Assessment and PT management of STROKE

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3rd year bpt

What is stroke

- Stroke or brain attack is the sudden loss of neurological function caused by an interruption of the blood flow to the brain.
- Motor deficit are characterized by paralysis or hemiparesis typically on the side of the body opposite the side of lesion.

Epidemiology

- More common in men then women.
- Stroke is major health problem in India.
- The prevalence of stroke in India ranges from 200-250/1,00,000
- In rural 10% and in urban 1.9%

Aetiology

Occlusion cause (50%) (5%)	Embolization (25%)	Haemorrhage (20%)	other
▪ *Atheromatous/ Thrombotic* ▪ *Non atheromatous disease of all vessel wall*	*From artery, From heart, Miscellaneous*	*Intracranial haemorrhage, subarachnoid haemorrhage*	*Disease of blood, venous thrombosis, Decreased cerebral perfusion*

Pathophysiology

- Interruption of blood flow can cause series of pathoneurological events.
- Complete cerebral circulatory arrest result in irreversible cellular damage with a core area of focal infraction within minutes.
- The area surrounding core is termed as ischemic penumbra which consist of visible but metabolic lethargic cells.
- Ischemic penumbra triggers release of glutamate and destructive calcium sensitive enzyme.
- Altered metabolism and that will cause necrosis of tissue.

Risk factors

Non modifiable

Age

Gender

Heredity

Heart disease

Modifiable

Hypertension

Smoking

Obesity

Lack of exercise

Drug abuse

Sedentary life style

Hyperlipidaemia

hypercoagulability

Early signs

- Numbness or weakness of face, arm or leg especially one side of the body.
- Confusion, trouble speaking or understanding.
- Trouble seeing in one or both eye.
- Trouble walking, dizziness, loss of balance or coordination.
- Severe headache with no known cause.

Different Classifications of stroke

Depending on cause

Haemorrhagic stroke

- Intracranial haemorrhage
- Subarachnoid haemorrhage

- Signs of raised ICP will be evident with a history of traumatic accident.

Ischemic stroke

- Traumatic : more common usually occurs in the sleeping hours.
- Characterized by gradually onset of symptoms.
- Embolic : occur in the waking hours of the day.
- Sudden onset of symptoms proceeded by giddiness in the most conditions.

Depending on the severity

Mild **Moderate** **severe**

Symptoms subside *complete* *symptoms recover* *There is no*

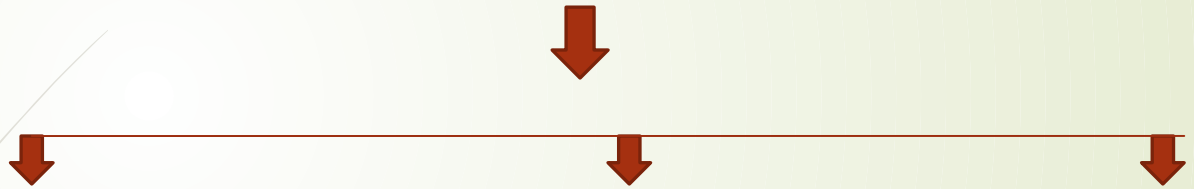
with no deficit symptoms *in a period of 3-6 month* *recovery of the*

in week period. always *with minimal neurological* *even after 1 yr.*

deficit. *ends up with sever*

neurological deficit.

Depending on duration



Acute	subacute	chronic
To a period of 1 week or until spasticity Develop.	after the development of spasticity and last For a period of 3-12 months.	more than 12 months

Depending on syndrome

- MCA syndrome
- ACA syndrome
- PCA syndrome
- Vertebro bacillary artery syndrome
  - vertebral artery
  - basilar artery
  - internal carotid artery
- Lacunar syndrome

Impairments

Primary impairment

- Altered sensation
- Vision
- Weakness
- Alteration of tone
- Abnormal synergy
- Abnormal reflexes
- Altered coordination
- Emotional status
- Speech, language and swallowing

Indirect impairment

- Musculoskeletal changes
- Neurological signs
- Thrombophlebitis and DVT
- Cardiac function
- Pulmonary function

Assessment

- **Subjective assessment**
  - *Name*
  - *Age*
  - *Sex*
  - *Address*
  - *Occupation*
  - *Chief complaints*
    - **History**
      - *Present history*
      - *Past history*
      - *Medical history*
      - *Family history*
      - *Personal history*
      - *Social history*

Objective examination

- Body Build
- Attitude of limb
  - In lying
  - In standing
  - In sitting
- Posture
  - AP view
  - PA view
  - Lateral view
- Gait analysis
- Deformity
- Any external appliances

On palpation

- *Tenderness*
- *Skin temperature*
- *Swelling / oedema*
- *Clubbing*
- ***On examination***
- *Higher mental function*
- *Orientation*
- *Memory*
- *Behaviour*
- *Speech*
- *intelligence*

Motor examination

- *Muscle girth measurement*
- *Muscle power*
- *Tone*
  - *Axial*
  - *Upper limb*
  - *Lower limb*
- *Voluntary control examination*
- *Reflexes*
    - *Spinal reflex*
    - *Superficial reflex*
    - *Abdominal*
    - *Babinskis sign*
    - *Deep tendon reflex*
- *ROM measurement*
- *Limb length measurement*

Sensory examination

- Superficial
  - Light touch
  - Pain
  - temperature
- Deep
  - Vibration sense
  - Joint position sense
- Cortical
  - Stereognosis
  - Graphesthesia
  - Baragnosis
- Discriminative
  - Two point discrimination

Balance and co-ordination

- **Balance**
  - *Static*
  - *dynamic*
- **Co-ordination**
  - *Finger to nose test*
  - *Heel to shin*
  - *Romberg's sign*
  - *Tandem walking*

Bowel and bladder control

Cardio respiratory

- Vitals signs
  - Temperature
  - Pulse rate
  - Respiratory rate
  - Blood pressure
- Breathing pattern
- Chest expansion
- Chest deformity

Functional activity examination

- *Eating*
- *Drinking*
- *Bathing*
- *Combing or dressing*

Investigation

- CT scan
- MRI
- Cerebral angiography

Test & Measurement

- Urine analysis
- CBC count
- Blood sugar level test
- Cardiac evaluation
- Lumbar puncture

Medical management

- **Anti coagulant therapy**
  - *Heparin, Coumadin*
  - *Used to reduce the risk of recurrent clots*
- **Anti platelet therapy**
  - *Aspirin*
  - *It is used for decrease the risk of recurrent stroke*
- ***Anti hypertensive agent***

Physiotherapy management

Motor function

How to Improve flexibility

- Soft tissue and joint mobilization
- Daily AROM and PROM exercise
- Positioning strategies
- Stretching programme
- Use of supportive devices
- Emphasize on:
  - Scapular upward rotation and protraction
  - Full elbow extension
  - Wrist and finger extension
  - Dorsiflexion

How to improve strength

- Strengthening of agonist and antagonist
  - With use of sand bags, Theraband, free weight and isokinetic devices.
- For weak muscle (<3/5):
  - Gravity eliminated exercise
  - Active assisted
  - Facilitate exercise
- For normal muscle (>3/5):
  - Gravity resisted
  - Added resistance
  - Free weights improve postural stability

Conti.....

- Contraindication :
  - High intensity strengthening
  - Isometric exercise with Valsalva manoeuvre
- precaution:
  - Careful monitoring of exercise
  - proper warm up and cool down period

How to manage spasticity

- Sustained stretch and slow icing of spastic muscle
- Rhythmic rotation
- Weight bearing exercise
- PNF pattern
- Splints
- Electrical stimulation

How to improve movement control

- Dissociation and selection of different body movement
- Instruct the pt. of avoid unnecessary effort for movement
- Task oriented exercise
- Start with assisted exercise followed by active and resisted ex.

How to correct postural control ?

- **Rolling**
- **Supine to sit**

  Supine to sit from both side
- **Sitting**

  Symmetrical posture and alignment

  Command give verbally

  If support need to pt. then giving support in early stage
- **Bridging**

  for develop trunk and hip extensor muscle
- **Sit to stand**

  pt. must actively flex the trunk and use the momentum
- **Modified plantigrade**

  Early standing posture

  Assist weak knee extensor

  Wide BOS
- **standing**

How to correct balance

Improve balance by

- Facilitate symmetrical weight bearing on both side.
- Reach outs
- Sit or stand on movable surface
- Single leg stance
- Dual task training

How to improve locomotion

- *Gait training between parallel bar*
- *Walking with aids or without aids*
- *Walking forward, backward, sideway and cross pattern*
- *Later stage treadmill training.*

Any question ?

Thank you….