- Observe the palatal arches as they contract and soft palate, in normal individuals, there is rise if palate and uvula and uvuala is in central position and does not deviate.
- In vagal lesions, there is no elevation or constriction on the affected side.

Spinal Accessory Nerve

The spinal accessory nerve is the XI cranial nerve and gives motor supply to the sternocleidomastoid and trapezius muscles.

The main functions are:

- Rotation of the head to opposite side of the contracting muscle.
- Tilting of the head to the same side of the contracting muscle.
- Flexion of the neck by both sternocleidomastoid muscles.
- Elevation of the shoulder.
- Drawing the head back such that the occiput tilts towards the acromion.

To check this nerve, the muscle power of these two muscles is checked.

How to check:

1. Palpate the trapezius and sternocleidomastoid muscles.
2. Ask the patient to perform the above mentioned movement first without resistance and later with resistance.
3. Compare both the sides.

Any weakness or paralysis of these muscles indicates the lesion of the nerve.

Hypoglossal Nerve

It is the XII cranial nerve and provides motor supply to the muscles of the tongue. The lesions of the hypoglossal nerve results in paralysis and atrophy of the tongue muscles. There will be fasciculations of the tongue on the involved side.

How to check: Ask the patient to protrude the tongue out. Usually, in normal individuals, the tip of the tongue will be in center, if there is a lesion, the tip of the tongue will point to the normal side due to unopposed normal tone of unaffected side.

Also observe the tongue for atrophy and fasciculations.

SENSORY EXAMINATION[7–10]

Check the sensations over all the dermatomes and report which is affected. Usually, in case sheets, the affected dermatomes are colored or shaded (Fig. 2.2).

Superficial sensations: Check for pain, fine touch, crude touch and temperature in all the dermatomes and compare with normal.

Fine touch is tested by using cotton or wool. Ask the patient to close the eyes and count numbers whenever he feels the sensation.

Crude touch is checked by the tip of your finger.

Temperature is checked by using two test tubes filled with hot and cold water.

Pain is checked by a sharp object like sterile injection needle.

Always remember, the patient can use guess work, so try to trick him, do not ask him "Do you feel? What you feel?" questions.

Deep sensations: The deep senses that are to be assessed are vibrations, pressure, joint position sense and joint kinesthetic sense.

Test: Use your thumb or fingertip to apply a firm pressure on the skin surface.

Response: Ask the patient to indicate the recognition of stimulus by saying yes or no.

To avoid bias, trick the patient, by not giving the stimulus now and then.

To find out the symmetry of sensation, compare with the normal and ask the patient to conform the symmetry of sensation.

Step 2: Practice of missing components:

- The missing components of the pattern practiced at peak performance for at least 30–60 minutes or more at least twice daily.
- The therapist can use verbal, visual cues or manual feedback, if the patient is not responding at first instance.

Step 3: Practice of task:

- Explain about the task in detail and the goal clearly to the patient. Motivate him.
- Practice the task repeatedly along with the verbal, visual or tactile feedback
- Progress the activity by reducing the verbal, visual and tactile cues dependency
- The progression can also be increased by increasing the complexity of the activity.

Step 4: Transfer of learning: Carry over the learning into task performance by incorporating in ADL.

Principles of Instructing Patient for MRP

- Verbal instruction is kept to a minimum. The therapist identifies the most important aspect of movement on which the patient is made to concentrate.
- Visual demonstrations are provided by the therapist.
- Manual guidance is given to give a clarification of mode of action by passively guiding the patient through the path of movement or by physically constraining inappropriate components.
- Accurate, timely feedback about the quality of performance helps the patient to learn which strategies to repeat and which one to avoid.
- Consistency of practice facilitates development of skill in task performance.

Vojta Method of Therapy

Vojta established 18 points in the body for stimulating and used the positions of reflex crawling and reflex rolling. He proposed that placing the child in these positions and stimulation of key points in the body would enhance CNS development. In this way, the child is presumed to learn normal movement patterns in place of abnormal motion.

According to Vojta, reflex locomotion is activated from three main positions—prone, supine and side lying.

Two coordination complexes in reflex locomotion: In the practical use of reflex locomotion, there are two coordinated complexes:

- Reflex creeping
- Reflex rolling

The movement sequences of reflex locomotion are retrievable at all times.

The three main positions—prone, supine and side lying and have more than 30 variations.

By combining and varying stimulation zones and resistances, as well as making changes in directions of pressure and joint angles in the starting position, therapy can be adapted to the patient's individual treatment goal and condition.

Reflex Creeping

Reflex creeping is a movement sequence that include the most fundamental components of locomotion.

Specific postural control:

- Upright posture or extension against gravity
- Goal-directed stepping movements of arms and legs
- The main position is prone lying with the head resting on the bed rotated to one side.

In newborn babies, reflex creeping can be fully activated from one zone. In adults, a combination of several pressure points is necessary.

Movement predominantly ensures in so-called cross-pattern, in which the right leg

circumduct or swing the leg around to step forward.

In hemiplegic patients, the anticipation of the weight-bearing excites the extensor synergy which results in plantar flexion, resulting in missing of heel strike component in gait. In flaccid stage of stroke, there will be buckling of knee joint during heel strike.

In hemiplegic patients during midstance, the forward progression of the body weight results in over stretching of calf muscles resulting in increased spasticity of plantar flexors, hence the forward shift in hemiplegics is prevented.

There is lack of heel off phase in hemiplegics due to quadriceps spasticity and plantar flexor spasticity. This results in slowness of walking.

In hemiplegics due to activation of extensor synergy, the adductors contract in place of abductors (abductors contract in normal gait) and hence there will be *Trendelenburg* sign visible.

In swing phase, the ground clearance is poor due to extensor synergy with hip, knee flexion and predominance of plantar flexion at ankle. In absence of forward rotation of pelvis, there will be circumduction of the limb resulting in classical circumduction gait.

INVESTIGATIONS DONE FOR STROKE PATIENTS

The purpose of doing investigations is to identify the causes or risk factors and level of damage to the brain due to CVA. The common investigations are:

1. **Routine and special blood investigations:** Complete blood picture along with thyroid function tests, lipid profile and blood glucose levels.
2. **Carotid duplex:** It is an ultrasound scan of the major arteries in the neck which supply blood to the brain. The atherosclerosis can be identified with this investigation.
3. **CT scan (Fig. 3.6):** The area of brain affected and extent of damage can be ruled out.

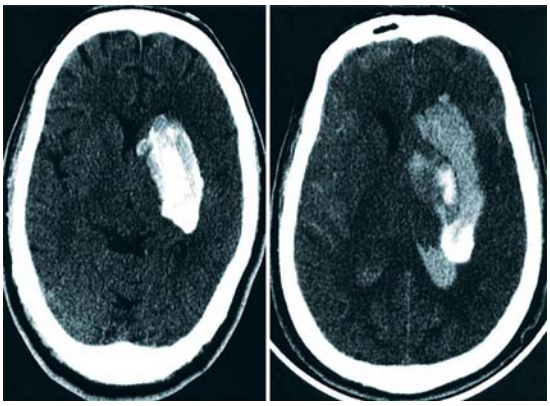

Fig. 3.6: CT scan showing the ischemic lesion of lentiform nucleus

4. **ECG:** To assess the heart function and electrical activity abnormalities of the heart. If further required, an echocardiography can be taken.
5. **MRI scan:** This may be required, if CT scan cannot reveal or give a clinical picture of symptomatology. An MRI scan may be used to look at the blood vessels in the neck to rule out any blocks (Fig. 3.7).

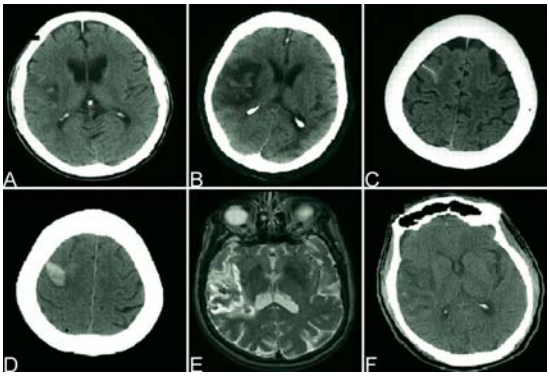

Fig. 3.7: MRI scan of ischemic stroke

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