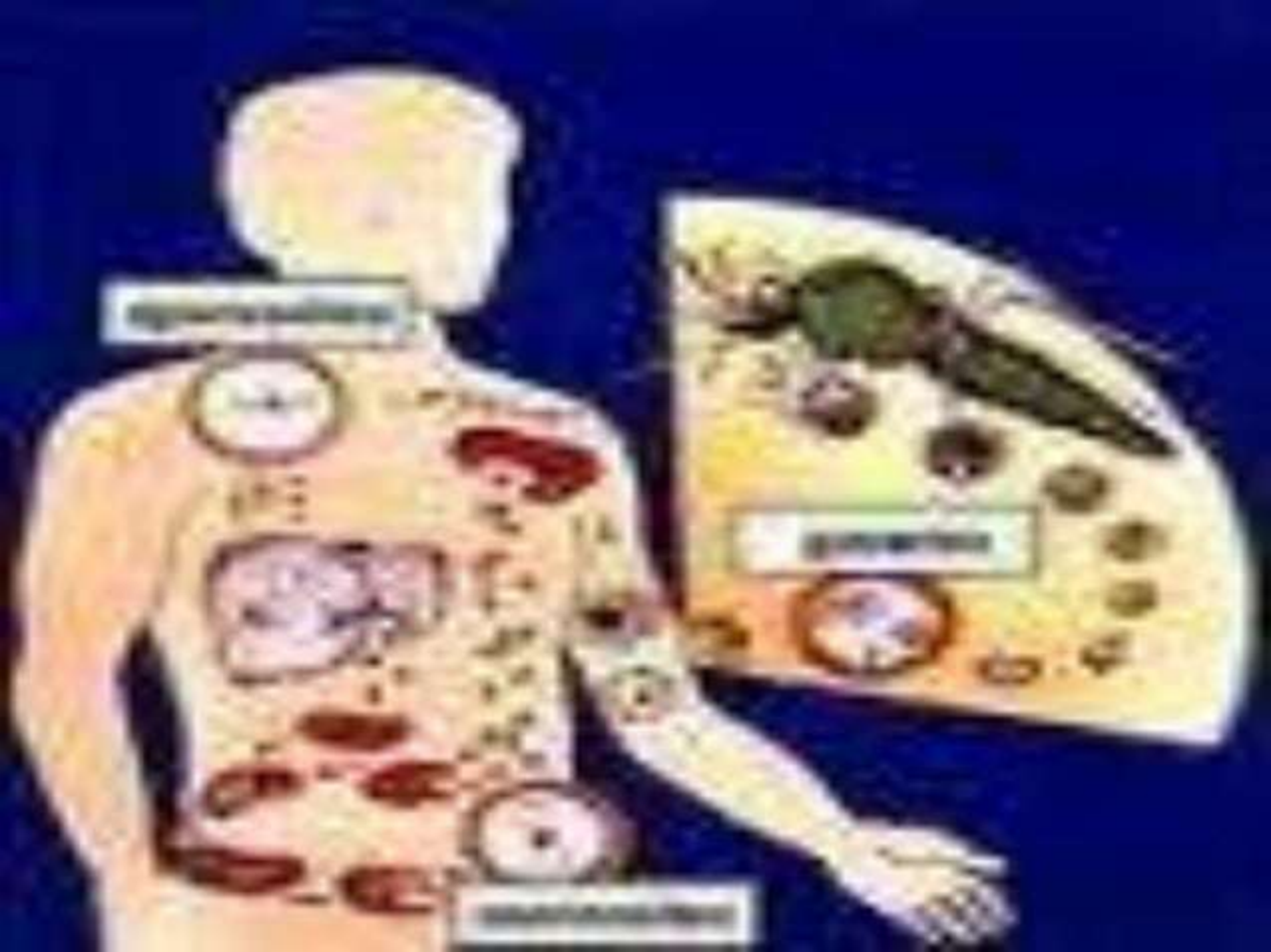


Activity and mechanism

- Dapsone is chemically related to sulfonamides and has same mechanism of action, that is inhibition of PABA incorporation into folic acid.
- its antibacterial action is antagonised by PABA .
- It is leprostatic at low concentrations , and at relatively higher concentrations arrests the growth of many other bacteria sensitive to sulfonamides.
- Doses of dapsone needed for the treatment of acute infections are too toxic , so not used .

Pharmacokinetics

- Dapsone is completely absorbed after oral administration and is widely distributed in the body.
- Metabolites are excreted in bile and reabsorbed from intestine , so that ultimate excretion occurs mainly in urine.



Dose

- 25,50,100mg tablet.

Adverse effects:

- Mild haemolytic anaemia
- Gastric intolerance-nausea and anorexia
- Others-headache, methaemoglobinaemia , mental symptoms
- Drug fever .

Cutaneous reactions include allergic rashes , fixed drug eruption , phototoxicity.

2) Phenazine derivatives

Clofazimine :

It is a dye with leprostatic and anti inflammatory properties; acts probably by interfering with template function of DNA in M.L eprae. When used along , resistance to Clofazimine develops in 1 to 3 years.

Pharmacokinetics

- Is orally active 40 to 70% absorbed.

DOSE:

CLOFOZINE , HANSEPRAN 50, 100 mg Capsule . Is used as a component of multidrug therapy of leprosy . Because of its anti inflammatory property , it is valuable in lepra reaction .

Adverse effects

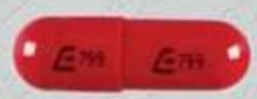
- Skin- Major disadvantage is reddish-black discolouration of skin , especially on exposed parts .
- Discoloration of hair and body secrections .
- Dryness of skin and itching .
- Acne form eruptions .
  GI SYMPTOMS-
- Loose stools ,
- Nausea ,
- Abdominal pain ,
- Anorexia and
- Weight loss .

3) Antitubercular drugs

Rifampin :

It is an important antitubercular drug also bactericidal to M.Leprae . Upto 99.99% M.Leprae are killed in 3 to 7 days. Included in the multidrug therapy of leprosy: shortens duration of treatment.

The 600mg monthly dose used in leprosy is relatively nontoxic and does not include Metabolism of other drugs. It should not be given to patients with hepatic or renal dysfunction.



4) Other Antibiotics

Ofloxacine :

As a component of multidrug therapy and found it to hasten the bacteriological and clinical response. Over 99.9% bacilli were found to be killed by 22 daily doses of Ofloxacin monotherapy .

DOSE:

400mg /day .

LEPRA REACTIONS

The acute exacerbation that occurs during the course of Leprosy is called LEPRA REACTION , but they are usually precipitated by anxiety , malaria , acute infections and during treatment with Sulfones .

Lepra reactions are of two types –

- Type 1 reaction and
- Type 2 reaction .

Type 1 Reaction

- This type 1 reaction also known as Reversal Reaction .
- The existing lesions show increased erythemia and swelling and tender peripheral nerves .
- Loss of nerve function may occur.
- The symptoms are not marked and often it leads to a decreased in the no. of bacilli in the lesions.
- This type of reaction usually occurs in tuberculoid leprosy.
- It occurs in patients with good C.M.I. towards M. Leprae .
- The treatment is mainly directed at controlling acute inflammation , reversing the eye and nerve damage .

Type 2 Reaction

- Usually in about 20% of lepromatous leprosy .
- Is characterised by Erythema Nodosum Leprosum (ENL).
- The basic lesion is a vasulitis following deposition of (antigen + antibody) immune complexes .
- This is a more severe reaction than the first one .
- It is difficult to treat and can relapse .

Clinical Activity In Tuberculoid Leprosy

- ✓ Increase in the size of previous lesions .
- ✓ Persistence of erythema or infiltration in the lesions .
- ✓ Progressive sensory impairment and motor loss and
- ✓ Continuation of local tenderness of peripheral nerves

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Prevention

- In a recent trial, a single dose of rifampicin reduced the rate at which contacts acquired leprosy in the two years after contact by 57%; 265 treatments with rifampicin prevented one case of leprosy in this period.
- A non-randomized study found that rifampicin reduced the number of new cases of leprosy by 75% after three years.
- e ALERT hospital and research facility in Ethiopia provides training to medical personnel from around the world in the treatment of leprosy, as well as treating many local patients. Surgical techniques, such as for the restoration of control of movement of thumbs, have been developed.

Time For...

Thank You.....