PAKSHAGHATA

HEMIPLEGIA

U Win Naing
Assistant Lecturer
Department of Physical Medicine

Introduction

- In Ayurveda, paralysis of one side of the body is known as *Pakshavada*.
- *Paksha* is hand, foot, or one side of the body.
- *Vadha* is complete loss of function.
- It is classified under *vatavyadhi*.

Introduction

- The word '**plegia**' means weakness so severe that it is nearly complete. '**Hemi**' implies one side of the body. Hence, '**hemiplegia**' means complete paralysis of one half of the body, including one arm and leg. Any disease or injury in the motor centers of the brain can cause hemiplegia.

Introduction

- Hemiplegia is a more severe form of '**hemiparesis**' wherein one half of the body is only weakened. It is also very different from the conditions of paraplegia & quadriplegia, which are commonly confused with hemiplegia. **Paraplegia** is paralysis in both legs, below the waist. **Quadriplegia** is paralysis below the neck and is also usually the result of a spinal cord injury.

Causes of Hemiplegia

- Many conditions give rise to hemiplegia. Generally, an injury to the right side of the brain will cause a left-sided hemiplegia while an injury to the left side of the brain will cause a right-sided hemiplegia.

Causes of Hemiplegia

1. Stroke: is the commonest cause of hemiplegia. Insufficient blood supply to the brain leads to loss of brain functions. The stroke may be caused by:
   - A clot formed within the blood vessel blocking the blood supply'-> a thrombus

Causes of Hemiplegia

- A thrombus breaks away from its site of origin and forms a block elsewhere in the circulation. -> an emboli
- A bleed from a blood vessel supplying the brain -> a hemorrhage

Causes of Hemiplegia

2.Head injury

3.Diabetes

4.Brain tumor

5.Infections -> meningitis, encephalitis

6.Migraine syndrome -> recurrent headaches of severe intensity occasionally accompanied by sensations of numbness and tingling in one half of the body.

7.Inflammation of the blood vessels -> vasculitis

Causes of Hemiplegia

8. Diseases affecting the nerves -> like Multiple Sclerosis; acute necrotizing myelitis.
9. Conditions presenting from birth -> cerebral palsy. Lack of blood supply damages nerve cells in the brain. Birth trauma, difficult labor, perinatal strokes in infants within 3 days of birth can all cause cerebral palsy.

Causes of Hemiplegia

10.Hereditary diseases -> leukodystrophies. This is a rare disorder affecting the myelin sheath which covers and protects nerve cells in the brain. The condition usually appears in infancy or childhood.

Symptoms of hemiplegia

- Injury or insults to the brain cells that control movements in one half of the body cause hemiplegia. Hence, symptoms largely depend upon the part of the brain affected. The same can be said about the severity of individual symptoms.

Symptoms of hemiplegia

(1) Difficulty in walking.

(2) Problems in balance, losses balance when trying to walk

(3) Difficulty in swallowing

(4) Trouble with vision. Blurred vision or weakness of the eyes.

(5) Speech becomes difficult.

(6) Numbness, tingling or loss of sensations on one half of the body.

Symptoms of hemiplegia

(7) Loss of control over bladder and bowel movements leading to an inability to hold on to stool or urine.

(8) Unable to perform tasks like holding objects, tying laces, dressing oneself, buttoning etc.

(9) Feeling depressed

(10) Heightened emotional sensitivity with inability to handle stressful situations.

(11) Memory seems poor. Unable to recall recent or past events concerning people, places and activities.

Physical Examination

A. Examination of Nervous System

- If the patient is coma, GCS should be used.

Glasgow Coma Scale (GCS Scale)	Score
Eye opening	
Spontaneous	4
To speech	3
To pain	2
No response	1
Verbal response	
Orientated	5
Confused: talks in sentences but disorientated	4
Verbalises: words, not sentences	3
Vocalises: sounds (groans or grunts), not words	2
No vocalisation	1
Motor response	
Obeys commands	6
Localises to pain, e.g. brings hand up beyond chin to supraorbital pain	5
Flexion withdrawal to pain: no localisation to supraorbital pain but flexes elbow to nail bed pressure	4
Abnormal flexion to pain	3
Extension to pain: extends elbow to nail bed pressure	2
No response	1

Physical Examination

- Abbreviation: EVM (456)

- Individual elements as well as the sum of the score are important. Hence, the score is expressed in the form "GCS 9 = E2 V4 M3 at 07:35".

- Generally, brain injury is classified as:

  (1)Severe, with GCS < 8–9

  (2)Moderate, GCS 8 or 9–12 (controversial)[4]

  (3)Minor/Mild, GCS ≥ 13.

Physical Examination

- This scale gives an indication of the patient's conscious state and is not a substitute for neurological examination.

- For example, a patient may have had nondominant hemispheric stroke causing a dense hemiplegia yet still have a normal GCS.

Physical Examination

- The Cranial Nerves

Nerve	Examination	Abnormalities/Symptoms
I	Sense of smell, each nostril	Anosmia/parosmia
II	Visual acuity Visual fields Pupil size and shape Pupil light reflex Fundoscopy	Partial sight/blindness Scotoma; hemianopia Anisocoria Impaired or lost Optic disc and retinal changes

Physical Examination

Nerve	Examination	Abnormalities/Symptoms
III	Accommodation reflex	Impaired or lost
III, IV and VI	Eye position and movements	Strabismus, diplopia, nystamus
V	Facial sensation Corneal reflex Muscles of mastication Jaw jerk	Impaired, distorted or lost Impaired or lost Weakness of chewing movements Increased in upper motor neurone lesions

Physical Examination

Nerve	Examination	Abnormalities/Symptoms
VII	Muscles of facial expression Taste over anterior two-thirds of tongue	Facial weakness Ageusia
VIII	Whisper and tuning fork tests Vestibular tests	Impaired hearing/deafness Nystagmus and vertigo
IX	Pharyngeal sensation	Not routinely tested

Physical Examination

Nerve	Examination	Abnormalities/Symptoms
X	Palate movements	Impaired unilaterally or bilaterally
XI	Trapezius and sternomastoid	Weakness of neck movement
XII	Tongue appearance and movement	Dysarthria and chewing/swallowing problems

Physical Examination

- **Stance**

  Yes -------- positive

  No -------- negative

- **Gait**

  Yes --------- Hemiplegic gait

  No --------- negative

Common gait abnormalities

No.	Gait disturbance	Description	Causes
1.	Parkinsonian	Stooped Shuffling(reduced stride length) Loss of arm swing Postural instability Freezing	Parkinson's disease Other parkinsoian syndromes
2.	Gait apraxia	Small shuffling steps(marche a petit pas) Difficulty in starting to walk/freezing Better 'cycling' on bed than walking	Cerebrovascular disease Hydrocephalus

Common gait abnormalities

No.	Gait disturbance	Description	Causes
3.	Spastic paraparesis	Stiff 'walking through mud' or scissors gait	Spinal cord lesions
4.	Myopathic	Waddling (proximal weakness) Bilateral Tredelenburg signs	Muscular dystrophies Acquired myopathies
5.	Foot drop	Foot slapping	Neuropathies L5 radiculopathy
6.	Central ataxia	Wide based 'drunken' Tandem gait poor	Cerebellar disease

Common gait abnormalities

No.	Gait disturbance	Description	Causes
7.	Sensory ataxia	Wide-based Positive Romberg sign	Neuropathies Spinal cord disorders
8.	Functional gait	Variable, often bizarre, inconsistent Knees flexed, buckling Dragging immobile leg behind them	Conversion disorder

Physical Examination

- **Power**
- Active

Score	Medical Research Council Scale for muscle power (MRC Scale)
0	No muscle contraction visible
1	Flicker of contraction but no movement
2	Joint movement when effect of gravity eliminated
3	Movement against gravity but not against examiner's resistance
4	Movement against resistance but weaker than normal
5	Normal

Physical Examination

Example; In right hemiplegia-

	Right		Left	
	Upper Limb	Lower Limb	Upper Limb	Lower Limb
Power	3 or 3/5	3 or 3/5	5 or 5/5	5 or 5/5

Physical Examination

Definitions of Paralysis	
Term	**Definition**
Paresis	Partial paralysis
Plegia	Complete paralysis
Monoplegia	Involvement of a single limb
Hemiplegia	Involvement of one-half of the body
Paraplegia/Diplegia	Paralysis of the legs
Tetraplegia	Paralysis of all four limbs

Physical Examination

- **Tone**

Hypertonia is seen in the affected side.

Example; In right hemiplegia-

	Right		Left	
	Upper Limb	Lower Limb	Upper Limb	Lower Limb
Tone	Hypertonia	Hypertonia	Normal	Normal

- Passive

Physical Examination

- **Light touch**

	Right		Left	
	Upper Limb	Lower Limb	Upper Limb	Lower Limb
Light touch	Normal	Normal	Normal	Normal

Physical Examination

- **Position**

	Right		Left	
	Upper Limb	Lower Limb	Upper Limb	Lower Limb
Position	Normal	Normal	Normal	Normal

Physical Examination

- **Coordination**

- In upper limbs –

  Finger-to-nose test

- In lower limbs –

  Heel-to-shin test

Physical Examination

Example; In right hemiplegia-

	Right		Left	
	Upper Limb	Lower Limb	Upper Limb	Lower Limb
Coordination	Impair	Impair	Normal	Normal

Physical Examination

- Example; In right hemiplegia

	Right		Left	
	Upper Limb	Lower Limb	Upper Limb	Lower Limb
Power	3 or 3/5	3 or 3/5	5 or 5/5	5 or 5/5
Tone	Hypertonia	Hypertonia	Normal	Normal
Light touch	Normal	Normal	Normal	Normal
Position	Normal	Normal	Normal	Normal
Coordination	Impair	Impair	Normal	Normal

Physical Examination

- **Reflexes**

Example; In right hemiplegia-

Reflexes	Knee	Ankle	Biceps	Triceps	Supinator	Plantar
Right	+++	+++	+++	+++	+++	Extensor
Left	++	++	++	++	++	Flexor

- Increased +++, Normal ++, Diminished +, Absent -

Differential Diagnosis of Vascular Causes

		Thrombosis	Embolism	Hemorrhage
A	Age	33-35 years or 60-70 years	Young	44-53 years
B	Nature of onset	Sudden or progressive	Instantaneous	Catastrophic
C	Time of occurrence	During rest	During play	During excitement
D	Convulsions	Common	May be present	Absent
E	Premonitory symptoms	Difficulty in speaking or weakness of arm or leg may be first symptom	Absent	Usually absent

Differential Diagnosis of Vascular Causes

		Thrombosis	Embolism	Hemorrhage
F	Common cause	Artherosclerosis with or without hypertension	Mitral stenosis with atrial fibrillation, carotid stenosis, myocardial infarction, bacterial endocarditis	Hypertension almost invariable
G	Clinical features			
	(a) Headache	Slight or absent	Variable	Severe
	(b) Vomiting at onset	Rare	Rare	Common
	(c) Coma	Varies with extent of thrombosis	Rarely deep	Deep unconsciousness
	(d) Stiffness	Rare	Rare	Frequent
	(e) Blood pressure	May be high	Normal	Usually high

Differential Diagnosis of Vascular Causes

		Thrombosis	Embolism	Hemorrhage
	(f) Cheyne-Stokes Respiration/labo ured breathing	Seldom	Not common	Common
	(g) Reaction of pupil to light	May be impaired	No change	Commonly impaired
	(h) Conjugate deviation of eyes	Seldom	Rare	Frequent
	(i) Bilateral extensor plantar	May be present	Rare	Frequent
H	CSF	Clear, pressure slightly increased	Usually normal Pleocytosis if infected embolus	Usually bloody, pressure increased

Differential Diagnosis of Vascular Causes

		Thrombosis	Embolism	Hemorrhage
I	CT Scan or MRI	Infarction may not appear for 2-4 days	Infarction may not appear for 2-4 days	Can be confirmed within minutes of onset
J	Termination	Recovery often	Recovery usual	Rapid deterioration, high mortality

Investigations

- Blood tests
  - Haemoglobin
  - ESR
  - Blood culture
  - Glucose(FBS/RBS)
  - Serum lipids and cholesterol
- Neurophysiology
  - 12-lead ECG
  - Electroencephalogram(ECG/EEG)

Investigations

- Radiology
  - CT brain scan
  - MRI
  - CT angiography/venography
  - Echocardiography
- Lumbar puncture
  - CSF

Management

- **Medication**
  - TDS- TMF-23/27/38/42 * 2 g + warm water
  - TDS- TMF-65/66/69/70 * 125 mg + warm water
  - TMF-32 + Lemon/ fresh juice of chili
  - HS- TMF-8/11 * 2 g + water
  - If oedema, hypertension_ TMF-26 * 125 mg + water

Management

- **Panchakarma Therapy**
  - **Snehana karma**
    - Abhyanga with medicated oil
  - **Swedana karma**
    - Patrapinda sweda
    - Nadi sweda
    - Bashpa sweda
  - **Vasti karma**
    - Niruha vasti

Management

- **Massotherapy**
  - HN-3
  - HN-21
  - HN-22
  - UL-6
  - LL-6
  - LL-10
  - LL-11
  - LL-12
  - LL-22
  - LL-23
  - LL-24
  - Ab-4
  - Ab-5

Management

- **External Application**
  - TMF-28/29/43/44/46/47 + alcohol/lemon juice/warm water
  - If joint luxation, above medicine + egg-white/aloe jelly

Thank You for Your Attention