LEISHMANIASIS AND LEPROSY…NEGLECTED TROPICAL DISEASES (NTDs)

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LEARNING OUTCOMES

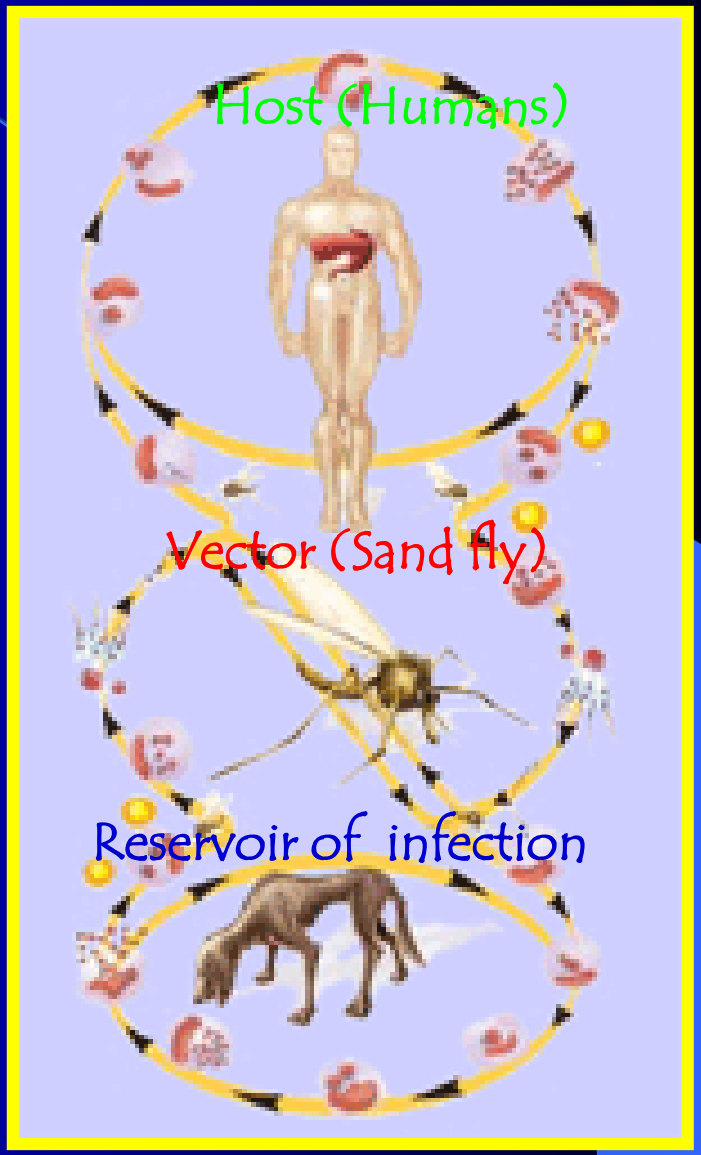
- At the end of lecture, student should be able to
  - Know the organism and vector of cutaneous leishmaniasis
  - Differentiate between old and new world cutaneous leishmanisis
  - Identify different clinical forms of cutaneous leishmaniasis
  - Investigate and treat a case of clinical leishmaniasis

LEARNING OUTCOMES

- Identify organisms of leprosy
- Differentiate between different types of leprosy
- Identify lesions of different types of leprosy
- Investigate appropriately a case of leprosy
- Treat a case of leprosy

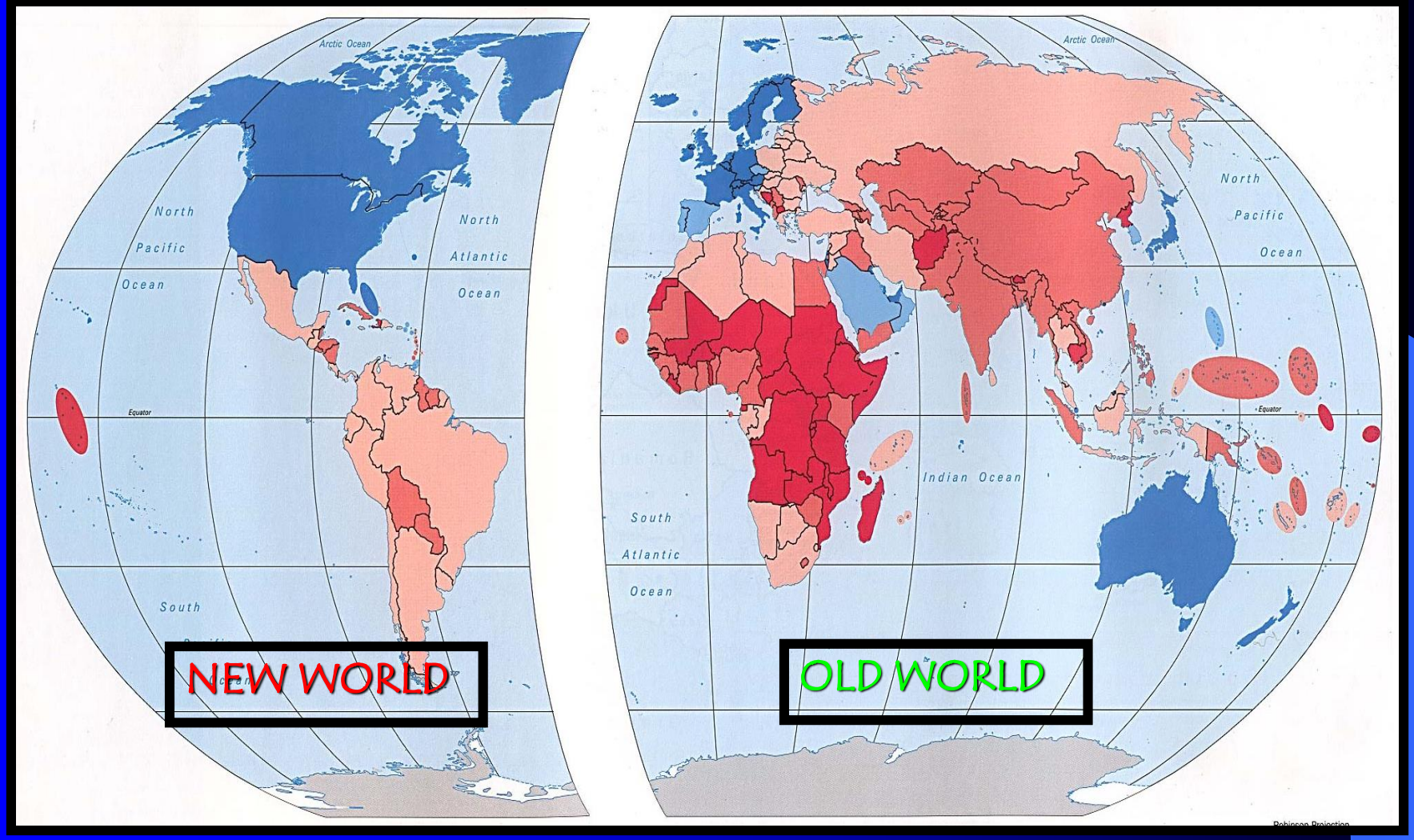
LEISHMANIASIS

- It is a disease affecting reticuloendothelial cells of the skin caused by protozoan Leishmania.
- There is an interplay of leishmania protozoa between
  - Host (Humans)
  - Vector (Sand fly)
  - Reservoir of infection



CUTANEOUS LEISHMANIASIS

NEW WORLD VERSUS OLD WORLD



LEISHMANIA PARASITES

OLD WORLD

- L. major
- L. tropica
- L. aethiopica
- L. donovani
  - L.d. donovani
  - L.d. infantum
  - L.d. chagasi

NEW WORLD

- L. mexicana
  - L.m. mexicana
  - L.m. amazonensis
  - L.m. venezuelensis
- L. brasiliensis
  - L.b. brasiliensis
  - L.b. guyanensis
  - L.b. panamensis

EACH SPECIES OF LEISHMANIA FAVORS ONE OR MORE ANIMAL RESORVIOR EXCEPT L. DONOVANI AND POSSIBLY L. TROPICA

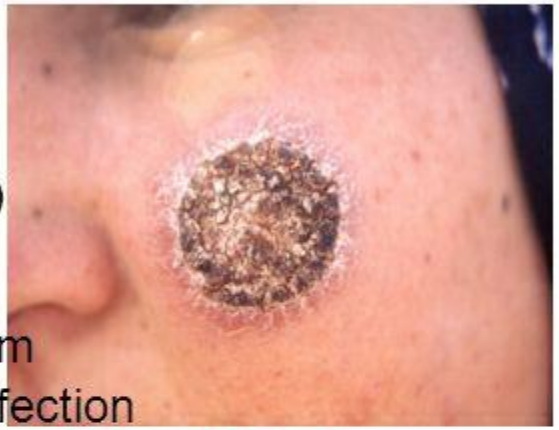
CUTANEOUS LEISHMANIASIS-VECTOR SAND FLY

- INFECTION IS TRANSMITTED BY THE BITE OF FEMALE SANDFLY, USUALLY AT NIGHT.
- DUSK AND DAWN ARE THE MOST SUSEPTIBLE TIMES
- WEAK FLIERS.
  - HOPPING TYPE OF FLIGHT.
  - DO NOT DISPERSE MORE THAN 10-20 METERS.
- REQUIRE MENT FOR BREEDING
  - HUMIDITY
  - MODERATE TEMPERATURE

I-Cutaneous Leishmaniasis "Oriental Sore"(O.W.C.L)

1- Single Dry Non-Exudative Lesion

Caused by *L. tropica* URBAN type



1- Present in towns & cities (common in Saudi Arabia).

2- Long incubation Period (months to years).

3- Lesions develop in exposed parts such as (face –limbs)

4- Lesions are slowly progressive.

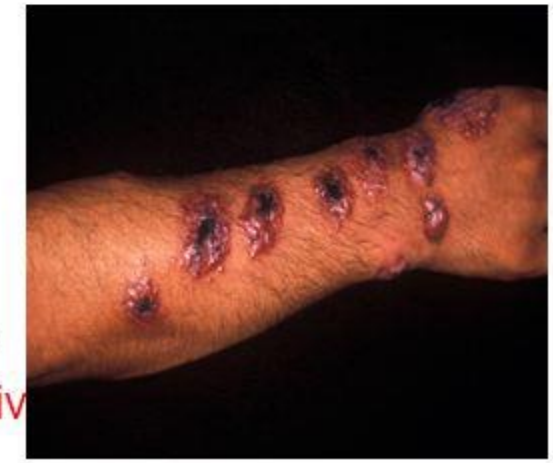
5- Ulcer heals "self-limiting infection" ⟶ scar tissue form

6- C.M.I. curtails the infection leading to resistance to reinfection

Appear as follows: single-small-Dry-painless nodule-nonexudative-delayed ulceration-small scar- non pruritic- uncommon 2ry bacterial infection.

2- Multiple Wet Exudative Lesion

Caused by *L. major* RURAL type



1- Found in villages at edge of deserts(common in KSA).

2- Relatively short incubation period (2-6 weeks).

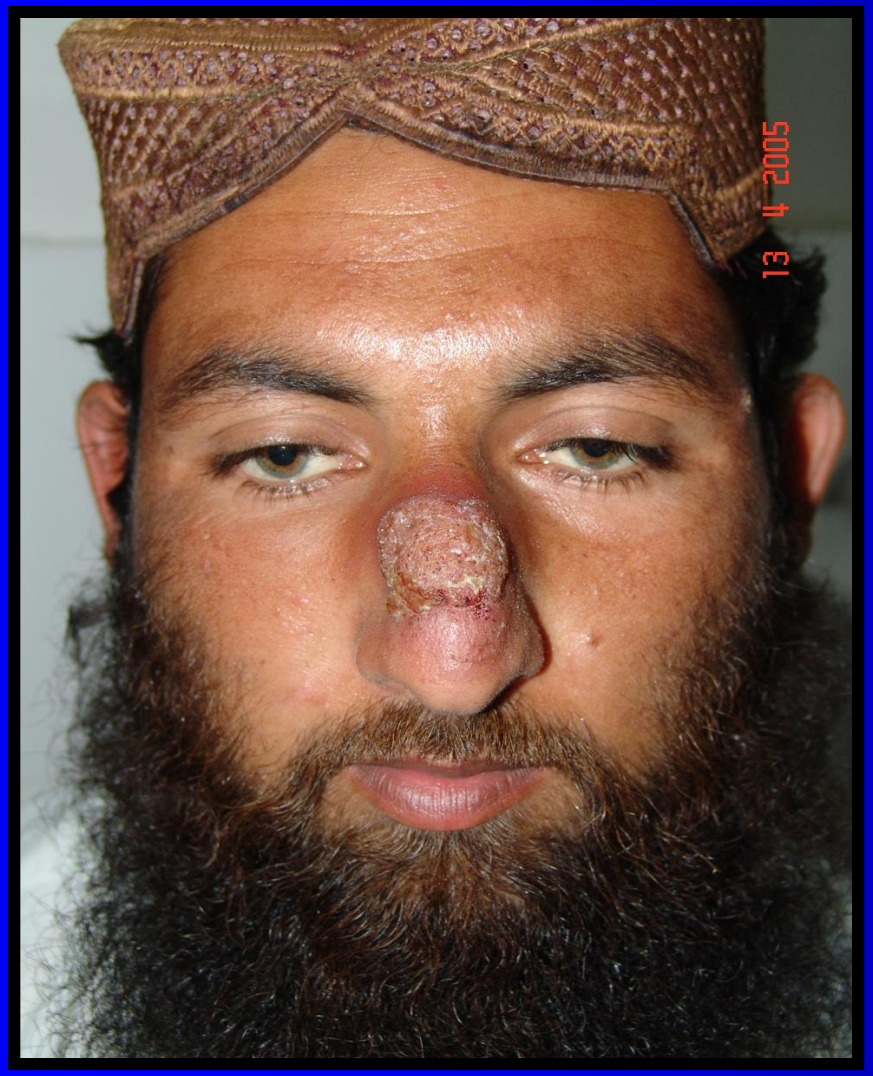
3- Lesions are more severe than *L.tropica* – big Ulcers

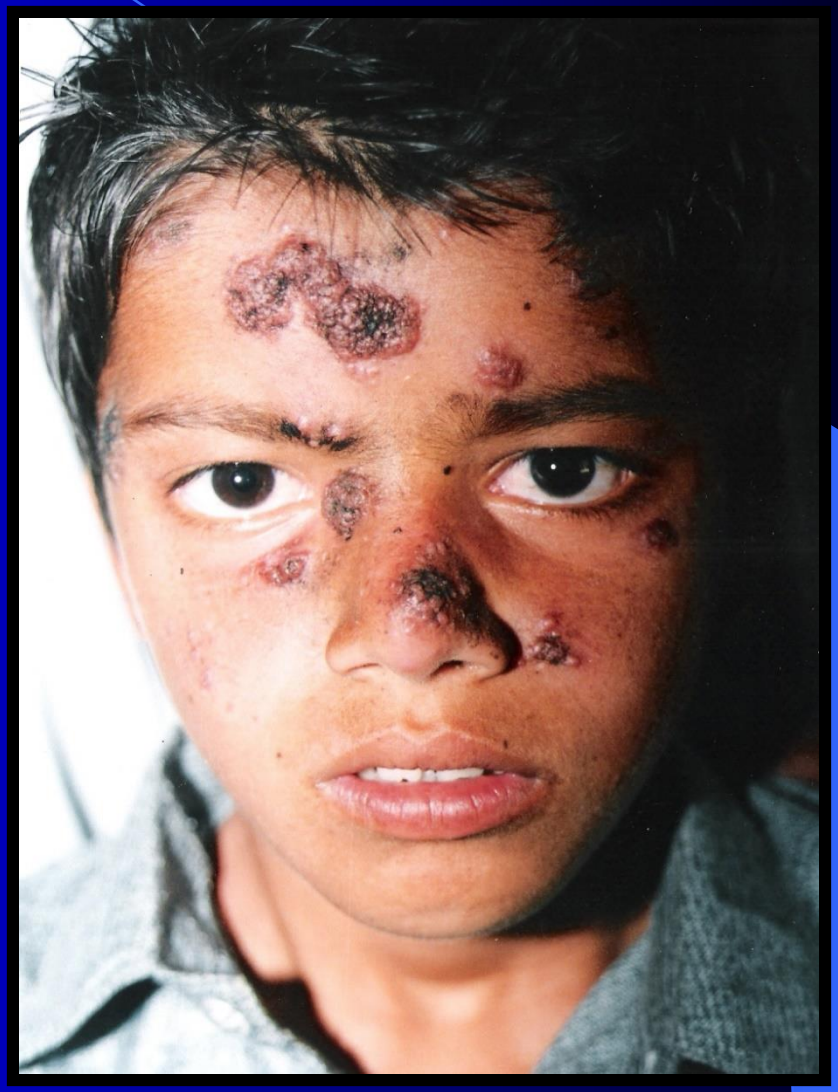
4- Lesions are rapidly progressive.

5- Dense nodules ⟶ ulcerate & Coalesce ⟶ big ulcers

Appear as follows: Multiple-Big-Wet-painless nodule-Exudativ
2ry bacterial delay healing –Big disfiguring scar- pruritic.

CUTANEOUS LEISHMANIASIS
OLD WORLD
URBAN ‘DRY’ LEISHMANIASIS





CUTANEOUS LEISHMANIASIS
OLD WORLD

RURAL 'WET' LEISHMANIASIS

NODULE

↓

PLAQUE

↓

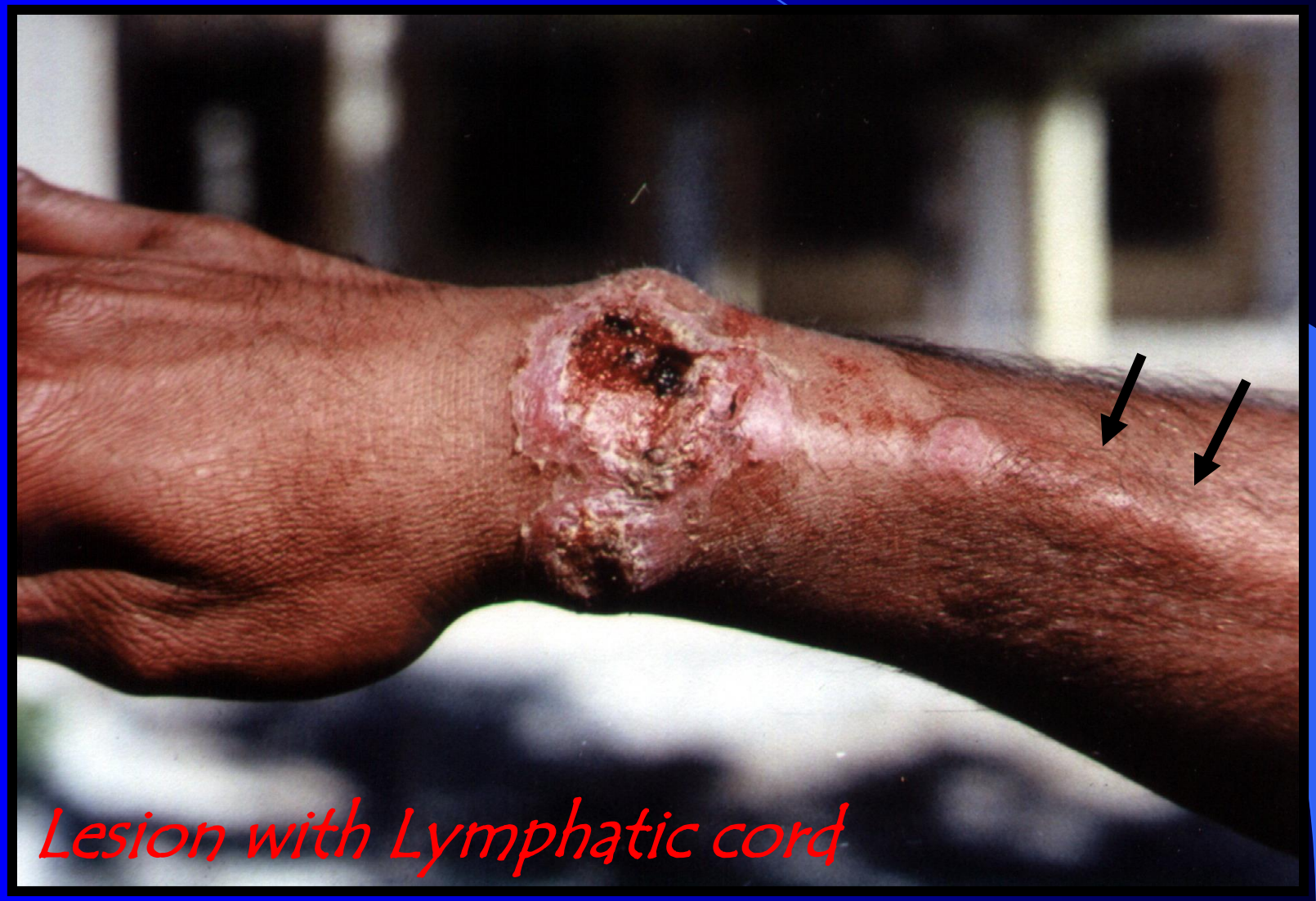
CRUSTING

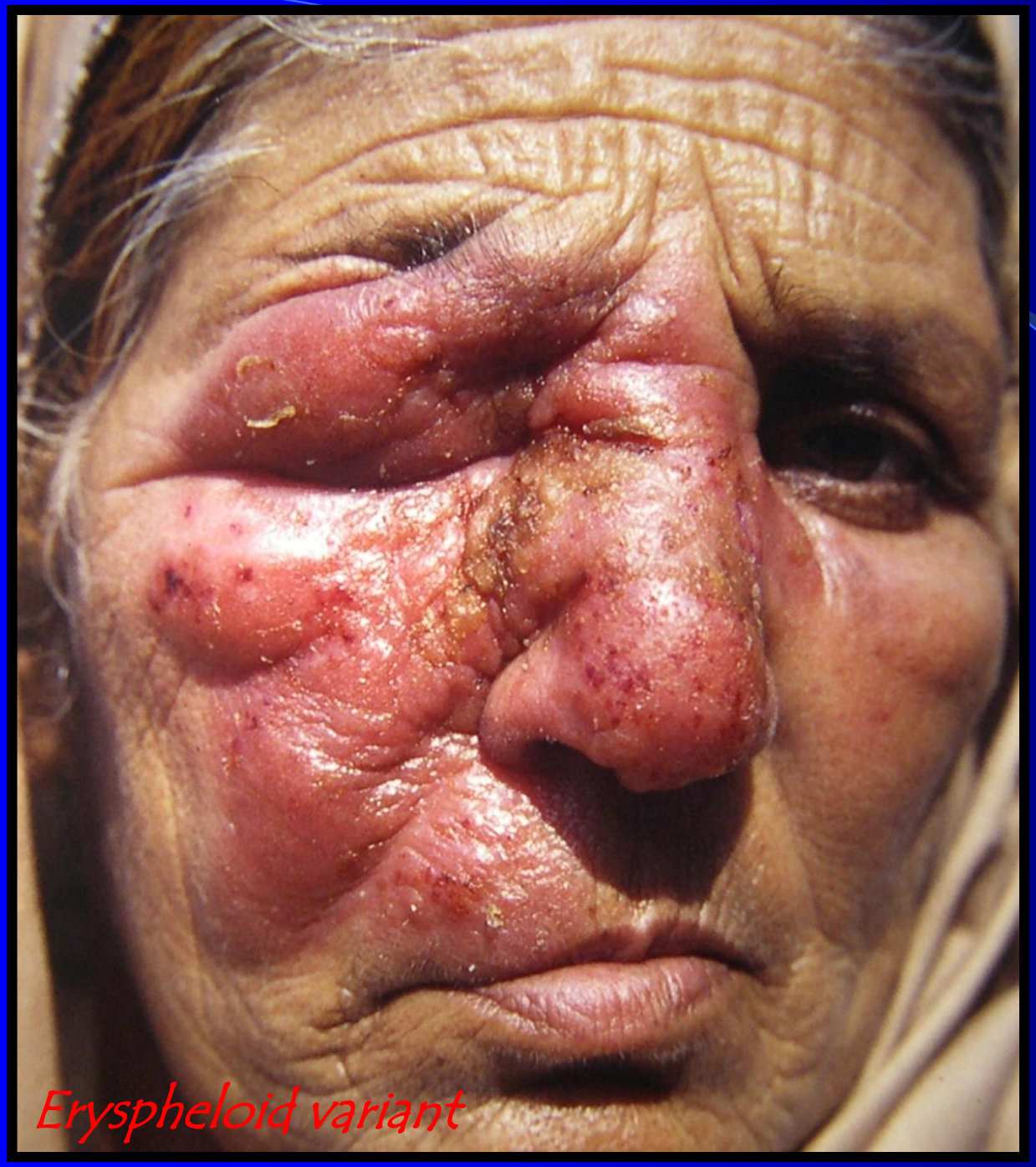
↓

ULCERATION

2-3 months

CUTANEOUS LEISHMANIASIS
OLD WORLD
RURAL 'WET' LEISHMANIASIS

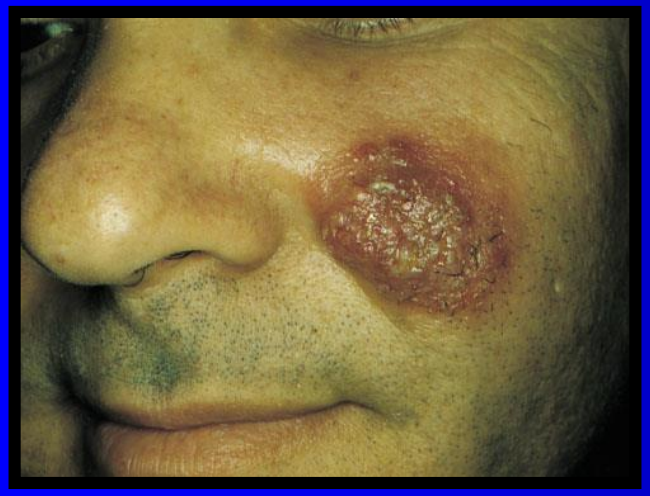


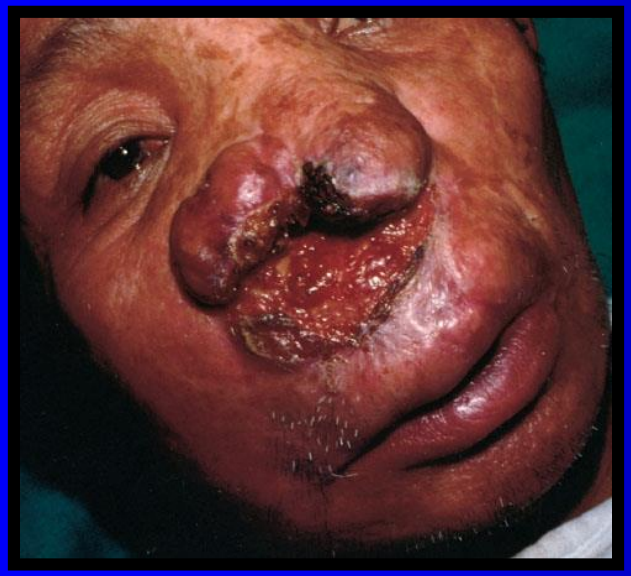


CUTANEOUS LEISHMANIASIS OLD WORLD

RURAL 'WET' LEISHMANIASIS

NEW WORLD CUTANEOUS LEISHMANIASIS
MUCO – CUTANEOUS LEISHMANIASIS
L. brasiliensis





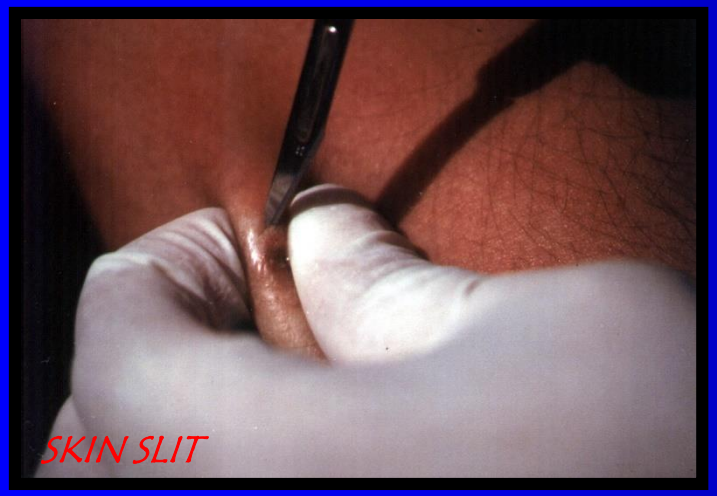
- *INITIAL LESION HEALS*
- *AFTER 2-5 YEARS*
  - *BLOOD BORNE METESTASIS*
  - *MUCOSAL LESION*
  - *CAUSES SEVERE DESTRUCTION*

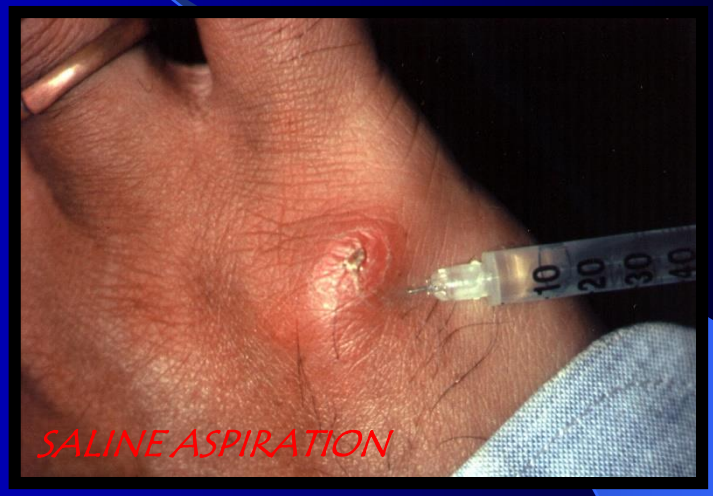
CUTANEOUS LEISHMANIASIS

PARASITOLOGICAL CONFIRMATION

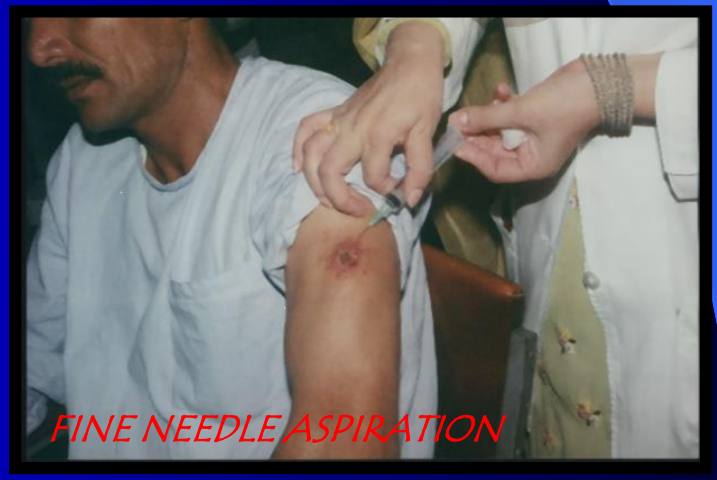
(AMASTIGOTES)

SKIN SMEARS


SKIN SLIT


SALINE ASPIRATION


BIOPSY IMPRESSION


FINE NEEDLE ASPIRATION

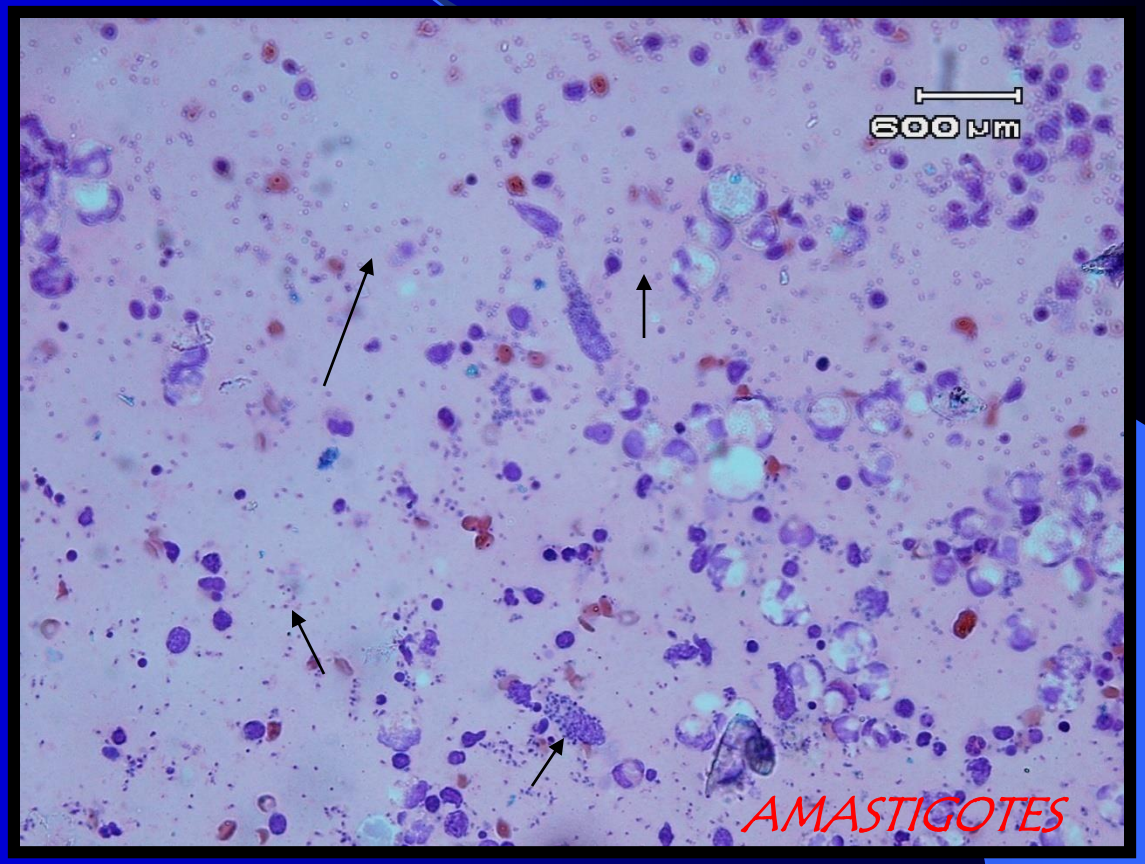
CUTANEOUS LEISHMANIASIS

PARASITOLOGICAL CONFIRMATION

(AMASTIGOTES)

SKIN SMEARS

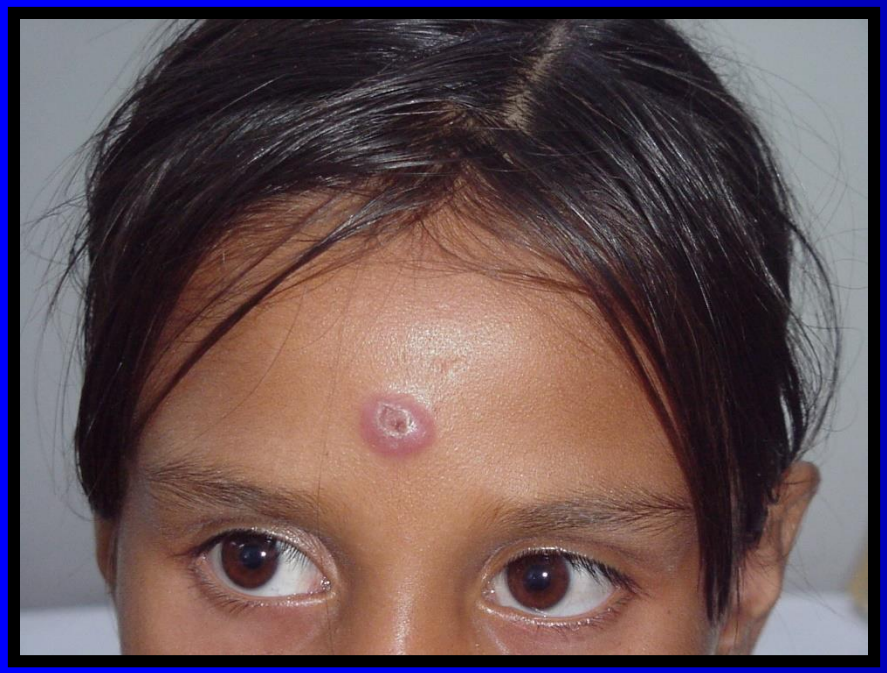
MATERIAL IS SMEARED ONTO SLIDE AND GIEMSA STAINED



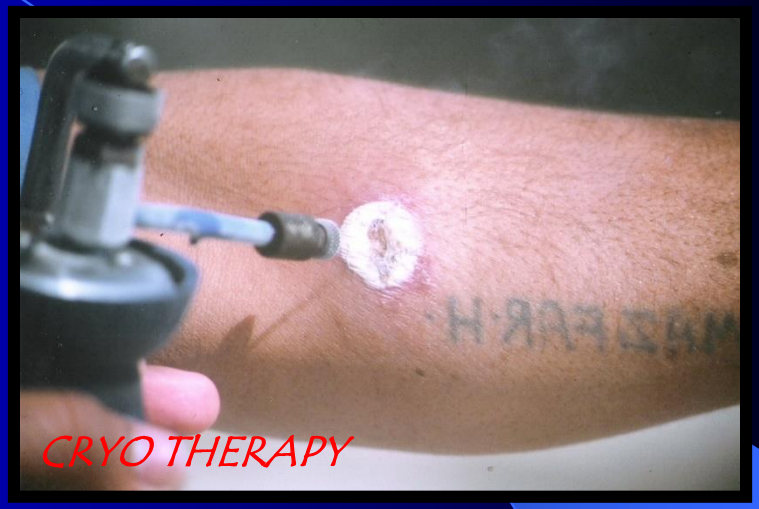
CUTANEOUS LEISHMANIASIS

TREATMENT

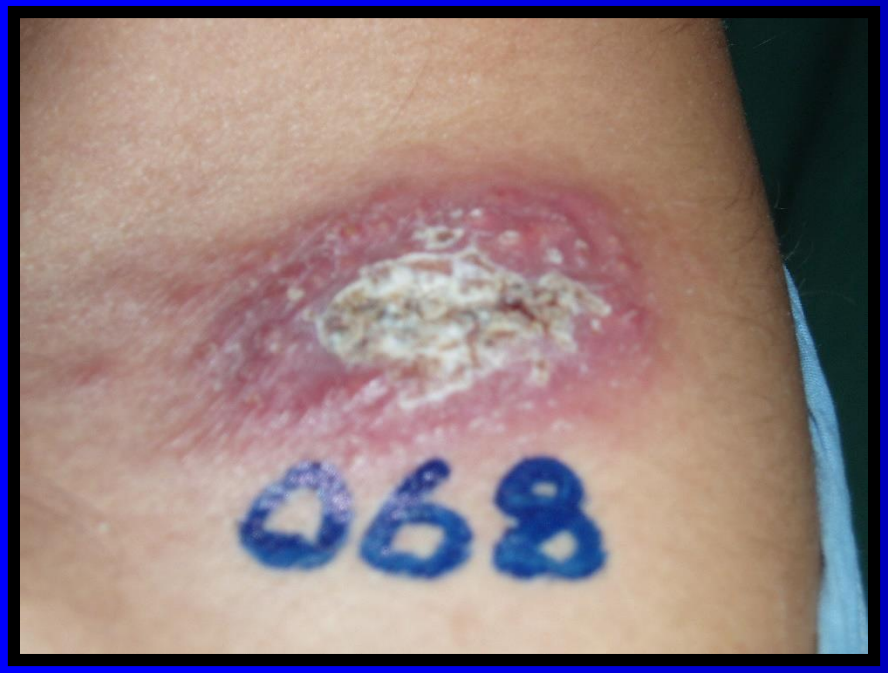
SINGLE SMALL LESION



- SURGICAL REMOVAL
- CURRETAGE



CUTANEOUS LEISHMANIASIS
TREATMENT
SINGLE LARGE LESION

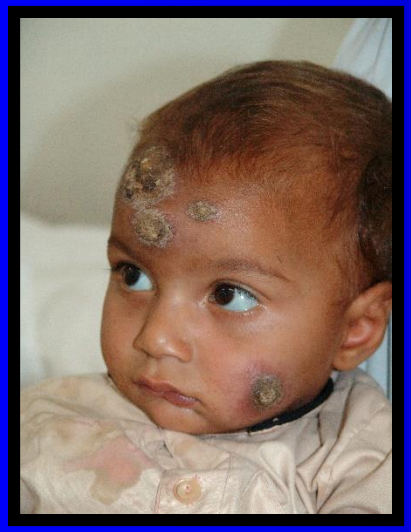


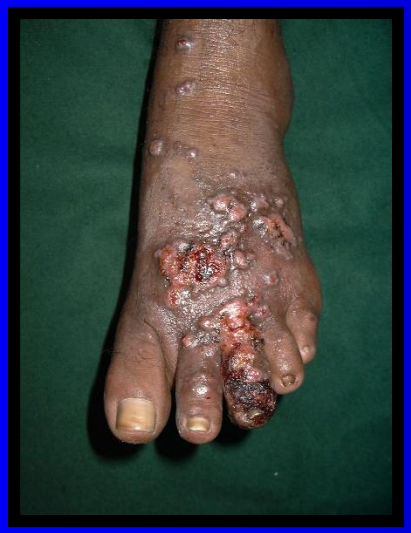
- *INTRALESIONAL INJECTIONS*
  - *PENTAVALENT ANTIMONIALS*
    - PENTOSTAM – 1-2 ml THRICE WEEKLY
    - GLUCANTIME – 1-2 ml THRICE WEEKLY
- *TOPICAL APPLICATION*
  - PAROMOMYCIN OINTMENT

CUTANEOUS LEISHMANIASIS

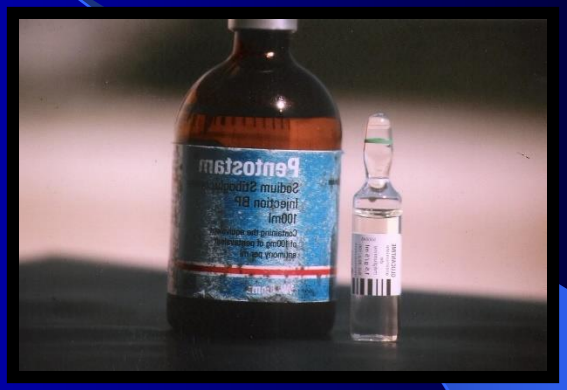
TREATMENT

MULTIPLE LESIONS AND LYMPHATIC SPREAD





PENTAVALENT ANTIMONIALS



- SODIUM STIBOGLUCONATE (PENTOSTAM)
  - CONTAINING 100 mg OF ANTIMONY PER ml
- MEGLUMINE ANTIMONIA(GLUCANTIME)
  - CONTAINING 85 mg OF ANTIMONY PER ml

Leprosy

(Hansen's disease)

M leprae

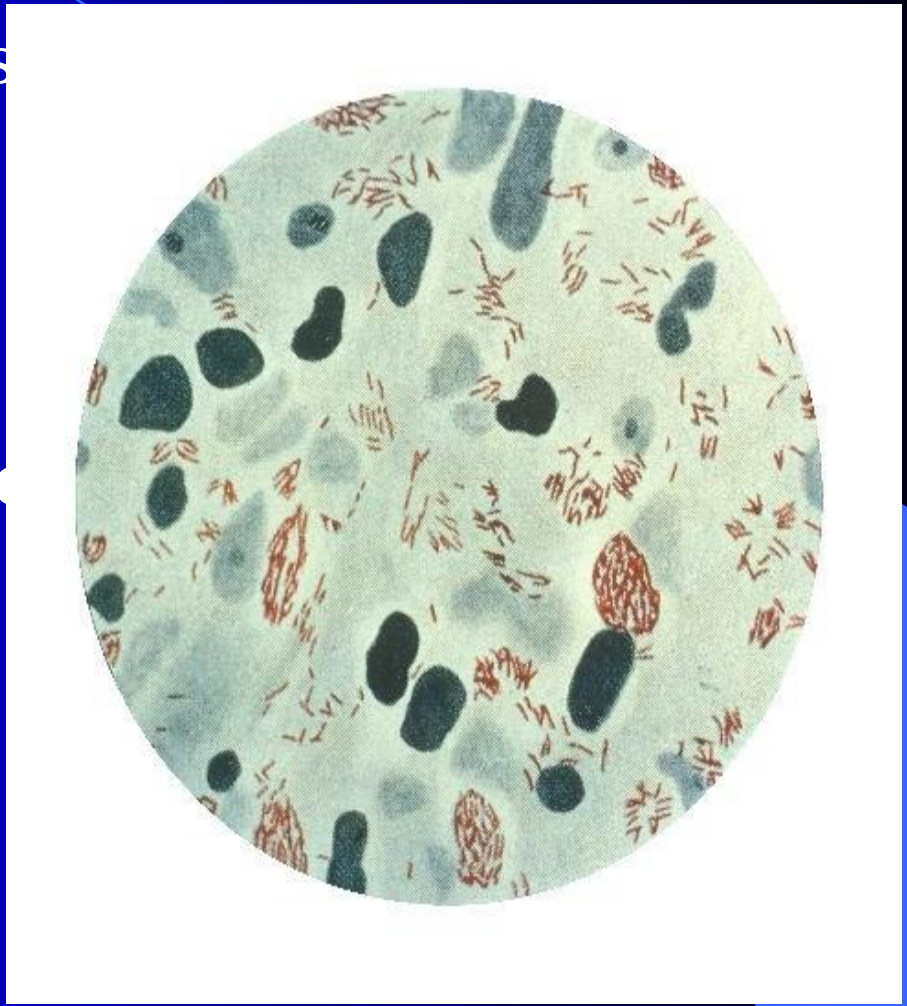
- Obligate Intracellular Acid-fas
  Gram-positive Bacillus
- multiplies very slowly

Slow growing (12 days doubling time).

Grows at 30–33^0 C(Prefers the cooler parts of the body

Affinity for

- **Macrophages**
- **Schwann cells**



Principal means of transmission

Aerosol spread

(from infected nasal secretions to exposed nasal and oral mucosa)

Not a highly infectious disease

Host's immune system

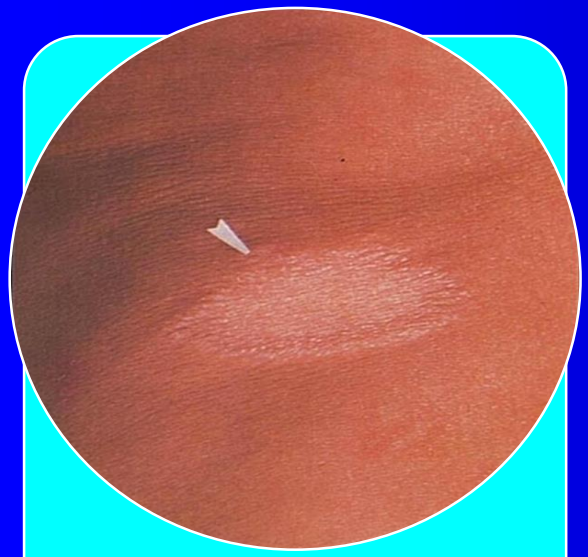
A strong cell-mediated immunity

- **Tuberculoid forms**
  - few lesions
  - well-defined nerves involved
  - lower bacterial loads

Relatively absent cell-mediated immunity

- **Lepromatous leprosy**
  - widespread lesions
  - extensive skin and nerve involvement
  - high bacterial loads.

SPECTRUM OF LEPROSY



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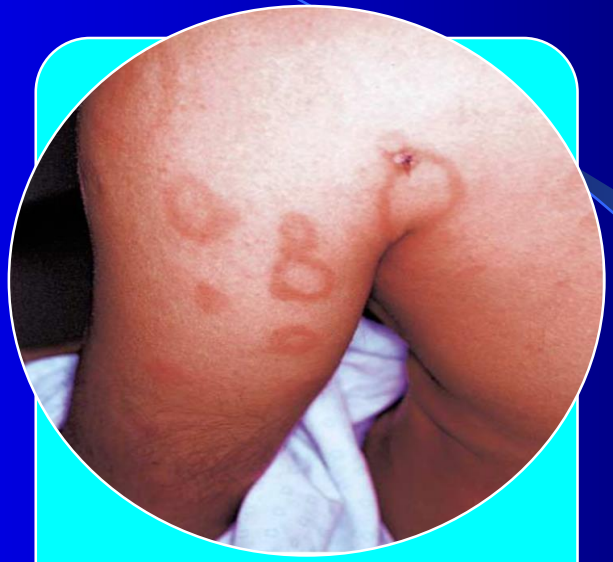
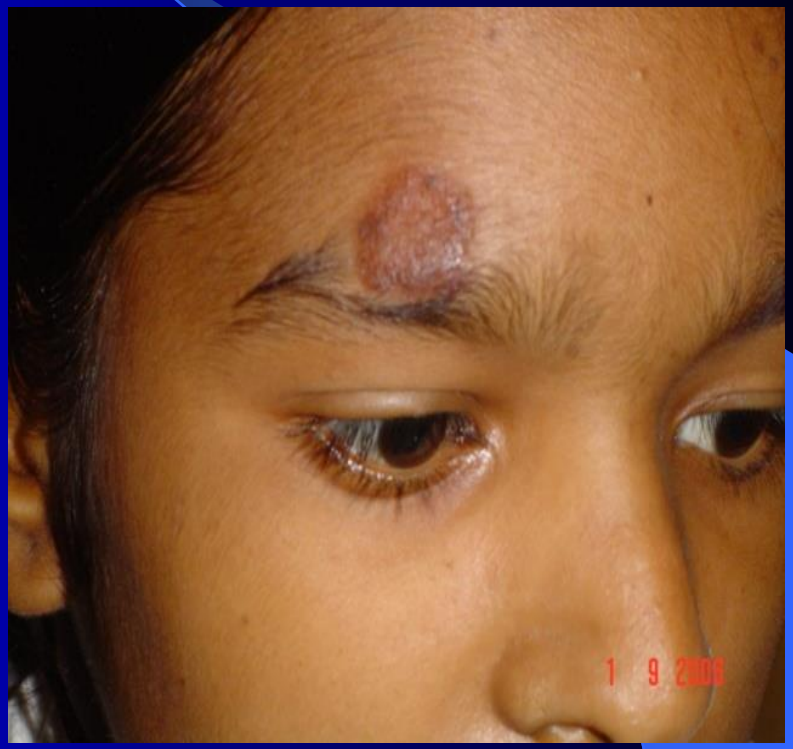


BB

LL

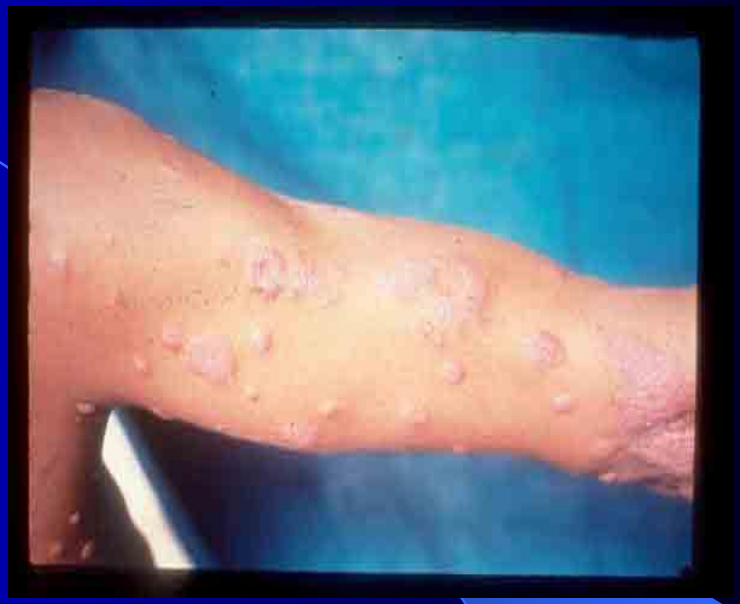
Tuberculoid leprosy

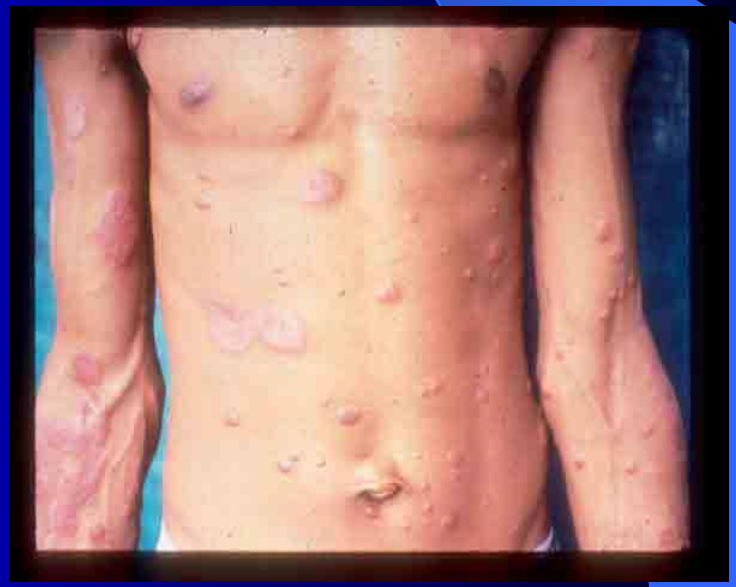
- **Lesion**
  - **Single or 2 or 3 (up to 10)**
  - **Erythematous /Hypopigmented**
  - **Dry surface, hairless**
  - **Raised well defined edge**
  - **tendency of central flattening**
- **Sensation**
  - **absent**
- **Nerve**
  - **Feeding nerve to the patch or solitary peripheral nerve may be thickened**
- **AFB: negative**
- **Lepromin: +++**



BB Leprosy

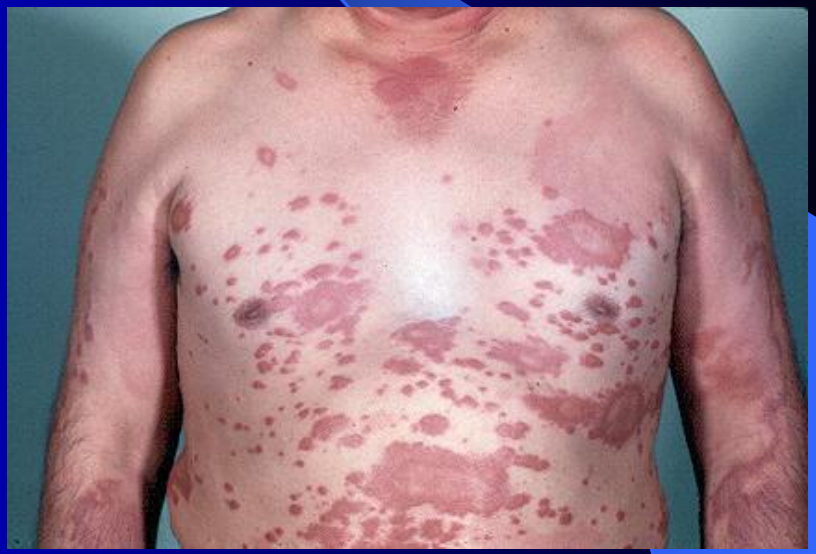
- **Lesion**
  - Several number
  - bilateral but **asymmetrical distribution**
  - Less well defined
  - Variable size, sloping outer edge
  - Slightly shiny
  - **central punched out area**
- **Sensory loss:**
  - slightly diminished
- **Nerve**
  - Asymmetrical many nerve thickening
- **AFB:** moderate 2+to3+
- **Lepromin:** negative





BL Leprosy

- **Lesion**
  - More numerous
  - bilateral, but asymmetrical
  - more shiny,
  - less defined lesions
  - + diffuse infiltration certain areas
- **Sensory loss:**
  - slight sensory loss over them



- **Nerve**
  - Wide spread nerve damage, asymmetrical
- **AFB**: many (4+)
- **Lepromin**: negative

Lepromatous leprosy

(infiltrative, papular, plaques type, & nodular stages)

- **Initial fine infiltration**
  - Diffuse redness of the face, ear lobes, extensor aspects of extremities, lower part of the back may be the initial presentation
- **Course infiltration**
  - leads to papules, plaques and nodules development due to marked aggregation of the infiltrate

- leonine facies
  - lines of the forehead become deeper as the skin thickens
- madarosis
  - eyebrows and eyelashes become thinned or lost (madarosis)
- ear lobes thickened
- nose becomes misshapen
  - may collapse due to septal perforation and loss of anterior nasal spine
- voice becomes hoarse

Lepromatous leprosy

- **loss of eyebrows**
- **nodules**

corresponding to cooler locations of the face.

  - **eyebrows**
  - **cheek**
  - **nose**
  - **ears,**

anaesthesia

- The longest peripheral sensory nerve fibers are first effected
- cause numbness and anaesthesia

Initially	• on the dorsal surfaces of hands and feet
Later	• extensor surfaces of arms /legs
Finally	• over the trunk

NERVE INVOLVEMENT

- **Posterior tibial** nerve is the most frequently affected nerve,

  followed by
- **ulnar, median, lateral popliteal** and **facial**

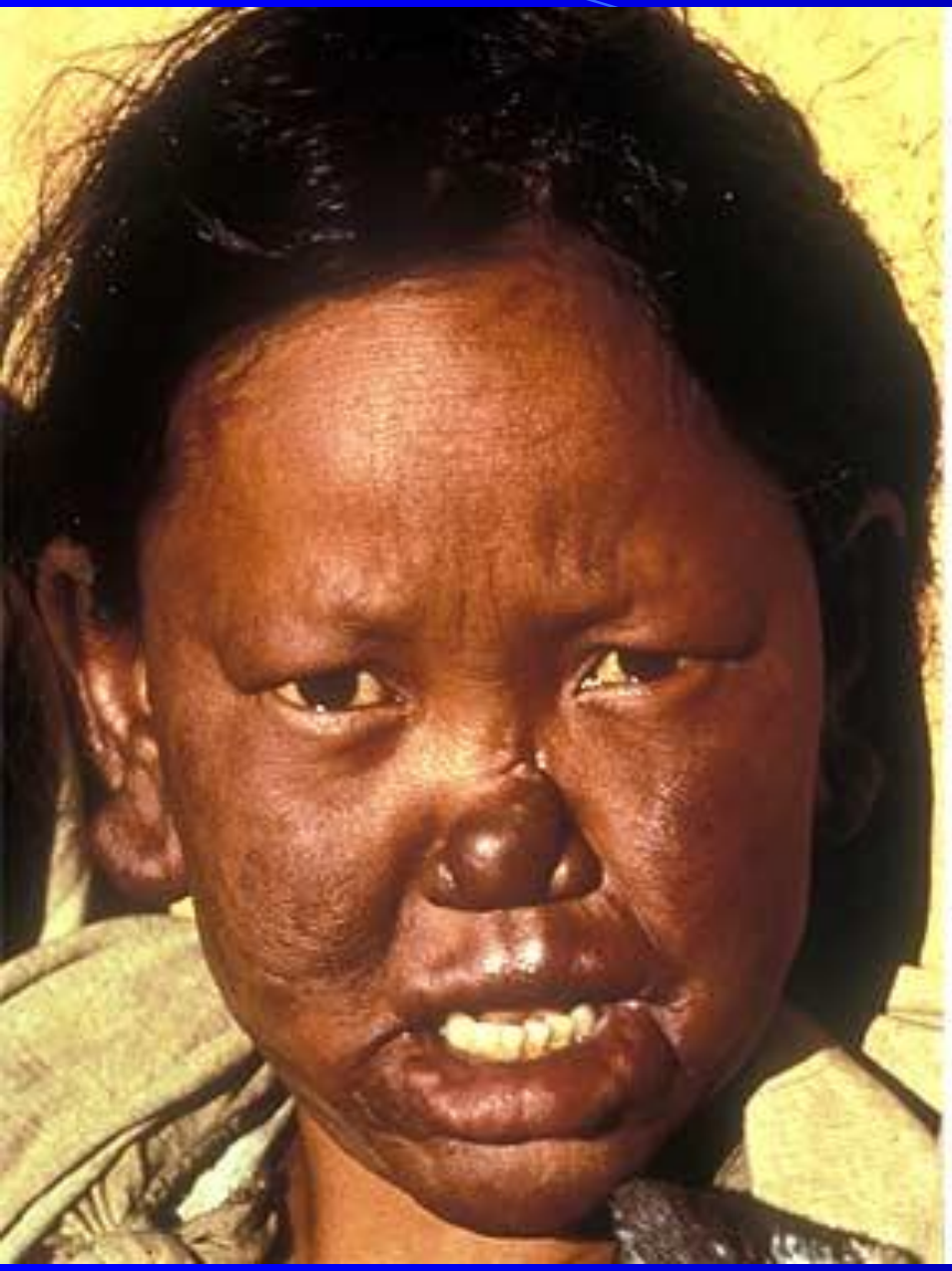

Complete claw hand
Ulnar & median
involvement

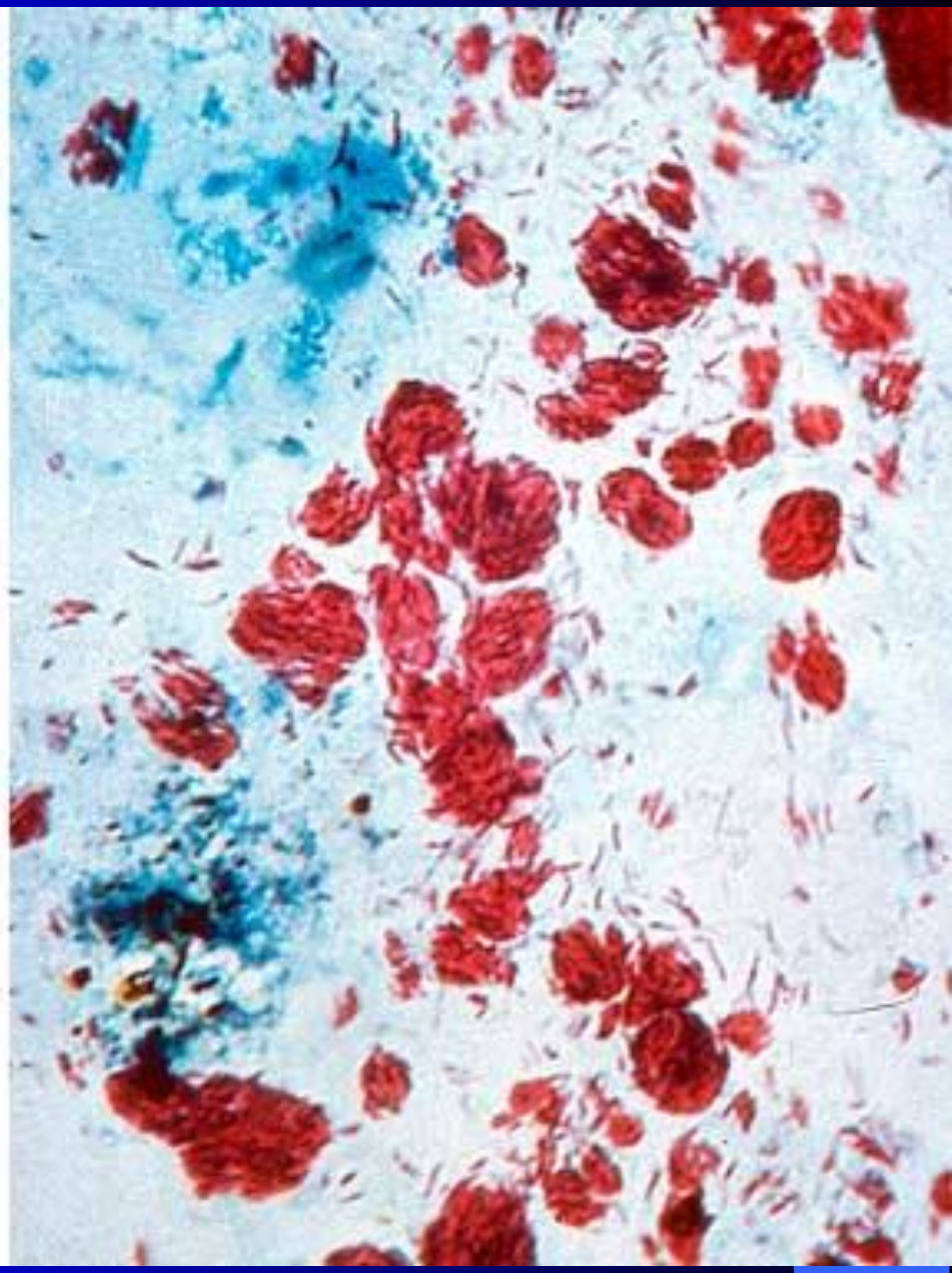
Cardinal signs of leprosy

The three Cardinal Signs of Leprosy

1. **Hypo-pigmented or reddish skin lesion(s) with definite sensory deficit**
2. **A thickened or enlarged peripheral nerve with loss of sensation and/or weakness of the muscles supplied by that nerve.**
3. **The presence of Acid-fast bacilli in slit skin smears or histopathology**

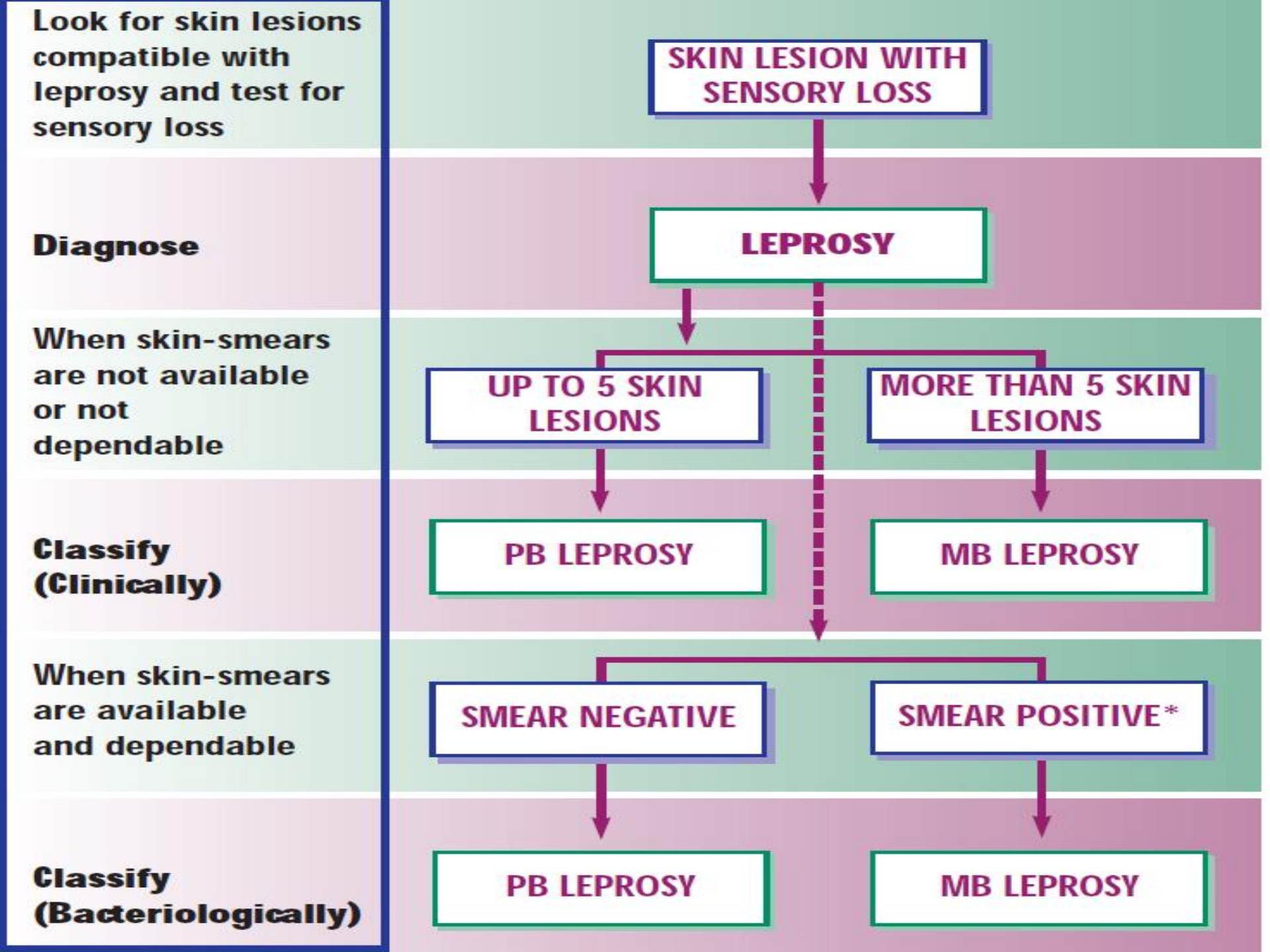
Presence of any one out of three cardinal signs is essential to diagnose leprosy.





SKIN OR NERVE BIOPSY

- In cases where the diagnosis may be uncertain.
- They should also be taken from areas of skin with the suspected most active disease, e.g. from the margin of a skin lesion.


Look for skin lesions compatible with leprosy and test for sensory loss
SKIN LESION WITH SENSORY LOSS
Diagnose
LEPROSY
When skin-smears are not available or not dependable
UP TO 5 SKIN LESIONS
MORE THAN 5 SKIN LESIONS
Classify (Clinically)
PB LEPROSY
MB LEPROSY
When skin-smears are available and dependable
SMEAR NEGATIVE
SMEAR POSITIVE*
Classify (Bacteriologically)
PB LEPROSY
MB LEPROSY

Main principles of treatment

1 Stop the infection with chemotherapy.
2 Treat reactions and reduce the risk of nerve damage.
3 Educate the patient to cope with existing nerve damage
4 Treat the complications of nerve damage.
5 Rehabilitate the patient socially and psychologically.

LEPROSY
TREATMENT
MULTI-DRUG TREATMENT(MTD)

PAUCIBACILLARY LEPROSY (DURATION 6 MONTHS)

- Rifampicin 600 mg/month (supervised)
- Dapsone 100mg/month (supervised)
- Dapsone 100mg/daily (unsupervised)
- FOLLOWUP 2 YEARS

MULTIBACILLARY LEPROSY (DURATION 12 MONTHS)

- Rifampicin 600 mg/month (supervised)
- Clofazamine 300mg/month (supervised)
- Dapsone 100mg/daily (unsupervised)
- Clofazamine 50mg/day (unsupervised)
- FOLLOWUP 5 YEARS