

PREVENTION OF DISABILITY IN LEPROSY

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Leprosy

Slow, chronic & progressive
Granulomatous disease of
*Peripheral nerves, skin and
Muco-cutaneous
tissues(Nasal mucosa).*



Lepromatous leprosy

- Generalized form occurring in patients with decreased CMI
- Skin lesions are extensive and bilaterally symmetrical.
- Sites: Commonly face, ear lobules, hands and feet.
- Symmetrical thickening of peripheral nerves & anesthesia
- Bacilli invade mucosa of Nose , Mouth and
Respiratory tract → shed in secretions.
- Bacteremia present.
- RE system, Eyes, testes, kidney & bone involved
- Infective form....more than other types – poor prognosis
- Lateral part of eyebrows are lost

Lepromatous leprosy



Tuberculoid leprosy

Localized form in individuals with intact CMI.

Skin lesions :

Few hypo or hyper pigmented macular patches (anesthetic)

Sharply demarcated

Seen on Face, trunk and limbs.

Bacilli are scanty or absent.
(paucibacillary)

Infectivity is low.



Dimorphous/Borderline type :

- Lesions resembles both LL (bacteriology) & T T (Clinically).
- May turn to complete LL or T T type
(depending on host resistance or chemo therapy)

Tuberculoid leprosy

- Lesions are large maculae on skin, superficial nerve endings.
- CMI is intact.
- Low infectivity

Regression

Progression

Lepromatous leprosy

Extensive maculae,

papules or nodules;

Extensive destruction of skin.

- CMI severely depressed
- High infectivity

Diagnosis

Cardinal signs of Leprosy

1. Hypopigmented hypoanaesthetic patch
2. Nerve involvement
3. Bacteriological demonstration bacilli – smear/biopsy

WHO Clinical Classification

<i>Characteristics</i>	<i>PB</i>	<i>MB</i>
Skin lesions	One to five lesions (including single nerve lesion if present)	Six and above
Peripheral nerve involvement	No nerve/only one nerve with or without one to five lesions	More than one nerve irrespective of the number of skin lesions
Skin smears	Negative at all sites	Positive at any site

DIFFERENCE BETWEEN TYPE-1 AND 2 REACTIONS

TYPE – 1	TYPE – 2
A. SEEN IN UNSTABLE TYPES: BT,BB,BL	SEEN IN LL AND BL
B. SHIFT IN IMMUNOLOGICAL STATUS DURING REACTION	NO SHIFT IN IMMUNOLOGICAL STATUS DURING REACTION
C) INVOLVEMENT OF OTHER ORGANS - UNCOMMON	INVOLVEMENT OF OTHER ORGANS - COMMON
D) CAN BE SEEN BEFORE STARTING TREATMENT, DURING AND AFTER STOPPING TREATMENT	CAN BE SEEN ANY TIME

E. MECHANISM OF TYPE 4 (DELAYED HYPERSENSITIVITY) OF COOMBS AND GELL REACTION	ARTHUS REACTION (IMMUNE COMPLEX REACTION) Or TYPE 3 REACTION OF COOMBS AND GELL • ANTIGEN • ANTIBODY • COMPLEMENT
F. T-CELLS ARE MAINLY RESPONSIBLE	B-CELLS ARE MAINLY RESPONSIBLE
G. SYMPTOMS SEEN IN EXISTING LESIONS	CAN BE SEEN ANYWHERE MAINLY EXTREMITIES
H. CLOFAZIMINE AND THALIDOMIDE ARE NOT USEFUL	CLOFAZIMINE AND THALIDOMIDE ARE VERY USEFUL

- **Disability:** Any restriction or lack of ability to perform an activity considered normal for a human being i.e. Impairment in function
- **Deformity:** Loss or abnormality of structure of the body part. i.e. Anatomical changes in form, shape and appearance. i.e. Altered Anatomical appearance

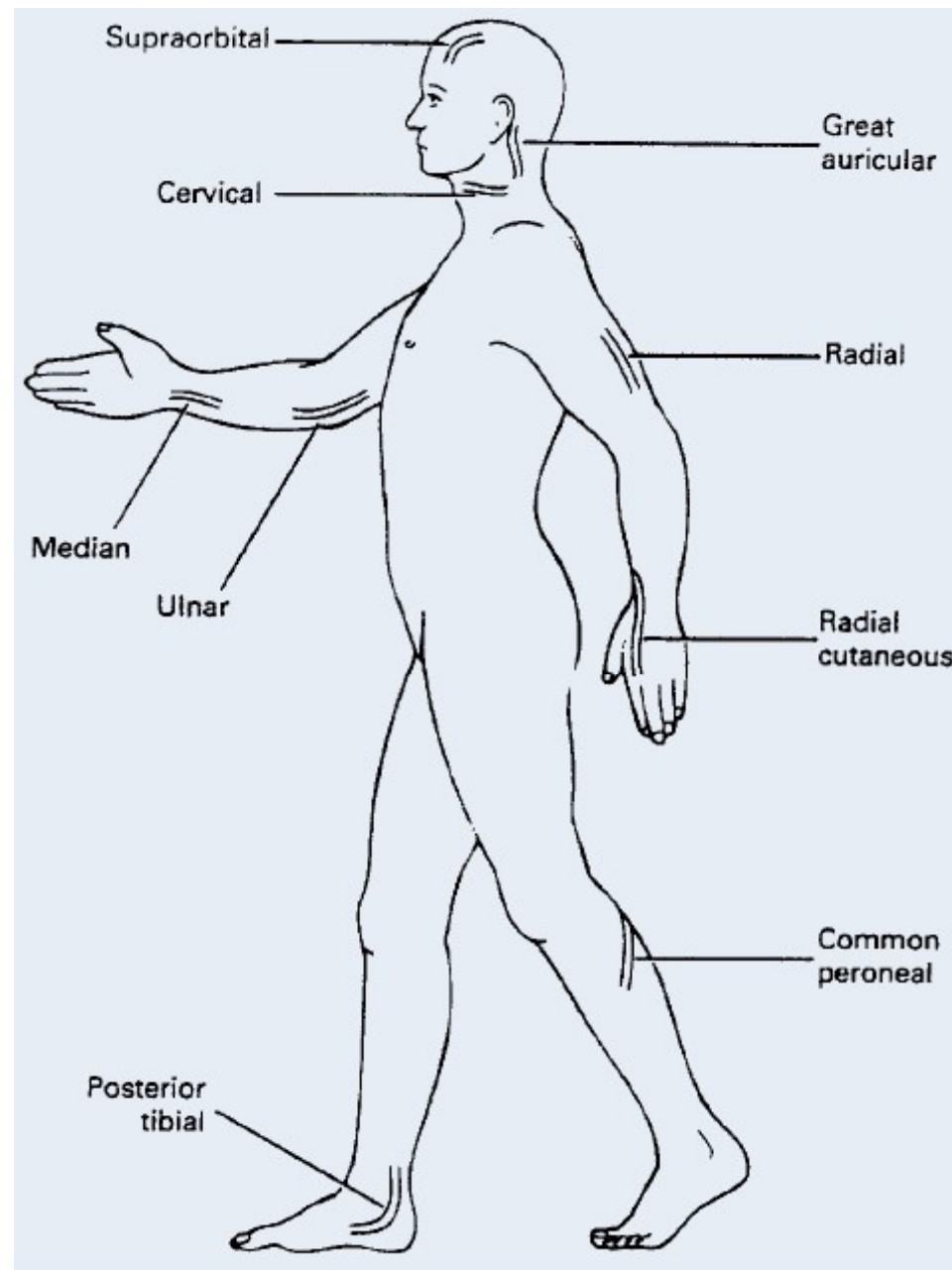
- HOW TO PALPATE NERVES
- WHAT ARE THE DEFORMITIES
- HOW ARE THEY CAUSED
- HOW TO PREVENT THEM
- TREATMENT OF THE DEFORMITIES

UPPER LIMB

- **ULNAR NERVE**
- **MEDIAN NERVE**
- **RADIAL NERVE.**

LOWER LIMB

- **THE POSTERIOR TIBIAL NERVE – ANKLE.**
- **LATERAL POPLITEAL NERVE NECK OF FIBULA-
COMMON TO RECOVER ON ITS OWN**



ULNAR NERVE AT THE INSIDE OF THE ELBOW

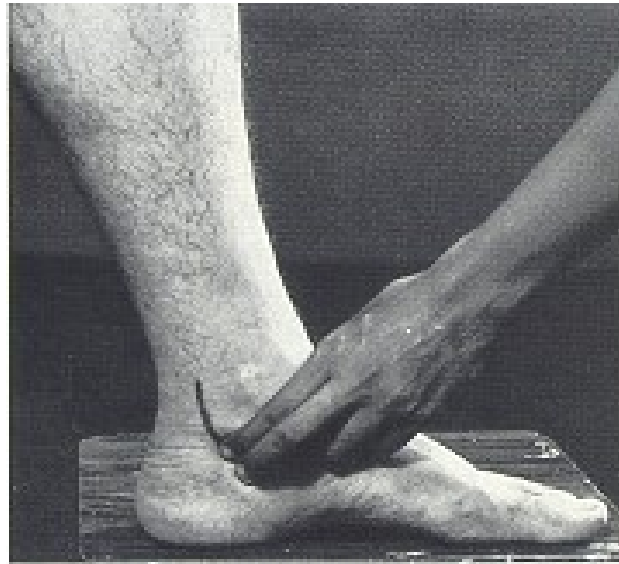


PALPATION – INSIDE OF THE
ELBOW – MEDIAL
EPICONDYLE.

SENSATION – INNER SIDE OF
FOREARM AND HAND.

MOTOR LOSS - CLAW HAND
DEFORMITY OF LITTLE AND
RING FINGER.

POSTERIOR TIBIAL NERVE



PALPATION – JUST BELOW MEDIAL MALLEOLUS

SENSORY LOSS – SOLE OF FOOT

MOTOR LOSS – INTRINSIC MUSCLES OF FOOT



COMMON PERONEAL NERVE

(LATERAL POPLITEAL)

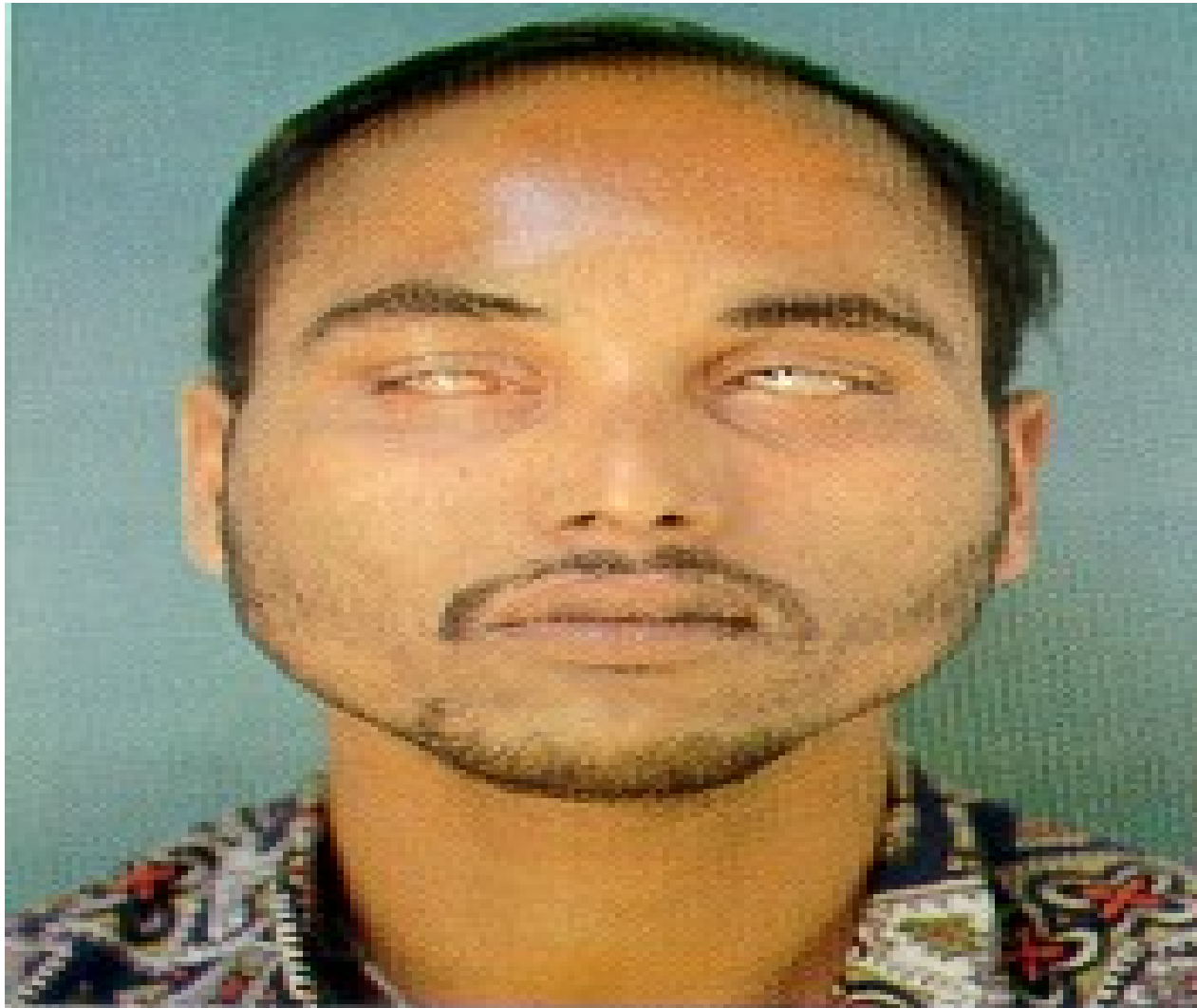
PALPATION - JUST BELOW THE OUTSIDE OF THE KNEE, AT THE NECK OF THE FIBULA.

LOSS OF SENSATION - THE LATERAL SIDE(OUTSIDE) OF THE LEG AND THE DORSUM (TOP) OF THE FOOT.

MUSCLE WEAKNESS - DIFFICULTY IN RAISING THE FOOT.

WHAT ARE THE DISABILITIES CAUSED

ORGAN	PRIMARY DISABILITY	SECONDARY DISABILITY
EYE	• CORNEAL ANAESTHESIA, • LAGOPHTHALMUS	• CORNEAL ULCER, • KERATITIS, • CORNEAL OPACITY, • BLINDNESS,
HAND	• ANAESTHESIA, • PARALYSIS (CLAW)	• CRACKS, FISSURES, ULCERS, • STIFFNESS/CONTRACTURES OF FINGERS, • ABSORPTION AND LOSS OF FINGERS
FOOT	• ANAESTHESIA, • PARALYSIS (DROP FOOT, CLAW TOES)	• CRACKS, FISSURES ULCERS, • STIFFNESS (Ankle), • LOSS OF TOES



LAGOPHTHALMUS IN BOTH EYES WITH 5 mm LIDGAP ON MILD CLOSING. BOTH EYES CAN COUNT FINGERS AT 6 METERS.



Figure 1.10: Hand gestures

Figure 1.10: Hand gestures





Ape Hand Deformity

- Median nerve palsy
- Wasting of the thenar eminence of the hand
- Inability to oppose or flex the thumb



→ Prominence at the base of the thumb



Causes of Deformity

Most deformities preventable.

- Occur as a result of direct/indirect effect of damage to peripheral nerves.
- Damage to nerves occur due to
 - a. Lepra reactions
 - b. Insidious process during the course of disease-.

WHO grading of disabilities

PART	GRADE 0	GRADE 1	GRADE 2
EYES	Normal, Not affected by leprosy	Affected by leprosy (corneal anaesthesia or lagophthalmos) but vision not affected (able to count fingers at 6 meters)	Impairment of vision (not able to count fingers at 6 meters)
HANDS / FEET	Normal (no anaesthesia or visible deformity)	Anaesthesia present but no visible deformity	Visible deformity present (e.g. Claw hand/ foot drop)

EHF score

- Method of 'severity grading' in relation to impairment in leprosy
- impairment sum score of the Eyes, Hands, Feet
- An indicator of the severity and the evolution of impairment over time

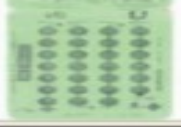
Prevention of Disabilities

- Early detection of cases
- Early MDT
- Treatment of Lepra reactions
- Anticipating nerve function impairment
- Supportive preventive measures
 - Eye care
 - Self inspection of hands and legs
 - MCR slippers
 - Regular physiotherapy exercises

Multi drug therapy

MDT regimen (Adult)

The appropriate dose for children under 10 years of age can be decided on the basis of body weight.

	Drugs used (adult)	Dosage	Frequency of Administration	Criteria for RFT	
MB leprosy	Rifampicin Dapsone Clofazimine Clofazimine	600 mg 100 mg 300 mg 50 mg	Once monthly Daily Once monthly Daily	Completion of 12 monthly pulses	 
PB leprosy	Rifampicin Dapsone	600 mg 100 mg	Once monthly Daily	Completion of 6 monthly pulses	 

MDT regimen (Child - 10-14 years of age)

MB leprosy	Rifampicin Dapsone Clofazimine Clofazimine	450 mg 50 mg 150 mg 50 mg	Once monthly Daily Once monthly Every other day	Completion of 12 monthly pulses	 
PB leprosy	Rifampicin Dapsone	450 mg 50 mg	Once monthly Daily	Completion of 6 monthly pulses	 

The appropriate dose for children under 10 years of age can be decided on the basis of body weight.

- Rifampicin: 10 mg per kilogram
- Clofazimine: 6 mg per kilogram monthly and 1 mg per kilogram per body weight daily
- Dapsone: 2 mg per kilogram body weight daily.

Treatment of Lepra Reactions

- Type 1 reaction
 - Steroids – T. prednisolone (1-2mg /kg)
- Type 2 reaction
 - NSAIDS
 - Steroids
 - Clofazimine
 - Thalidomide

Risk factors for neuritis

- ☐ Face lesions
- ☐ M.B. cases
- ☐ Skin lesions in the vicinity of nerve trunks
- ❖ Pregnancy
- ❖ Intercurrent infections
- ❖ Mental and physical stress.

TO PRESERVE NERVE FUNCTION

- **IDENTIFY PATIENTS AT RISK OF NERVE DAMAGE**
- **PERIODIC ASSESSMENT OF NERVES**
- **REPORT NEW or WORSENING OF SYMTOMS.**
- **REFER PATIENTS WITH NERVE DAMAGE FOR FURTHER INVESTIGATION AND TREATMENT.**

NERVE FUNCTION ASSESSMENT

1. *Voluntary Muscle Test or VMT-*
TESTING FOR INVOLVEMENT OF MUSCLES
2. *Voluntary Sensory Test or VST*
TESTING FOR SENSORY LOSS IN THE AREA

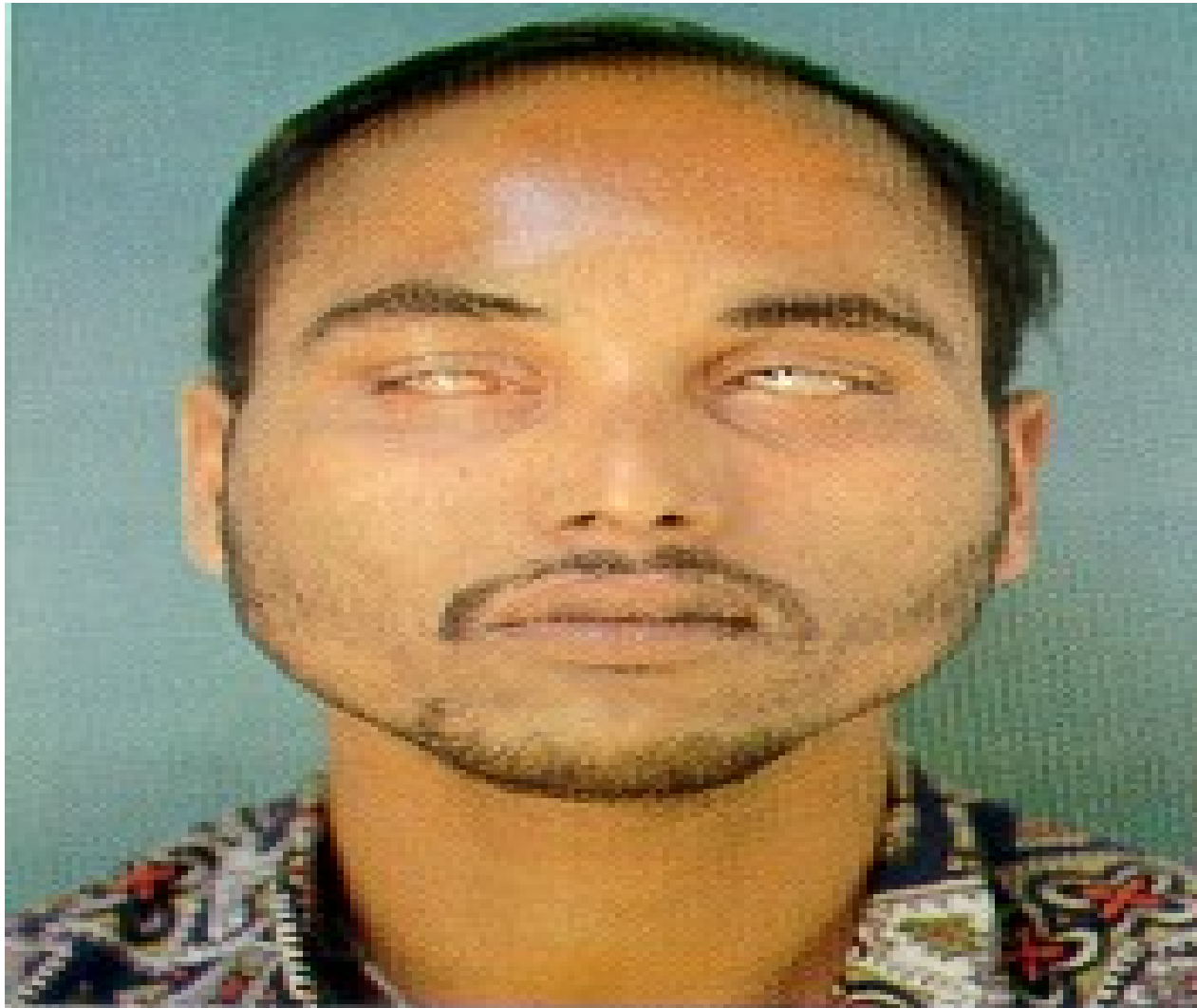
Both should be done

- a. *All patients with nerve thickening*
- b. *All MB patients*

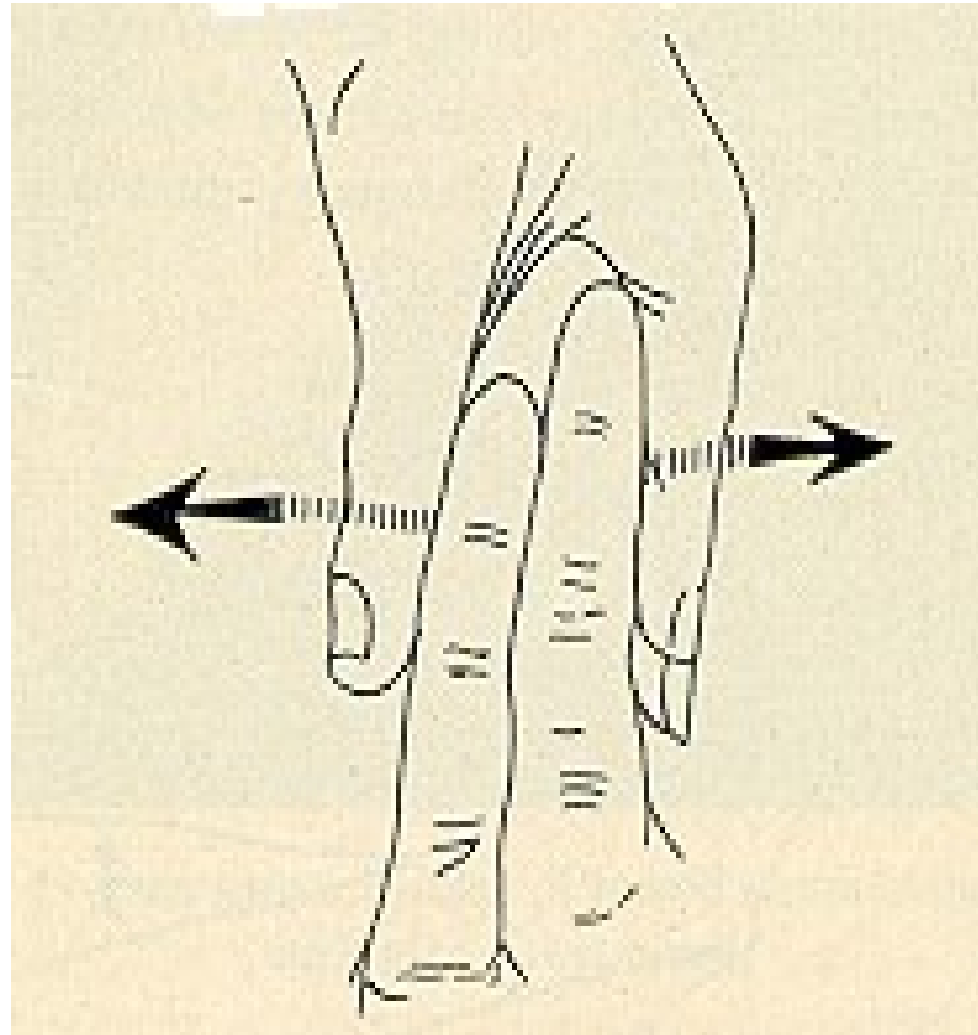
NERVE	MOTOR DEFICIT
FACIAL NERVE	Lagophthalmos
ULNAR NERVE	Weakness in moving the little finger out
MEDIAN NERVE	Weakness in lifting the thumb
RADIAL NERVE	Weakness in lifting the wrist
LATERAL POPLITEAL NERVE	Inability to lift up the foot
POSTERIOR TIBIAL NERVE	Inability to spread the toes

LAGOPHTHALMOS

1. WEAKNESS OF EYE
2. DUE TO INVOLVEMENT OF THE FACIAL NERVE
3. LOOKS FOR ANY GAP BETWEEN THE EYELIDS
WHEN THE PATIENT CLOSES HIS EYES



LAGOPHTHALMUS IN BOTH EYES WITH 5 mm LIDGAP ON MILD CLOSING. BOTH EYES CAN COUNT FINGERS AT 6 METERS.



TEST FOR ABDUCTION OF FINGERS (DORSAL INTEROSSEI)



VMT FOR ULNAR NERVE

THE PATIENT IS ASKED TO JOIN THE STRAIGHT LITTLE FINGERS WITH THE THUMBS AND TO HOLD THE POSITION FIRMLY; THE ASSESSOR THEN TRIES TO SEPARATE THE LITTLE FINGERS FROM THE THUMBS.

N.B.: IF A LITTLE FINGER IS PARALYSED THE PATIENT WILL NOT BE ABLE TO STRAIGHTEN IT AND JOIN IT WITH THE THUMB.



VMT FOR MEDIAN NERVE

**THE SAME POSITION IS USED AS BEFORE ASSESSOR TRIES TO
SEPARATE THE THUMBS FROM THE LITTLE FINGERS**



VMT FOR RADIAL NERVE
WRIST, FINGERS AND THUMB CAN NOT BE LIFTED.



VMT FOR POSTERIOR TIBIAL NERVE

CAN NOT WALK ON TIP TOES



VMT FOR COMMON PERONEAL NERVE

PATIENT CAN NOT LIFT THE ANKLE AND TOES



VST FOR THE ULNAR AND MEDIAN NERVES

HOLD THE PATIENT'S HAND WITH A BALLPOINT TOUCH

- **TIP OF ALL FINGERS,**
- **BASE OF THENAR**
- **BASE OF HYPO THENAR**
- **BASE OF INDEX AND LITTLE FINGER**

SENSATION TEST FOR POSTERIOR TIBIAL NERVE



VST FOR THE POSTERIOR TIBIAL NERVE

HOLD THE PATIENT'S FOOT, SEE FOR SENSATION

- TIP OF ALL TOES
- BASE OF ALL TOES
- HEEL

Corneal anaesthesia

- Due to involvement of the *Trigeminal Nerve*.
- Leads to Dryness of the cornea
- VSTesting - wisp of cotton, standing behind pt.
- Treatment
 - patient taught to consciously blink frequently.

Treatment of deformities

1. Medical

1. Rest
2. Steroids
3. Physiotherapy

2. Surgical

Decompression

3. RCS end stage

THANK YOU