SPECIAL CASES: LEPROSY IN PREGNANCY AND CHILDREN

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Leprosy in pregnancy

- Leprosy is not a contraindication for pregnancy.
- No risk of congenital leprosy infection of the fetus.
- Leprosy aggravates/downgrades in pregnancy.
- Increased bacillary load due to suppressed Cell mediated immunity(CMI) & reluctance of women to take medications during pregnancy.
- Due to prolonged immunosuppression in pregnancy , persisters of M.leprae multiply resulting in relapse.

Women of reproductive age

- No reduction in the fertility of women due to leprosy.
- Efficacy of contraceptive drugs may be diminished due to rifampicin- induction of liver enzymes.
- Women of childbearing age should be offered family planning advice if they are at a, Multibacillary or with pre-existing Nerve Function Impairment(NFI).

1. Metabolic changes during pregnancy

- A state of relative malnutrition(Deficiency of proteins, vitamins, iron & minerals)
- Increased levels of free cortisol & 17- hydroxycorticosteroid during pregnancy

- Reduced Cell Mediated Immunity

- Worsening of leprosy, TB

First episode of leprosy

Cell mediated immunity(CMI) depressed during pregnancy,

20-30% of female patients develop signs & symptoms of leprosy for the first time of pregnancy.

Recovery of CMI in post partum period

- Increased visibility of lesions due to erythema & edema of reversal reactions (RR) - first presentation with leprosy lesions.

REACTIONS DURING PREGNANCY

- TYPE 1 REACTIONS:
- Reversal reactions (RR) are more during first 6 months of lactation.
- Peak incidence of RR occur 3-16 weeks after delivery.
- Patients with Borderline are at greatest risk of developing RR's.
- During pregnancy, presentation with cutaneous manifestations are more frequent.
- During Lactation, Neuritis & Nerve Function Impairment are seen more frequently.

TYPE 2 REACTIONS

- First episodes of Type 2 Reactions can begin early in pregnancy & peak in the 3rd trimester.
- severe & recurrent episodes of ENL
- Associated with significant motor & sensory deficit involving multiple nerves.

IMPACT OF LEPROSY

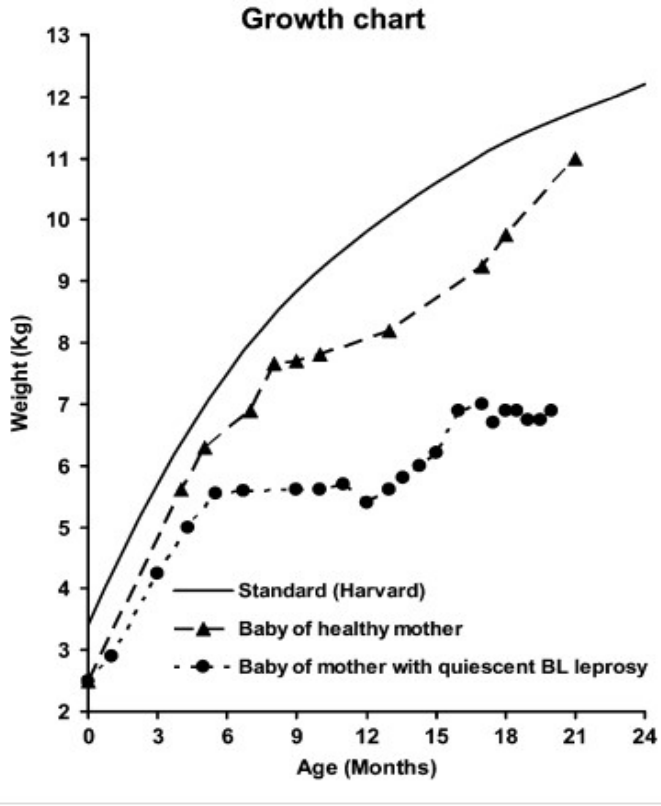
1. Fetus:

- Only few obstetric complications have been reported.
- **Significant low birth weight** due to *fetoplacental inadequacy* in babies born to mother with LL.

2. Infants

- More incidence of respiratory problems reported in infants
- Newborns of mothers on MDT

- exfoliative dermatitis in first hours of life (due to dapsone)
- brownish discoloration (due to clofazimine)



TREATMENT

- *Benefits of treating leprosy* during pregnancy far risks of the drugs.
- WHO recommends **standard MDT** to be continued during pregnancy.
- Counselling to the mother about course of MDT, possibility of reactions during pregnancy & lactation.

- Testing for G6PD deficiency (if available) to identify and avoid severe hemolysis due to dapsone

ug	Use in pregnancy an lactation	Effect on fetus/baby
ampicin	Generally safe in pregnancy and lactation	Neonatal bleeding when given in 3rd trimester. (Parenteral Vit K)
psone	Generally safe in pregnancy and lactation Supplementary 5mg folic acid because of lower folate absorption.	Neonatal hemolysis, hyperbilirubinemia methemoglobinaemia when given in 3rd trimester.
fazimine	Safe in pregnancy and lactation.	Reversible discoloration of the breast-fed child.
oxacin	Avoid in pregnancy and lactation	arthropathies , osteochondrosis
nocycline	Teratogenic in pregnancy	Infant teeth discoloration and damage through passage in breast milk.

Anti-reaction drugs

ug	Use in pregnancy an lactation	Effect on fetus/baby
dnisolone rt with 40 mg/day and er by 5 mg every 2 weeks	Use in moderate to severe reactions during pregnancy Monitor for adverse effects, especially hypertension and hyperglycemia.	cleft palate in first trimester Breast feeding deferred four hours after ingestion of drug to reduce exposure to peak concentration of drug.
fazamine gh dosage 100mg three es a day for neuritis/ENL	Crosses the placenta and breast milk well tolerated	
alidomide	Contraindicated in women of child bearing age	Teratogenic
closporine, **thotrexate,** **athioprine**	Contraindicated in pregnancy and lactation.	

BREASTFEEDING

- Women should be advised not to withhold breastfeeding.
- No evidence that *orally ingested M. leprae* causes leprosy.
- The air-borne infection risk is negligibly low if the mother is on MDT.

- Prevention of disability
- Increase in weight and change of gait in pregnancy - increased risk of trophic ulcer

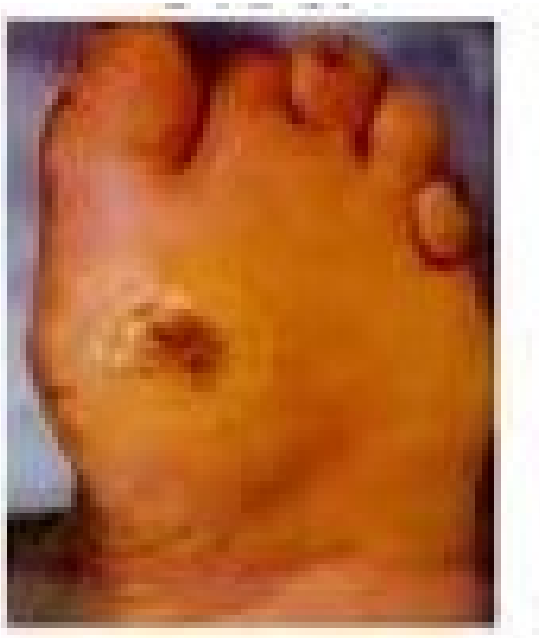
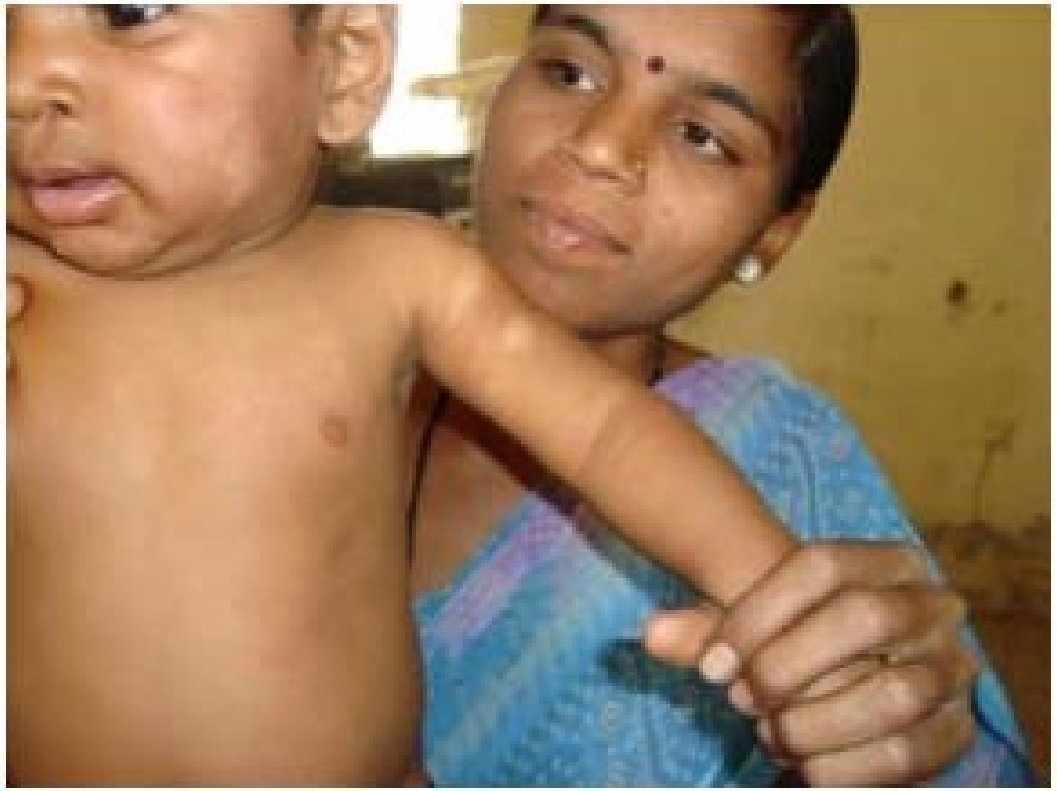


Figure 1. MCR Footwear

Leprosy in Children



Childhood Leprosy

- Children are the most vulnerable group to infection with *Mycobacterium leprae* - nascent immunity
- possible intrafamilial contact.
- Progressive physical deformity with serious psychosocial impact on both the child and the family.
- The proportion of children among newly detected cases of leprosy is a strong indicator of active **disease transmission** in the community

Age and Sex Distribution

- All ages ranging from early infancy to old age.
- Highest frequency in children of 5–14 years age group
- only 5.8–6% cases are below 5 years of age.
- This may be due to the relatively long incubation period of leprosy and delayed diagnosis of indeterminate lesions in children.
- Among children, boys > girls due to greater mobility and increased opportunities for contact.

Contact History

- Sources of infection in childhood is familial contact with leprosy
- Prevalence of childhood leprosy was 14 times higher among families with LL.

- The risk of developing leprosy in a person is
  - 4x times neighborhood contact.
  - 9 x when the contact is intra-familial
  - contact has multibacillary (MB) form.
  - mother is the index case

CLASSIFICATION

Ridley and Jopling

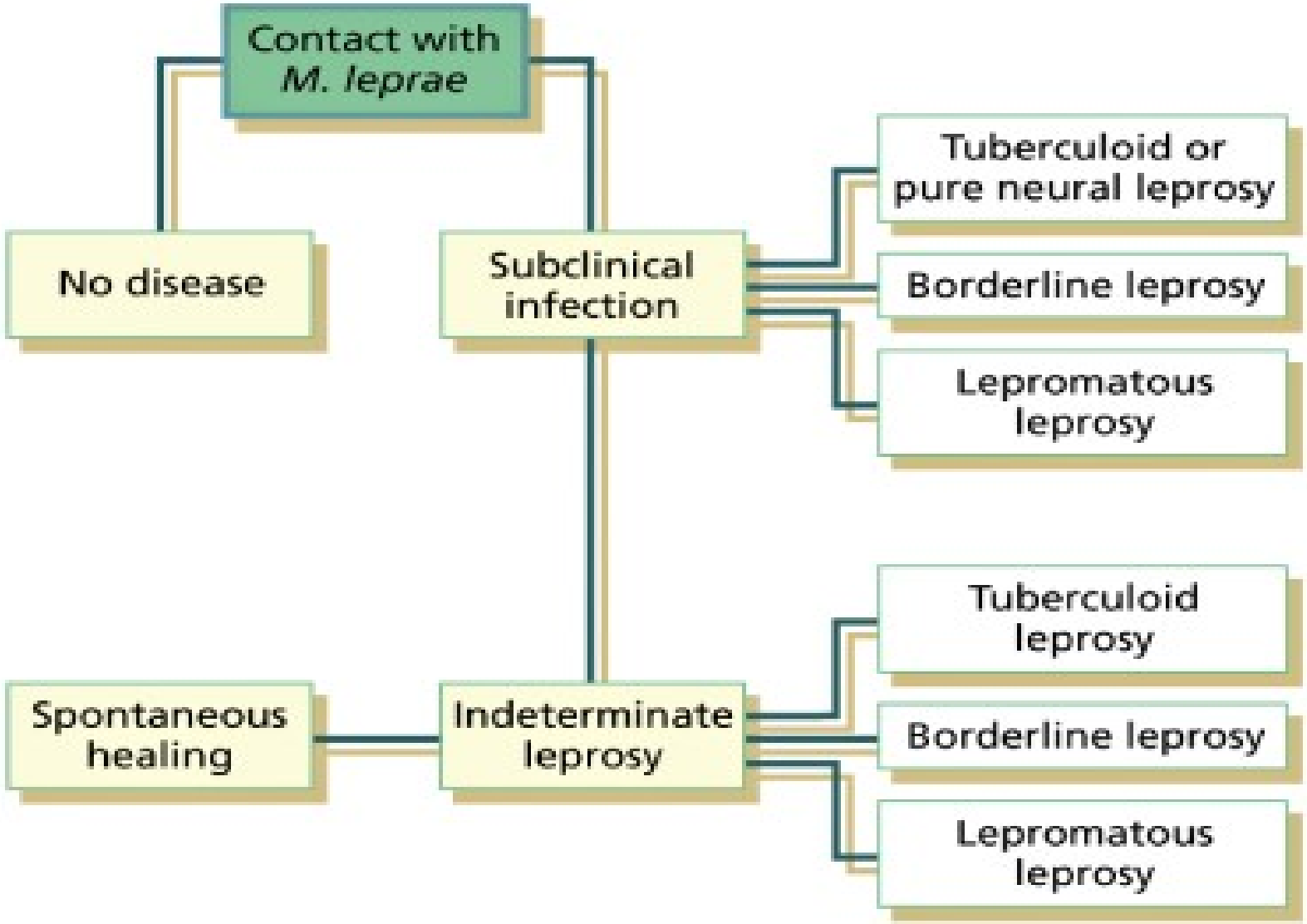
- **T**uberculoid(tt),
- Borderline Tuberculoid (BT),
- Mid-borderline (BB),
- Borderline Leprosy(bl)
- Lepromatous Leprosy (LL)

- Indeterminate Forms.

- WHO Classification
- paucibacillary-PB multibacillary-MB
- up to 5 lesions 6 or more lesions

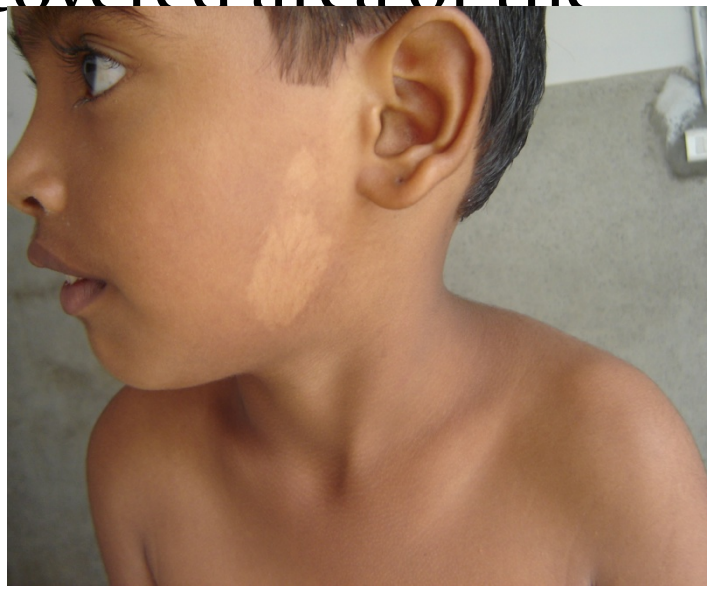
CLINICAL PRESENTATION

Clinical parameters	TT	BT	BB	BL	LL
Arrangement	Asymmetrical	Asymmetrical	Symmetrical	Symmetrical	Symmetrical
Annular aspect	Present	Present	Present	Absent	Absent
Surface	Rough	Rough	Smooth	Smooth	Smooth
Edge	Very sharp	Sharp / vague	Rather vague	Rather vague	Vague
Loss of sensation	Marked	Marked / moderate	Absent	Absent	Absent


Contact with
M. leprae
No disease
Subclinical
infection
Tuberculoid or
pure neural leprosy
Borderline leprosy
Lepromatous
leprosy
Spontaneous
healing
Indeterminate
leprosy
Tuberculoid
leprosy
Borderline leprosy
Lepromatous
leprosy

Indeterminate Leprosy

- an early, transitory stage , may resolve spontaneously or progress to either forms of the disease, 30% more towards the lepromatous end.
- Hypopigmented macular lesions with fairly well-defined edges, slight or no loss of sensations, usually over covered area of the body

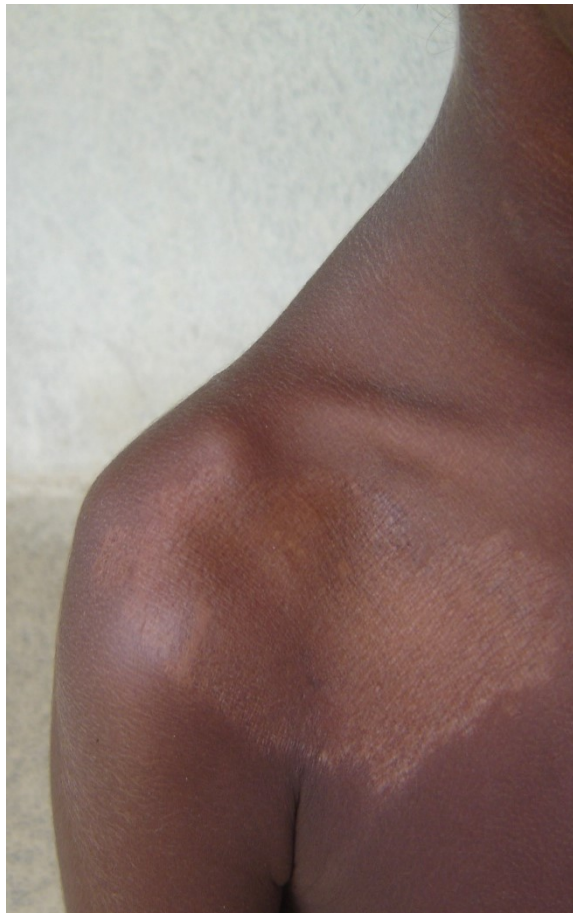


- SSS- negative for AFB and
- Biopsy- non specific histology of the lesion , chronic inflammation with the predominance of lymphohistiocytic infiltrate in the perineural, intraneural, and periadnexal areas
- Multiplex PCR - diagnosis of IL.

- Diagnostic label of leprosy in a child for obvious psychological trauma to the family and the child.
- keep a child under close supervision for few months to observe the disease course

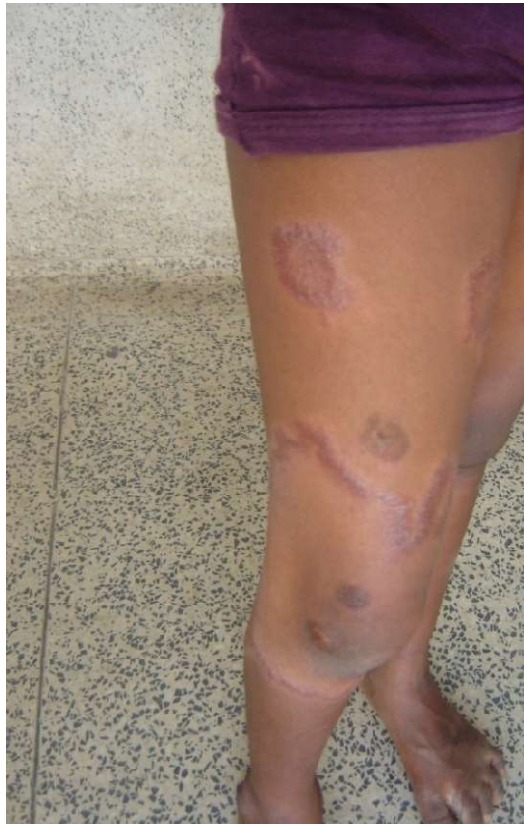
TUBERCULOID LEPROSY

- Single or a few lesions
- Asymmetrically distributed on trunk and limbs
- Sharply defined, dry, flat or raised, erythematous or hypopigmented, and are anesthetic.
- One or two nerves may be enlarged near skin lesion
- SS for AFB: Negative



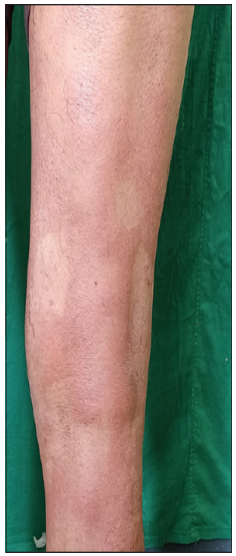
Borderline Tuberculoid

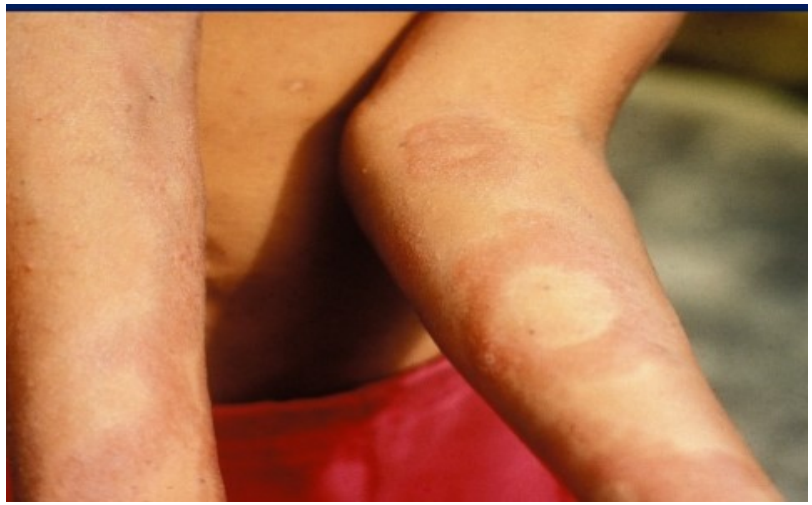
- Four or more lesions, asymmetrically distributed
- Macules or plaques of variable sizes with well or illdefined margins & satellite lesions
- Peripheral nerves enlarged asymmetrically
- Sensation: hypoesthesia
- SS for AFB: may or may not be positive.



Borderline Borderline

- Multiple erythematous macules & plaques
- Various sizes and shapes with punched out center and ill defined slopping outer margin , Swiss Cheese appearance
- Tend to be symmetrical
- Nerves may be asymmetrically enlarged
- Sensation:+/-
- SS for AFB: seen +/-





Borderline Lepromatous

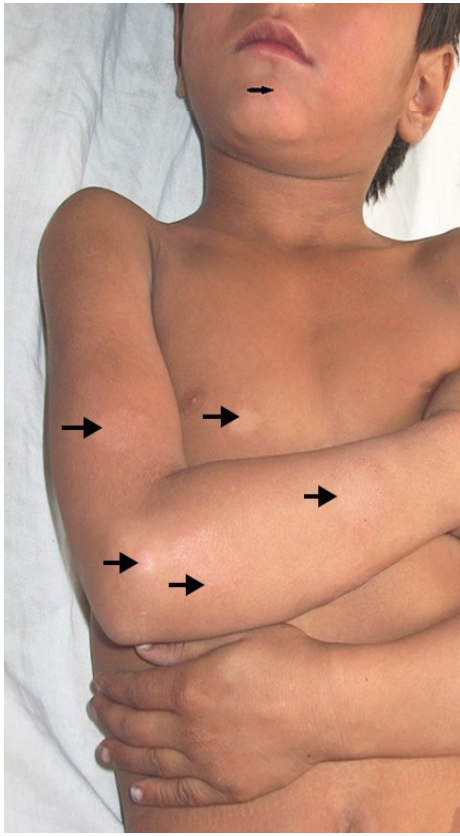
Numerous, symmetrically distributed lesions

Hypopigmented or erythematous irregularly shaped maculopapular, infiltrative nodules, or plaques, with smooth surfaces & ill defined borders, sloping outwards .

Nerves may be symmetrically or asymmetrically enlarged

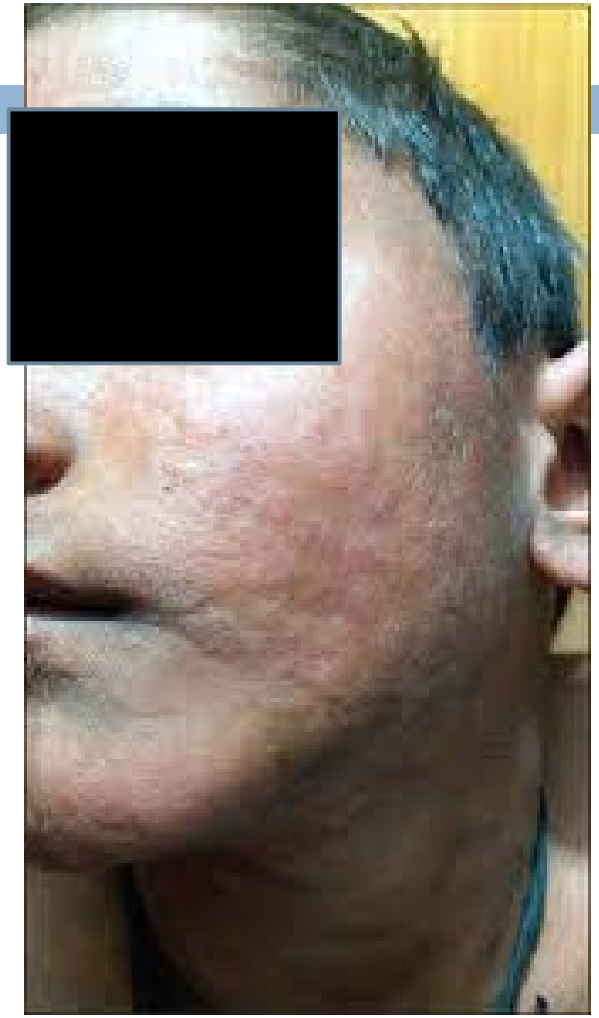
Sensation:+/-

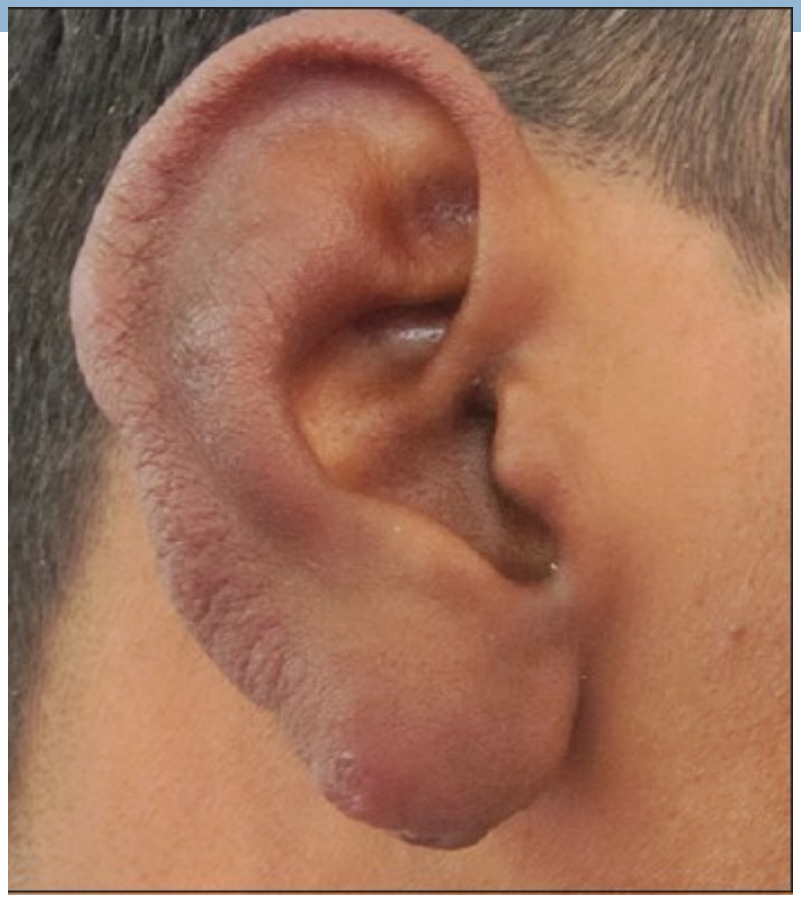
SS for AFB: Many AFB



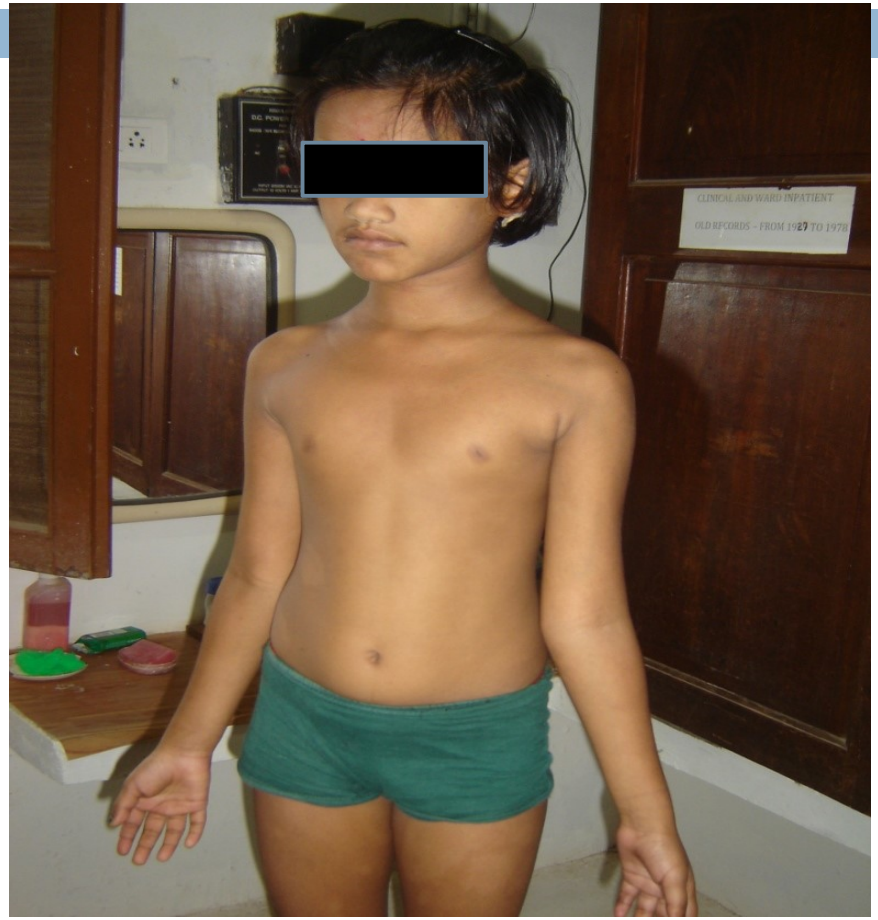
Lepromatous Leprosy

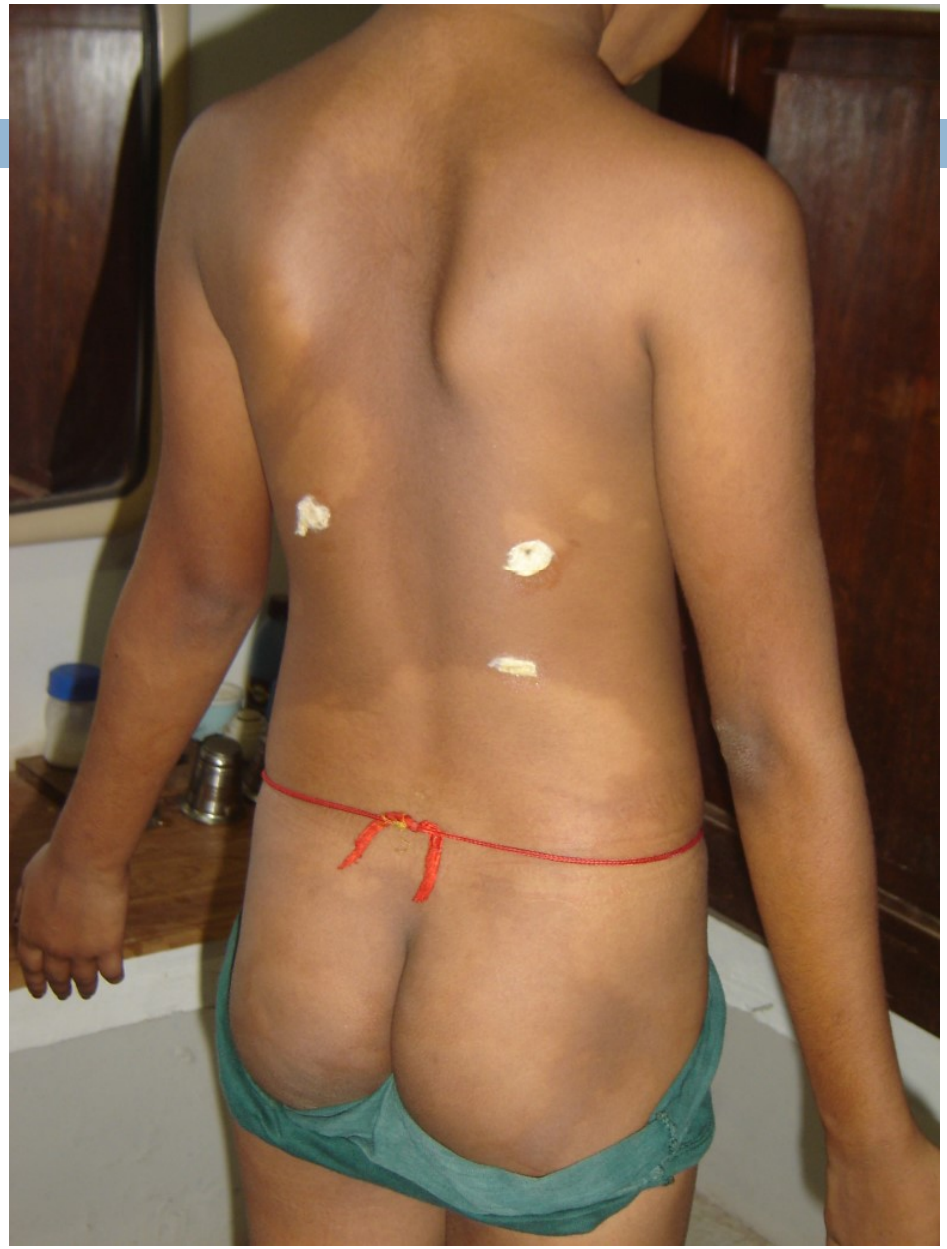
- Numerous macules, plaques, nodules or diffusely infiltrated lesions, shiny, smooth, symmetrically distributed on face, trunk and extremities with illdefined margin which may be slightly hypopigmented or erythematous
- Symmetrical nerve enlargement is seen
- Sensation: normal
- SS for AFB: numerous seen





Diffuse thickening of the skin, with loss of hair (eyebrows and eyelashes): madarosis.
Saddle nose deformity Leonine facies


CLINICAL AND WARD INPATIENT
OLD RECORDS - FROM 1927 TO 1978



Reactions

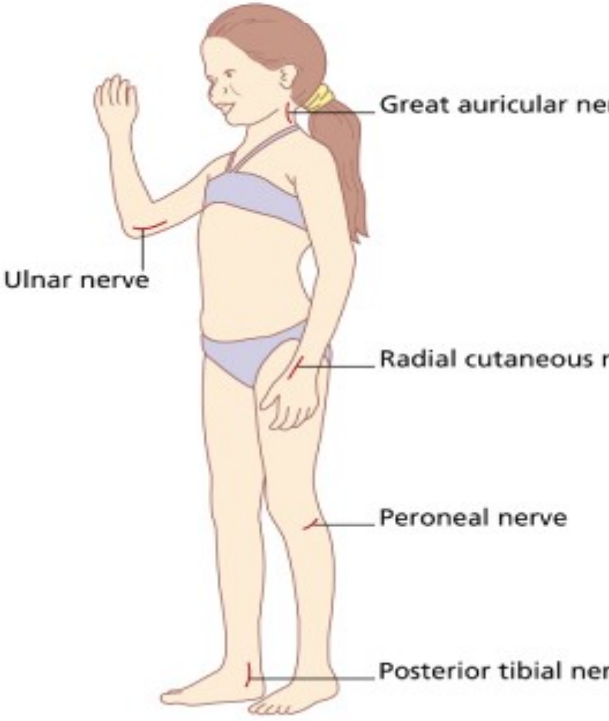
- Reactional episodes and disabilities are **less common**.
- Incidence : 3-33 % in children

- More in older children, due to their relatively well developed immunological status.
- Type 1 and 2 Erythema nodosum leprosum or ENL have been observed with or without neuritis.
- **Erythema Nodosum Leprosum (ENL)** red, firm, painful, tender **nodules** appear in crops.
- Nodules blanch on pressure, multiple, Ulcerated, pustular and necrotic forms.

Risk for deformity

- **Presence of neuritis** significant increased risk for deformities, especially in older children with MB disease.
- Children with **thickened nerve trunks - 6 times** higher risk

- Majority of these deformities involve upper limbs.
  - Ulnar Nerve
  - Median Nerve
  - Common Peroneal Nerve
  - Facial Nerve
  - Radial Nerve



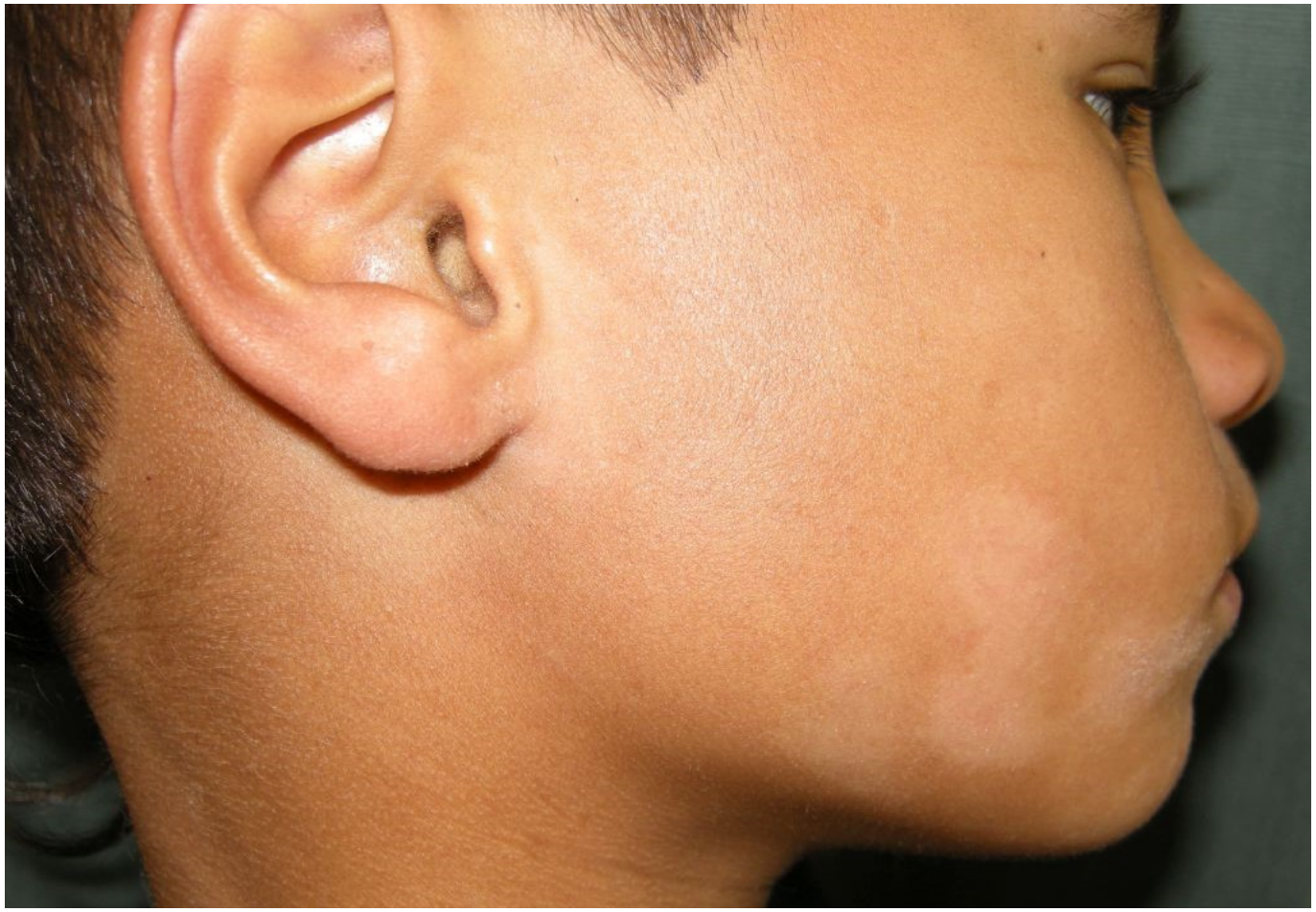
Diagnosis

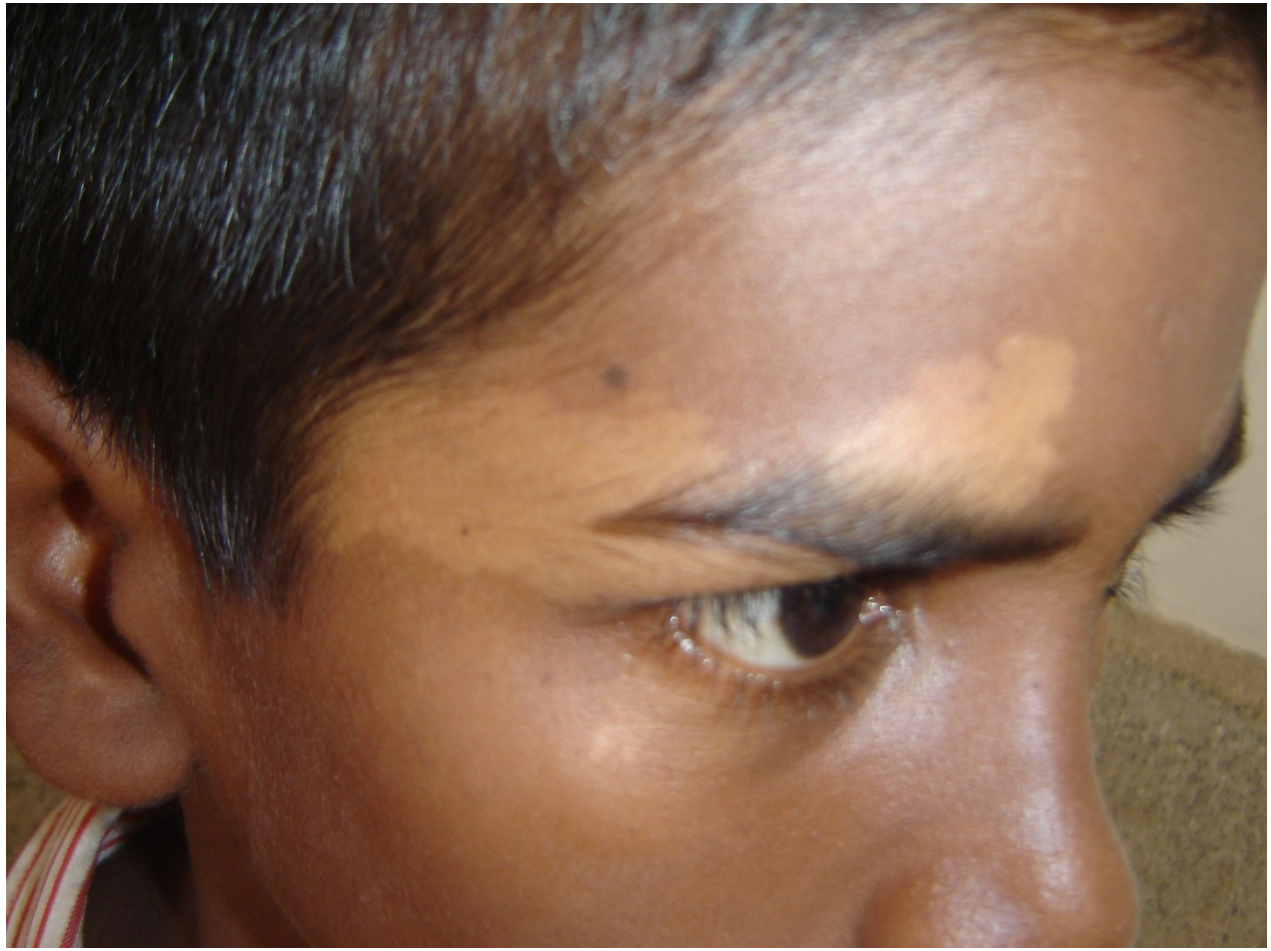
- Difficult in children.
- Single hypopigmented patch on the face in children commonly misdiagnosed.
- Eliciting sensory impairment especially on face difficult.

Differential diagnosis

1. Hypopigmented macules

- Pityriasis alba
- Naevus depigmentosus
- Early Vitiligo
- Polymorphic Light Eruption

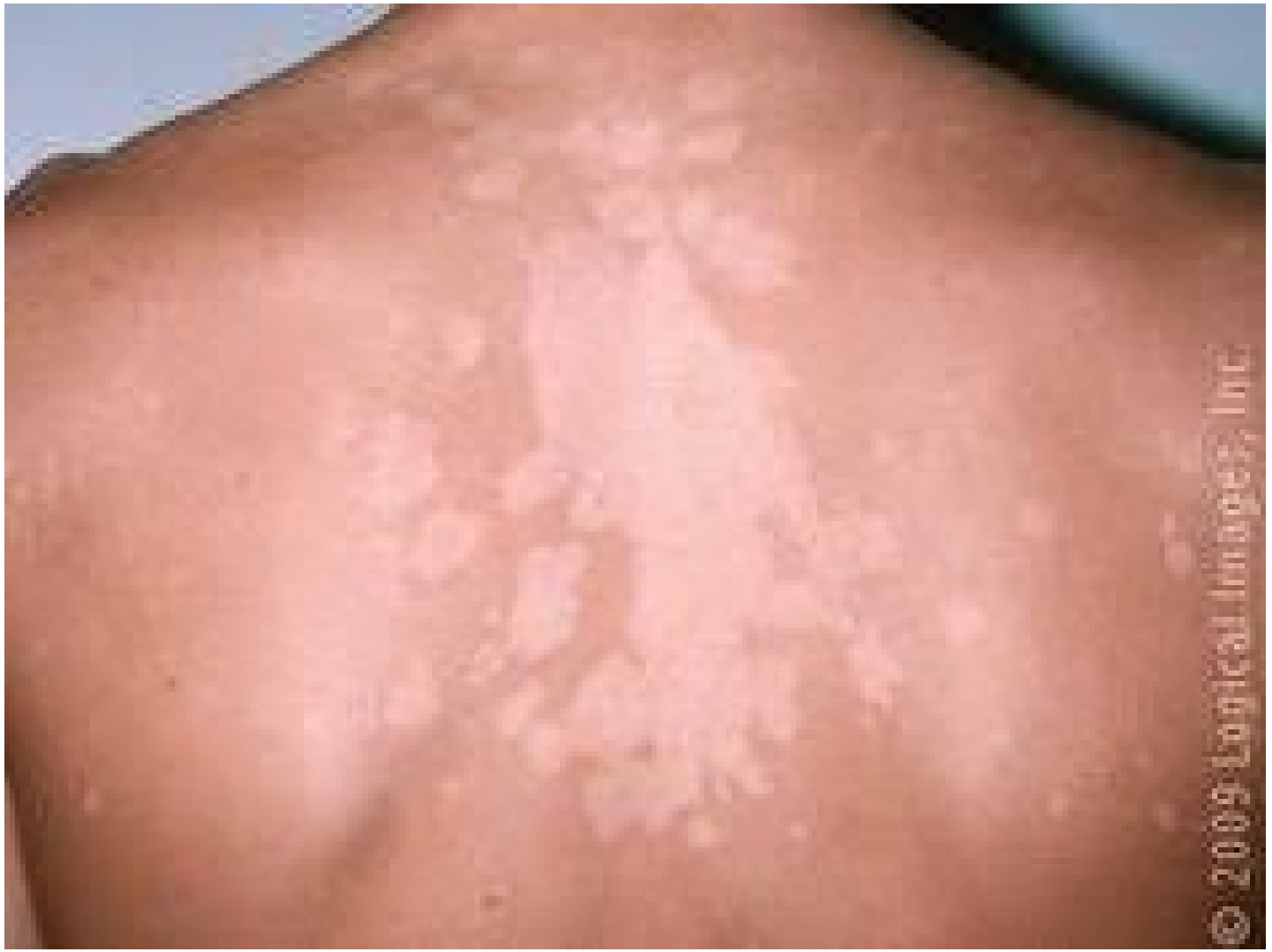




Differential diagnosis

2. Hypopigmented scaly lesions

- Pityriasis Versicolor (mutliple, oval scaly on the trunk ,face, Fungal hyphae in skin scales on KOH mount)
- Pityriasis Rosea
- Seborrheic dermatitis (first few years of life, when clearing HP macules)
- Tinea incognito – dermatosis treated with steroids. Stop steroids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Differential diagnosis

- Annular lesions

1. Granuloma annulare – no hypoesthesia,

   ddx for borderline leprosy

2. Tinea corporis – scaly , itchy annular

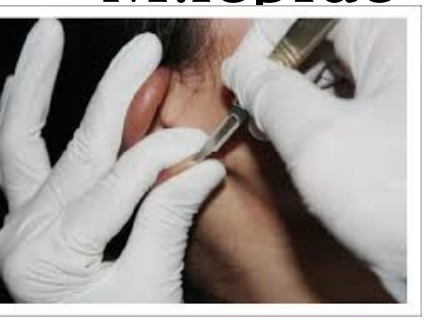
- Nodular lesions

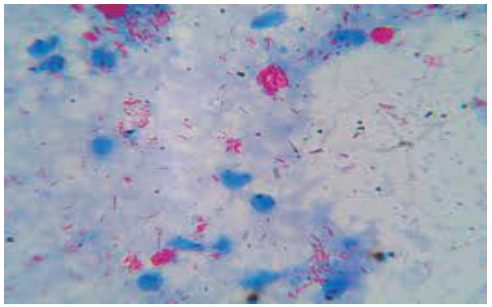
1. Neurofibromatosis
   thickened nerves seen but no
   motor or sensory impairment

   ddx for histoid and nodular leprosy

Labarotory methods

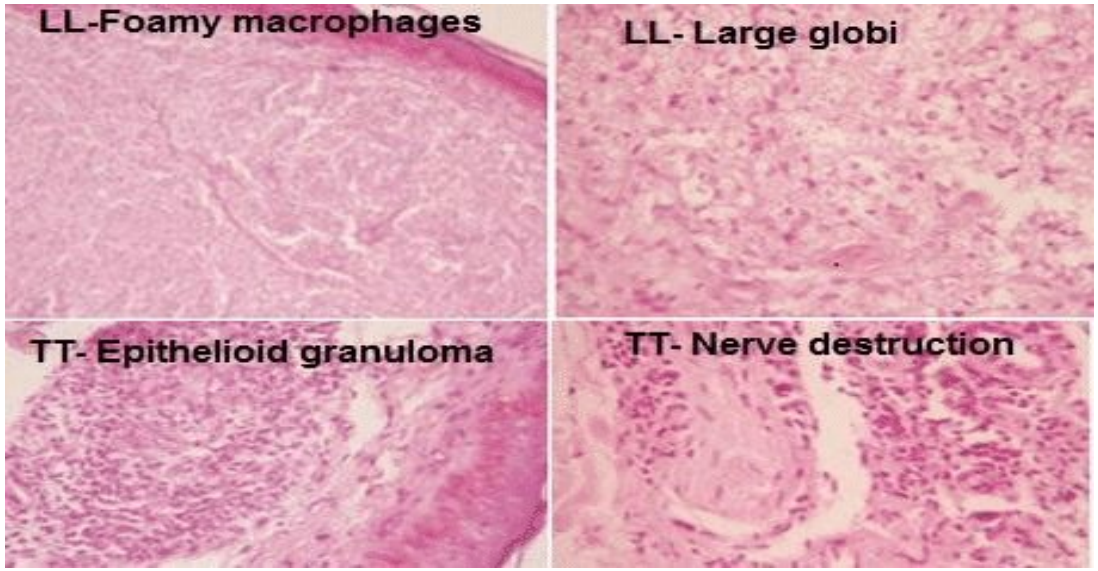
- **Slit-skin Smear Examination** for bacteriological index (BI) and morphological index (MI)
- AFB negative because most of them are TT, BT, or indeterminate.
- Children with suspected MB disease.
- In situ **PCR on Slit Skin Smear** - demonstrates presence of M.leprae



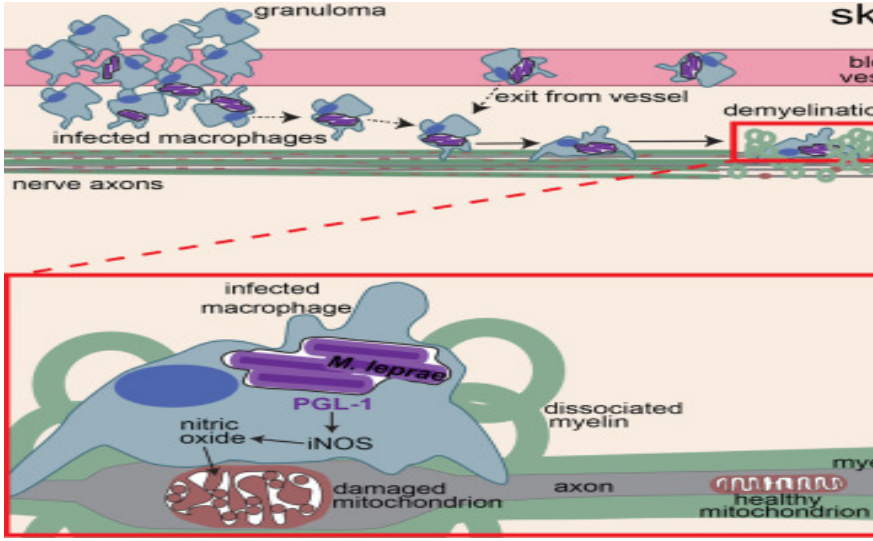


Histopathological diagnosis

- The **non-specific histological features** in childhood cases may be due to the poor immune system in children.



- Serological tests for antibodies against *M. leprae* antigens such as phenolic glycolipid-I (PGL-I) Supplementary tests for diagnosis.
- Entry into nerves mediated by binding of PGL-1 to laminin 2 in basal lamina of Schwann cells.
- High IgM titers to *M. leprae* PGL-I with resulting disseminating, progressive infections.

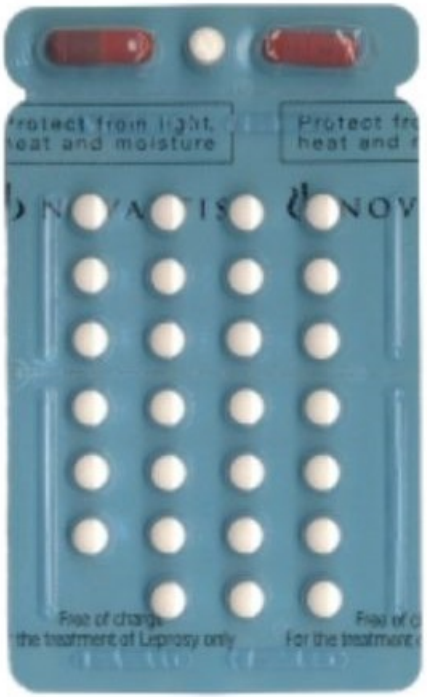


TREATMENT

- Reassurance of the parent and child
- General health and diet.
- Baseline investigations – Complete Blood Count, Renal FT, Liver FT
- Educate the parent about the side effects and to report immediately if they develop.

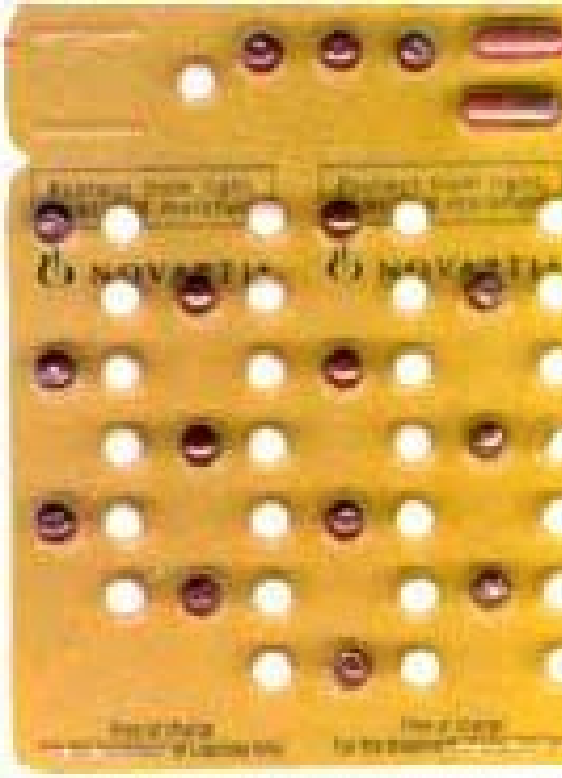
PB-MDT		
ge group ears)	Rifampicin: Monthly dose, supervised (mg)	Dapsone: Daily dose, unsupervised (mg)
-14	450	50
or above	600	100

uration: 6 months. PB - Paucibacillary; MDT - Multidrug



MB-MDT				
group s)	Rifampicin monthly supervised dose (mg)	Dapsone daily unsupervised dose (mg)	Clofazimine	
			Unsupervised dose (mg)	Monthly supervised dose (mg)
	450	50	50 every other day	150
above	600	100	50 daily	300

ion: 12 months. MB - Multibacillary; MDT - Multidrug therapy



MB (Child) Blister pack

Children below 10 years

Paucibacillary Leprosy

- Cap. Rifampicin 10 mg/kg/month
- Tab. Dapsone 2mg/kg/day

- Period 6 months

Multibacillary Leprosy

- Cap. Rifampicin 10 mg/kg/month
- Tab. Dapsone 2mg/kg/day
- Cap. Clofazamine 1 mg/kg/day
  6 mg/kg/month

- Period 12 months

For Children Weighing 20–40 kg

The MDT pediatric blister calendar pack can still be used with the following adaptations:	
Dapsone:	Half of 50 mg tablet (thus 25 mg)
Clofazimine:	50mg twice weekly (instead of every other day)
Rifampicin:	Single formulation 300 mg

Treatment of reactions:

- **Steroids** for the prevention of nerve damage and deformity.
- Prednisolone Dosage 1 mg/kg/day. 12-week course beginning at 30mg prednisolone per day and tapering rapidly in to 20 mg, then more slowly.

- Analgesics
- Antibiotics for intercurrent infection
- Anti-helminthics at the start of a steroid course
- Monitor weekly for side effects and response to treatment.

- High dose clofazimine for chronic ENL can be used in children

Second line drugs

- Minocycline is generally contraindicated in early childhood.
- Ofloxacin have been shown to cause arthropathy (degenerative changes in weight bearing joints) used with caution in children and adolescents.

Side effects

- **Dapsone**
- Hemolytic anemia – most common. Esp in G6PD deficiency
- Methemoglobinemia
- Hepatitis

Dapsone Hypersensitivity Syndrome

- DRESS - Drug Reaction with Eosinophilia Systemic yndrome
- Within 6 weeks of starting treatment.
- Facial edema, erythema. Rash maculopapular, pruritic, pustular, sparing of mucosa
- P.S eosinophilia and atypical lymphocytes

Modified WHO MDT regimen - Rifampicin monthly
- Clofazimine daily
usual doses and same duration.

Rifampicin

- Reddish discoloration of urine,
- Hepatitis – jaundice

Clofazamine

- Skin pigmentation
- Dyspepsia and melena
- Acquired icthyosis

PREVENTION

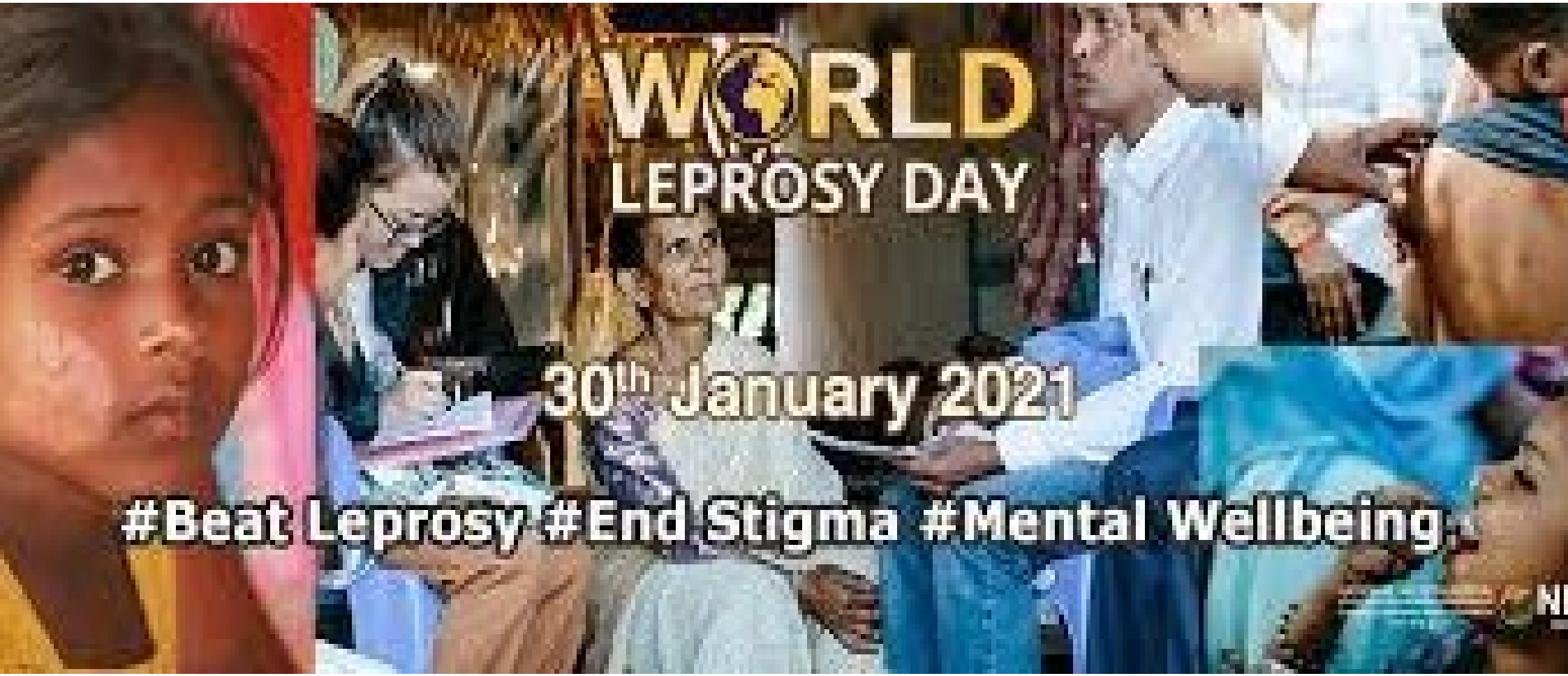
For every new case of childhood leprosy, detailed contact history and screening of family members of the affected child to search for index case.

Chemoprophylaxis of close contacts of newly diagnosed cases with **Single Dose Rifampicin** reduce clinical leprosy by 57% in 10–14 years age group and in those who have received BCG in the past.

Regular school surveys for early detection of cases.

Rashtriya Bal Swasthya KaryaKram (**RBSK**)- Child Health Screening under NHM

Rashtriya Kishore Swasthya Karyakaram (RKSK) for counselling the children of teen age group (13-19 yrs) at Adolescent Friendly Clinics


WORLD
LEPROSY DAY
30th January 2021
#Beat Leprosy #End Stigma #Mental Wellbeing


Thank You