Case study

Title- Effect of early Proprioceptive Neuromuscular Facilitation on a Hemiplegic patient post-Hemorrhagic Stroke: A Case Report

ABSTRACT-

Background: Stroke is the sudden loss of neurological function caused by an interruption of blood flow to the brain. Hemorrhagic stroke occurs when a blood artery ruptures in the brain, causing bleeding into the brain leading to hemiplegia. Hemiplegia is a paralysis of the face, arm, and leg on one side.

Aim: Effect of early rehabilitation of patient right from the ICU to get early recovery post hemorrhagic stroke.

Presentation of case: In the present case report, a 75-year-old male was admitted into the hospital with a history of giddiness and weakness of the right upper limb and lower limb along with slurring of speech. He was diagnosed with Left Intraparenchymal bleed in the Corona Radiata based on his symptoms and investigatory findings, he was under medical and physiotherapy management. Goal seeking limb was provided to the patient in the ICU and was continued in the ward. The early physiotherapeutic intervention proved to be effective for the positive outcome of the patient. After 20 days of treatment, there was a tremendous improvement in the bed mobility of the patient. Speech therapy was also provided to the patient.

Discussion: Physiotherapy will increase the decreased ranges, help in improving the daily living activity of the patient, thus enhancing the confidence of the patient.

Conclusion: Thus, we conclude by this case report that early rehabilitation enhances the condition and later on the quality of life of the patient.

KEYWORDS -Hemiplegia, hemorrhagic stroke, physiotherapy, early rehabilitation, a case report.

INTRODUCTION-

Stroke is the sudden loss of neurological function caused by an interruption of blood flow to the brain. Strokes can be either ischemic or hemorrhagic. When the blood supply to a portion of the brain is cut off, and ischemic stroke develops. Hemorrhagic stroke occurs when a blood artery ruptures in the brain, causing bleeding into the brain. Intracerebral hemorrhage (ICH) and subarachnoid hemorrhage are two types of hemorrhagic stroke (SAH) (1). Hemorrhagic stroke accounts for the largest number of deaths with 37%to 38% in a month. Every year, 13.7 million people worldwide suffer from a hemorrhagic stroke. There are 1.8 million persons in India who have had a stroke. In India, the rate of stroke in the general population is 154 per 100,000 (2). Hemorrhagic stroke causes neurological symptoms such as paralysis on one side of the body (hemiparesis), arm or leg paralysis (hemiplegia), or even complete paralysis (hemiplegia), but it also causes facial palsy (facial palsy) in the early stages of muscular weakness. The most essential element in minimizing the risk of stroke and cardiovascular disease is hypertension treatment(3). Hemiparesis describes a moderate loss of strength or paralysis on one side of the body, whereas Hemiplegia describes a complete loss of strength or paralysis on one side of the body. Shoulder subluxation,

loss of functional capacity in the hands, foot drop, and psychological stress are all complications of neurological injury (3,4).

PATIENT INFORMATION

The 75-year-old male patient with right-hand dominance was apparently alright till 12th October. Then on 13th October around 11 a.m., he went to the bathroom and fell there. After that, he panicked and started taking high breaths. His daughter-in-law saw him and with the help of other family members, picked him and took him to bed, and consulted their family doctor. The patient was a known case of hypertension for 10 years and was on regular medication. On examination, his vitals were unstable with high Blood Pressure along with weakness of the right upper limb and lower limb and slurred speech. Immediately, he was taken to Sewagram hospital where a CT scan was done and the patient was admitted. Later on, the patient was brought to Acharya Vinobha Bhave Rural Hospital for further management on the evening of the same day. Here again, the CT scan was done and the patient was admitted to the neurology ICU.

Clinical findings:

The patient was mesomorphic built, conscious, cooperative, and well oriented to time, place, and person with a Mini-mental state examination (MMSE) score of 25/30. On observation attitude of the limb in the supine position, Shoulder and elbow extended forearm supinated of the right side. Right hip in extension, knee extended, and externally rotated with the ankle in plantarflexion. The left side was in a neutral position. On examination, cranial nerves were intact, and the special sense of speech was slurring (global aphasia) hearing and vision were normal. Tonal examination of the right

side was hypotonic for the upper limb and lower limb while for the left side it was normal. Muscle power was reduced on the right upper limb (MRC grade 1) and lower limb (MRC grade 2). Balance was impaired as the patient was not able to sit independently.

Clinical Diagnosis:

The routine blood reports and urine examination did not reveal any abnormality. The CT scan reports revealed there was a **left intraparenchymal bleed in Corona Radiata** leading to his clinical symptoms.

Physiotherapy Functional Assessment:

Barthel Index was taken and it showed 20/100 score by which it was evident that the patient is dependent on daily functional activities.

Timeline of events- Table 1

Sr no	**DATE OF EVENTS**	**CONSULTATION**	**FINDINGS**	**SUGGESTIONS**
1.	13/10/21		WEAKNESS OF	NEUROLOGY CALL

	(ICU)		RIGHT UPPER LIMB AND LOWER LIMB ALONG WITH SLURRING OF SPEECH	(MEDICATION STARTED) TAB AMLO TAB PAN TAB LEVEPSY CAP FELICITA OD SYP DUPHALAC PHYSIOTHERAPY CALL (STARTED WITH ACTIVE-ASSISTED EXERCISES FOR UPPER AND LOWER LIMB AND POSITIONING)
2.	14/10/ 21 (SHIFTED TO	CT SCAN	LEFT INTRAPARENCHYMAL BLEED IN CORONA	HAEMORRHAGIC STROKE

	WARD)		RADIATA	
3.	15/10/21	NEUROLOGIST AND PHYSIOTHERAPIST		TAB AMLO TAB PAN TAB LEVEPSY CAP FELICITA OD SYP DUPHALAC PHYSIOTHERAPY CONTINUED

Physiotherapeutic interventions:

During the ICU stay, the main focus was on promoting the mobility of the patient to prevent further complications. Positioning was given along with regular turning and breathing exercises. Range of motion exercises to maintain joint mobility were provided. Details of the treatment are shown in table 2.

Problem identified	**Probable cause**	**Goal Framed**	**Physiotherapy Intervention**

1. Decreased bed mobility	Weakness and decreased pulmonary and muscular endurance	Improve bed mobility and prevent pressure sores	Rolling facilitation and transition training started within the ICU and encouraged even after shifting to ward
2. Limb Weakness	Muscle paralysis and reduced nerve conduction	Stimulate the nerves and improve motor performance	Planned for giving electrical stimulation and increase the muscle performance
3. Reduced active joint range of motion	Decreased joint integrity, muscle weakness, and reduced tone	Improve the integrity of joint and tone facilitation strategies.	Active assisted range of motion exercises, bilateral training, and Roods approach for tone development in the upper limb.

4. Reduced muscle strength	Muscle paralysis	Improve the strength by strengthening program for Lower limb	Bilateral strengthening to improve bed transitions and train the weak muscles.
5. Difficulty in performing daily activities	Decreased muscle performance	Energy conservation and compensatory strategies and Proprioceptive Neuromuscular Facilitation	Encouraged how to use the extremities to involve in activities of daily living
6. Reduced strength	Weakness and hospital stay	To improve strength	Upper limb strengthening with a water bottle (1/2 L initially progressed to 1 L) Lower limb strengthening with weight cuff (½ kg initially progressed

			to 1kg) Hip hikers strengthening along with Quadriceps strengthening
7. Decreased out of bed transitions	Weakness in girdle muscles and decreased stability	Increase functional performance	Transition training, supine to sit, and sit to stand
8. Secondary complications (e.g., shoulder subluxation)	Weak girdle muscles	Provide shoulder support during activities	Shoulder brace
9. Decreased Activities of daily living	Decreased performance of muscles	Advise the patient to be as active as possible	Encouraged how to use the extremities to involve in activities of daily living

Follow-up and outcomes:

There was a tremendous improvement in the Barthel index, STREAM Score, and the WHO-QOL post-rehabilitation.

Results:

Early rehabilitation for patients with hemorrhagic stroke opens up a gate for early recovery post-stroke. Basic bed mobility training improves mobility and joint integrity. The vitals were taken into account while targeting the best possible outcome of the patient. The Barthel score was improved to 50/100 during the hospital stay(5).

Discussion:

This study is mainly focused on early rehabilitation and the prevention of complications. Studies are suggesting the effective physiotherapeutic intervention post hemorrhagic stroke but only a few focus on rehabilitation from the acute phase. Continued rehabilitation from the acute phase leads to better outcomes and prevention of complications that were needed to be dealt with in the sub-acute phase(6,7). Rigorous inpatient rehabilitation prevents OPD basis and regular visits to different centers(8,9).

Conclusion-

Early rehabilitation has proved to be effective to improve the patient's condition, thus providing a positive outcome, boosting the patient's confidence and mental status. These interventions provide further scope to start the rehabilitation from the ICU itself to get better results. Earlier the intervention provided, better is the result.

Informed consent: A proper informed consent was taken from the patient prior.

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