

Research Papers



## Therapeutic Intervention of Post Surgical Removal of Oligodendroglioma- Case Report

### Narkeesh

Associate Professor  
Department of Physiotherapy,  
Punjabi University, Patiala

### Lekhni Priya

MPT(Neuro) Student,  
Department of Physiotherapy,  
Punjabi University, Patiala

### Abstract

**Aims and objectives:** To describe the evaluation, management and rehabilitation of left side hemiplegia of a middle aged female in spastic stage. **Background:** History of tumor which was treated surgically. The reported onset was gradual with chief complaint of not being able to use her left side of the body, post surgery. **Treatment:** The patient was having medical, surgical and physiotherapy treatment from last 6 years. **Uniqueness:** This case is unique in terms that it involves a patient with, initially having minor weakness in left hand, progressed to spastic hemiplegic stage due to improper rehabilitation and unawareness. **Conclusions:** By presenting this case report, we hope a better understanding and necessity of early physiotherapy management and rehabilitation in hemiplegic cases and how to return to one's normal independent life.

**Key Words:** Hemi plegia, Physiotherapy, Rehabilitation, Spastic.

### INTRODUCTION:

The term "hemi" refers to "half" and "plegia" refers to the paralysis, so the term itself means paralysis of half side of the body. (Goel, 2002) Any lesion in the internal capsule will lead to hemi plegia. Since hemi plegia is an upper motor neuron lesion, so any lesion in the pyramidal system will lead to hemi plegia. Fibers of the pyramidal tract pass down to the internal capsule and occupy the dorsal part of the posterior limb of internal capsule. The fibers are being somatically arranged with upper limb in front, trunk in middle and lower limb behind from internal capsule fiber descend to mid brain and then the fiber pass to the central part of the medulla. About 80% of the fiber cross to opposite side to form lateral spinothalamic tract and 20% remains uncrossed are anterior spinothalamic tract. If there occurs any disturbance in the cortico spinal tract of one side, the opposite half of the body is affected. (Goel, 2002)

Hemi plegia may be characterized by many other problems. For example, the use of one hand may be limited, there may be a problem with balance, speech may be affected or visual field problems may exist.

There are many different types of hemi plegia: (Wallace, 2011)

Facial hemi plegia is characterized by paralysis of one particular side of the face.

Cerebral hemi plegia occurs when a brain lesion disrupts the flow of blood to the brain.

Spastic hemi plegia is characterized by paralysis along with spastic movements of the affected side.

Spinal hemi plegia is caused by lesions that have formed on the spine.

The most common cause of hemi plegia is stroke. A stroke occurs either when a blood clot forms and obstructs normal blood flow or when a blood vessel breaks, cutting off or disrupting blood flow. Stroke is the main cause of cerebral palsy, which is another major cause of hemi plegia.

Please cite this Article as : Narkeesh AND Lekhni Priya , Therapeutic Intervention of Post Surgical Removal of Oligodendroglioma- Case Report : Indian Streams Research Journal (Feb ; 2012)

Perinatal strokes, which occur in infants within three days of their birth, can cause cerebral palsy in children. Cerebral palsy limits function not specifically by total paralysis, but rather by uncontrollable spasms. Another cause of hemiplegia can be the resulting disruption of blood flow to the brain due to an injury to the brain's motor centers. The excessive bleeding that accompanies some head injuries either deprives the brain of blood or affects the blood vessels through swelling. If a person suffers an injury to the right side of the brain, the left side of the body experiences the paralysis or weakness. If the left side is affected, then the right side of the body will experience hemiplegia.

Hemiplegia is similar to another condition called hemiparesis, but it is far more serious. Hemiparesis is usually characterized by one side of the body that is affected not by paralysis, but by a less severe state of weakness (Wallace, 2011).

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

- § Difficulty in walking.
- § Problems in balance, losses balance when trying to walk
- § Difficulty in swallowing
- § Trouble with vision. Blurred vision or weakness of the eyes.
- § Speech becomes difficult.
- § Numbness, tingling or loss of sensations on one half of the body.
- § Loss of control over bladder and bowel movements leading to an inability to hold on to stool or urine.
- § Unable to perform tasks like holding objects, tying laces, dressing oneself, buttoning etc.
- § Feeling depressed
- § Heightened emotional sensitivity with inability to handle stressful situations.
- § Memory seems poor. Unable to recall recent or past events concerning people, places and activities.

The presentation will also depend on which side of the brain is damaged.

§ Right hemiplegia is caused by damages in the left hemisphere while with left hemiplegia it is vice versa.

§ Right hemiplegia most often shows -> loss of sensations on left side. There will be difficulty in understanding the spoken or written word ->

condition called aphasia.

§ Left hemiplegia often presents itself after right cerebral hemisphere damage. It usually presents with

§ Loss of control over purposeful movements.

§ Unable to use objects correctly.

§ Unable to draw, comb hair or cook.

Conditions like Alternating Hemiplegia have recurring episodes of hemiplegia. But, attacks are generally preceded by warning symptoms like -

§ Yawning

§ Fatigue

§ Appearing very exhausted

In the hemiplegic patient the main factors of abnormal postural reflex activity interfering with movement are :- (Bobath, 2009)

Associated reactions

The effect of released asymmetrical tonic neck reflex activity

The effect of released positive supporting reaction

There are several concepts underlying the assessment of adult hemiplegia in use today. For example; the 'rehabilitation concept' with its assessment of functional abilities, or the concept which underlies the assessment of 'ranges of movement' of individual joints, and one which underlies the assessment of 'muscle power'(Bobath, 2009). It must be remembered that the aim of the treatment is to improve the quality of movement on the affected side so that the two sides work together as harmoniously as possible. The constant adjustments of the techniques to the response of the patient will not only prevent waste of time, but will make possible a more systematic treatment and give better results.

The techniques employed depends on the process of recovery which has become arrested – (Bobath, 2009)

1. Initial Flaccid stage – It is found soon after the onset of hemiplegia and lasts from a few days to several weeks and may be longer. The patient cannot move his affected side and often does not appreciate that he has an arm or a leg on that side. The sound side does not know what is happening on the affected side.

2. Stage of Spasticity – The gradual development of spasticity occurs during the first flaccid stage. It is at this stage that the most patients with residual hemiplegia come for out-patient treatment. Spasticity usually develops slowly with a predilection for the flexor muscles of the upper, and the extensor muscles of the lower limbs.

3. Stage of Relative Recovery – This is especially

so with the regard to the bilateral use of arms and hands, and in some cases with the use of the affected hand for independent grasps. In treatment the therapist should avoid causing effort and stress. Any effort, especially voluntary effort, increases spasticity.

Sudden recovery from hemi plegia is very rare. Many of the individuals will have limited recovery, but the majority will improve from intensive, specialized rehabilitation. Potential to progress may differ in cerebral palsy, compared to adult acquired brain injury. It is vital to integrate the hemiplegic child into society and encourage them in their daily living activities. With time, some individuals may make remarkable progress.

#### CASE REPORT:

A 37 year old female is having left side hemi plegia since 5 years. The reported onset was gradual. There was a history of right frontal oligodendroglioma which was diagnosed in 2006 and radiotherapy treatment was done for it. The patient had a complaint of left hand weakness which progressed gradually to increase in tone of whole upper extremity of left side in the year 2007. On patient's complaint and reoccurrence of fits, MRI was repeated again in year 2009, which depicted necrosis and palliative chemotherapy was done for it in same year. The whole medical was recorded from the investigatory reports of the patient carried by her.)

The spasticity progressed to lower limb of the left side. This made the patient completely dependent on the wheel chair. Past history of patient was relevant. She had a history of vertigo and sudden falls occasionally at the age of 19 - 20 years. Patient had a chief complaint of being dependent, with other complaints of feeling of tightness in left side of the body and was not able to use her left side of the body.

On examination of the patient as on date – September 8, 2011; it was observed that the facial expressions were attentive, with facial deviation to left side (angle of jaw). The external appliance used by the patient was KAFO on the left lower extremity and using wheel chair as walking aid. Gravitational edema was palpated at both ankles which were non pitting. On examining the cognitive skills, the MMSE score of the patient was 29/30. On cranial nerve examination, it was found that the patient's vision (near and far) was reduced in left eye with reduced ocular movements of the left sided eye. Also the facial muscles were weak on left side with drooping of the mouth and mild facial asymmetry was present. Thus the

cranial nerves III (oculomotor), IV (trochlear), VI (abducens) and VII (facial) were found to be affected.

On motor examination, –

The examination of tone was as: [Modified Ashworth scale for hyper tonicity]

#### Upper Extremity –

Muscle Group	Left Extremity	Right Extremity
Shoulder adductors	1+	0
Shoulder internal rotators	2	0
Elbow flexors	2	0
Forearm pronators	2	0
Wrist and thumb flexors	3	0

#### Lower extremity –

Muscle Group	Left Extremity	Right Extremity
Hip Flexors	1+	0
Extensors	2	0
Abductors	1+	0
Ext. rotators	2	0
Knee Flexors	1+	0
Ankle Dorsi flexors	2	0
Plantar flexors	3	0

The abnormal movement pattern, that is, the Synergy pattern noticed in patient was the flexor synergy for the upper and the lower extremity of the left side.

Range of motion was within normal limits for right side and couldn't assess for the affected limb due to inconsistent findings because of fluctuations in tone.

Superficial reflex - Babinski's sign was positive on the left side of the foot.

Deep Tendon Reflexes were graded as –

Reflexes	Left Extremity	Right Extremity
Biceps	+++	++
Triceps	+++	++
Knee Jerk	++++	++
Ankle Jerk	+++	++

Superficial sensory examination was done – showing inaccurate response to light touch and pressure. There was decreased sensitivity to pain and temperature. All dermatomes of left upper and lower extremity were affected.

Body chart showing areas to be tested -

Pressure sensation – red marks

Pain sensation – black lines



Blank Human Body Diagram to Label

Deep sensations – kinesthesia, proprioception were decreased. Patient had shown normal response to Combined cortical sensations – graphesthesia, barognosis.

For coordination and balance, Non Equilibrium co-ordination tests – (finger to nose, finger to finger, alternate nose to finger, alternate heel to knee, alternate heel to toe, pronation /supination) were performed using right extremity, as patient was not able to use her left side of the body, showing normal performance. Equilibrium tests could not be performed as the patient was totally wheel chair dependent. Bladder and Bowel were found to be intact. For functional assessment, Barthel Index was used. The score obtained was 35/100.

#### PHYSIOTHERAPY MANAGEMENT –

The main aim of the treatment is to obtain the symmetry with normal balance reactions in whole of the body with maintenance of normal muscle tone and range, improvement in muscle performance, avoidance of any deformity to develop, and to enhance the sense of well being in the patient.

The various activities performed on the patient are described in the table;

Exercises	Duration / Repeations
Rolling	10 – 12 rep.
Turning over from supine to side lying	
- to affected side	5 – 7 rep.
- to sound side	5 – 7 rep.
Turning to sound side and sit up	5 – 7 rep.
Lying down from sitting	5 – 7 rep.
Trunk balance in sitting	3 – 4 rep. / 10 min
Weight transference to affected arm in extension	3 – 4 rep. / 10 min
Weight on the affected leg in cross leg sitting	3 – 4 rep. / 10 min
Bridging – bilateral – unilateral	7 – 10 rep.
Moving forwards and backwards while sitting	
Moving side to side in sitting	

Other than this –

1. PNF technique for the affected side
2. Shoulder mobilization
3. Arm elevation (by the pat. with support of the sound limb)
4. Proper positioning is taught to the patient and the care givers.
  - Lying on the hemiplegic side
  - Lying on the sound side
  - Sitting in bed
5. Exercise to inhibit the pattern of left side extremities
6. Immersion of affected hand in ice/crushed ice
7. Splint support for the wrist and KAFO for the lower extremity of the affected side.

Various exercises given for weakness of facial muscles were –

1. Wrinkle nose. Flare nostrils
2. Curl upper lip up and protrusion of the lips
3. Smile without showing teeth and showing teeth
4. Lips together and try to whistle
5. Try to close the eyes slowly and gently
6. Raise eyebrows and hold; frown and draw them downwards
7. Winking of the eyes
8. Do try to chew food using both sides of the mouth
9. Practice speaking in front of mirror, repeating words A, E, I, O, U.

#### DISCUSSION:

The case involved a female with stage II (spastic) hemi plegia. The gradual development of spasticity occurs during the first stage (flaccid stage). When spasticity has developed, the process of spontaneous recovery is often arrested. Spasticity usually develops slowly with a predilection for the flexor muscles of the upper, and the extensor muscles of the lower limb. It usually increases with the patient's activities and use of effort throughout the first 18 months. As spasticity develops there is increasing resistance to certain passive movements. (Bobath, 2009)

Initially positioning of the hemiplegic person should be done correctly to stop the further deterioration. In lying on hemiplegic side, the ideal position (Davies, 2003) is with head well supported and should be flexed in the upper cervical region and not pushed back into extension. The trunk is rotated somewhat backwards and supported from behind by a pillow tucked firmly in behind the patient. The sound arm lies in front of the patient; it brings the whole trunk forwards. The legs lie in a step position, with the sound leg flexed at the hip and knee and supported on a pillow. If lying on the unaffected side, the ideal position (Davies, 2003) is with the well supported head; the side flexion of the cervical spine is maintained. The trunk is at right angles to the surface of the bed. The affected arm is supported on a pillow in front of the patient in approximately in 90 degree elevation with well protracted scapula. The hemiplegic leg is brought forwards and fully supported on a pillow with some degree of flexion at hip and knee.

The supine position should be used as little as possible, because the abnormal reflex activity is at its highest in this position due to the influence of the tonic neck and labyrinthine reflexes.

The half lying position should be avoided, at all times. It reinforces the patterns of spasticity. While sitting in bed, the hips should be flexed in as near to a right angle as feasible and the spine extended. An adjustable table placed across the bed, beneath the patient's arms will help to counteract the pull into trunk flexion. Nothing should be placed in the hand in an attempt to counteract the flexor spasticity. The effect will be just the opposite, as the influence of the grasp reflex causes the hand to close on an object placed in the palm. The correct positioning proximally will allow the hand to remain open, particularly as the patient is at rest and not exerting himself against gravity. (Davies, 2003).

The practice of support and weight bearing on extended arm is important for two reasons – (Bobath, 2009)

1. Extension with outward rotation, abduction and supination counteracts flexor spasticity which is associated with inward rotation, pronation and retraction of the shoulder. Weight bearing on the extended arm activates the extensor muscles in a much needed functional pattern.

2. Weight bearing on the extended arm is part of the process of gaining balance and makes the patient feel sufficiently safe to bear weight on the affected side without fear of falling over.

Self assisted arm activity with clasped hands is taught to the patient initially. It is important for the reasons; (Davies, 2003)

1. Because the fingers of the sound hand abduct the fingers of the hemiplegic hand, the flexor spasticity in the whole arm is reduced.

2. With the hands held forward, the retraction of the scapula is prevented.

3. When the patient is moving, associated reactions in the arm are prevented. Trunk activity is stimulated and symmetrical movement and weight bearing are improved.

Mobility of shoulder girdle and scapula is important to obtain movements of the arm at the shoulder and to prevent shoulder pain. In all cases, we find a combination of flexor spasticity of the side flexors of the trunk, depression and retraction of the shoulder and fixation of the scapula. If the scapula cannot move freely, passive lifting of the arm above the horizontal, especially if done with internal rotation, pushes the humerus against the acromion, with the supraspinatus and the capsule pressed against it which is painful (Bobath, 2009). It is easier for the patient to get control of his shoulder girdle and arm in supine then in sitting, because when the hips are flexed, the tendency to

flexor spasticity is increased. During all work for extension and lifting the arm, the patient's leg should be in some flexion. It is essential in order to avoid the occurrence of extensor spasticity, through associated reactions. (Bobath, 2009)

In weight bearing of the affected lower limb, the patient's heel is banged on the floor, tone in his knee extensors is built up and activity is often elicited automatically. Active dorsiflexion of the foot is stimulated at the same time (Davies, 2003). Because of the above reasons, this treatment was followed in the patient. No one pattern and no one technique should be made responsible for an expected reaction. It should be borne in mind that the three stages (flaccid, spastic, recovery) overlap and cannot be clearly separated. If treatment cannot be given immediately after the onset of hemi plegia, it has to be started at the stage of recovery the patient has reached.

#### CONCLUSION:

In hemi plegia, effective rehabilitation should take advantage of the brain's capacity for repair and recovery. Rehabilitation interventions seek to promote recovery and independence through neurofacilitation, functional and compensatory training strategies. The utilization of effective motor learning strategies with task oriented training for real life environment is critical for the successful attainment of functional outcome. If the patient was provided with better rehabilitation and treatment techniques initially after the onset of the problem, the patient would be independent to some extent. Techniques and tools to be used are interchangeable. The constant adjustment of the techniques to the response of the patient will not only prevent waste of time, but will make possible a more systematic treatment and give better results.

The few activities are shown in the figures below;

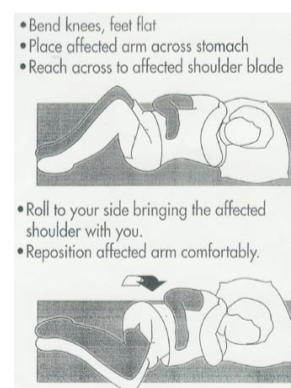


Fig 1: Rolling to sound side



Fig 2: Sitting from lying

(source fig 1 & 2 : link : [www.aroundhawaii.com/lifestyle/health-and-fitness/2007-06\\_caregiving\\_for\\_patients\\_after\\_a\\_stroke.html](http://www.aroundhawaii.com/lifestyle/health-and-fitness/2007-06_caregiving_for_patients_after_a_stroke.html) )

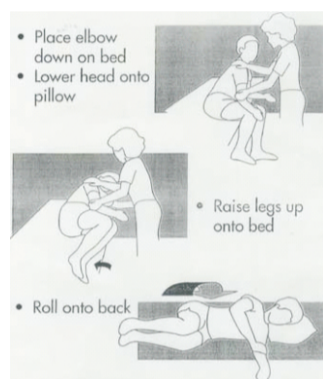


Fig 3: Sitting to lying down

(source:link:www.aroundhawaii.com/lifestyle/health-and-fitness/2007-06\_caregiving\_for\_patients\_after\_a\_stroke.html)

#### REFERENCES:

1. Bobath (2009); Adult Hemiplegia - Evaluation and Treatment, 3rd ed., Butterworth – Heinemann, Pg no: 11, 20, 71 – 130
2. Davies (2003); Steps to Follow - The Comprehensive Treatment of Patients With Hemiplegia, 2nd ed., Springer (India) Private Limited. Pg no: 100, 101, 103 – 120
3. Goel (2002); Goel's Physiotherapy, 2nd ed., vol .II, Dr.R.N.Goel Publishers, Ch – 10, Pg no - 195
4. Sullivan and Schmitz (2007); Physical Rehabilitation, 5th ed. Jaypee Brothers, pg no : 236
5. Wallace(2011); reference is taken from the link : <http://www.wisegeek.com/what-are-some-causes-of-hemiplegia.htm>

Please cite this Article as : Narkeesh AND Lekhni Priya , Therapeutic Intervention of Post Surgical Removal of Oligodendroglioma- Case Report : Indian Streams Research Journal (Feb ; 2012)