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Effects of Early Mobilization on Functional Outcomes and Recovery Time in Left Mca Stroke Vs Right Mca Stroke Patients

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ABSTRACT: This study investigates whether early mobilization yields consistent results across different brain regions affected by stroke or if outcomes vary based on the specific brain territory involved. The objective is to evaluate the efficacy of early mobilization in patients with middle cerebral artery (MCA) stroke through a 4-week training program. A total of 50 patients will be included, divided equally into two groups of 25.the results are analyzed via Modified rankin scale and the Barthel Index. The findings reveal that early mobilization results in comparable improvements regardless of whether the stroke impacts the left or right MCA. This indicates that the specific area of brain damage does not significantly affect recovery outcomes when early mobilization is employed. Thus, early mobilization appears to be an effective rehabilitation approach with uniform benefits across different MCA stroke territories.

KEYWORDS: Modified rankin scale (MRS), Barthel Index(BI),Early mobilization,stroke in different territories, rehabilitation, stroke

I. INTRODUCTION:

Stroke (cerebro-vascular accident) is a sudden loss of neurological function caused by an interruption of the blood flow to the brain. the interruption is either by a blockage in an artery (ischemic stroke) or by the rupture of a blood vessel (hemorrhagic stroke).[(1)] The middle cerebral artery (MCA) is the most common artery involved in acute stroke.Both the left middle cerebral artery (MCA) and the right middle cerebral artery are equally susceptible to strokes, but their impacts differ based on location. [(4)]There is a striking difference in the rate of diagnosis of left-sided and right-sided ischaemic events. Symptoms of cerebrovascular events differ depending on the hemisphere in which the lesion arises, thereby affecting disease recognition and management. [(5)(6)]Having a stroke has a serious negative impact on patients and their families. The most negative potential impact is disability which could be reduced if the patients receive appropriate treatment within 4.5 hours. most of informants recognized the stroke signs and symptoms that the patient had.[(3)] Early mobilization plays a pivotal role in optimizing recovery for stroke patients. Stressing the initiation of physical activity shortly after stroke onset, ideally within the first 24-48 hours when feasible. It includes standardized protocols, staff education, and family involvement to promote early mobilization effectively across acute and rehabilitation settings. various types of early mobilization interventions, including passive range of motion exercises, active-assisted exercises, sitting at the edge of the bed, standing, and eventually walking. Tailoring these interventions to the individual patient's functional status and medical condition is crucial.[(2)]The modified Rankin Scale is widely used to measure overall disability and dependence in activities of daily living after stroke. On the other hand, the Barthel Index assesses functional independence. Understanding the relationship between these scales can provide insights into the functional outcomes of stroke survivors and help clinicians and researchers assess the effectiveness of rehabilitation interventions.[(7)]

II. AIMS AND OBJECTIVES:

The aim of the study is to conduct an observational analysis comparing the impact of early mobilization on patients with left mca stroke vs. right mca stroke, with a focus on understanding potential differences in outcommes and recovery trajectories.

The objective of this study is to evaluate the efficacy of early mobilization in patients with middle cerebral artery (MCA) stroke over a 4-week training program, specifically to determine whether the treatment produces consistent recovery outcomes regardless of whether the stroke affects the left or right MCA. By comparing recovery improvements between patients with left MCA strokes and those with right MCA strokes, the study aims to assess whether the area of brain

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damage significantly influences the effectiveness of early mobilization as a rehabilitation strategy.

III. METHODS:

Study Design: Patients with left or right MCA stroke of age group 40-80 years who are conscious and are willing to participate in this study will be selected from Department of neurology PMCH Udaipur, Rajasthan.after obtaining ethical approval.

Sample size: 50 patients with left and right MCA stroke will be selected. who are then divided into two groups 25 each.

Study duration: The study will span a period of 4 weeks, during which participants will undergo treatment twice a day, with mobilization interventions administered once daily.

Data Analysis: In this study, subjects will be analyzed using both the Modified Rankin Scale (mRS) and the Barthel Index (BI). The Modified Rankin Scale will assess overall functional disability and the degree of impairment in daily activities, ranging from no symptoms to severe disability. Simultaneously, the Barthel Index will measure specific functional abilities related to activities of daily living, such as mobility and self-care. By employing these two assessment tools, the study aims to provide a thorough evaluation of both general disability and specific functional capabilities in patients with left or right MCA stroke.

Result: The results indicate that patients with both left and right MCA stroke exhibit comparable improvements following the same treatment, specifically early mobilization. Statistical analysis using the chi-square test reveals no significant differences between the two groups, as the p-values suggest that the extent of improvement in functional outcomes is similar for both left and right MCA stroke patients.

Table 1: Pre and Post MRS wise distribution of patients

	Left MCA	**Right MCA**	
MRS	**Mean ± SD**	**Mean ± SD**	**P value**
Pre	4.48 ± 0.51	4.44 ± 0.51	0.81 (NS)
Post	3.26±0.75	3.07± 0.73	0.38 (NS)
P value	<0.001 (HS)	<0.001 (HS)	

In both Group A and Group B, patients with middle cerebral artery involvement showed significant improvement in Modified Rankin Scale (MRS) scores after intervention.

- **Group A**: Mean MRS score improved from 4.48 (SD 0.51) before intervention to 3.26 (SD 0.75) after, with a highly significant p-value (<0.001).
- **Group B**: Mean MRS score improved from 4.44 (SD 0.51) before intervention to 3.07 (SD 0.73) after, also with a highly significant p-value (<0.001).

These results indicate substantial and statistically significant improvement in both groups.

Table 2: Pre and Post BI wise distribution of patients

	Group A Left MCA	**Group B Right MCA**	
BI	**Mean** ± SD	**Mean** ± SD	**P value**
Pre	5.87 ± 2.46	5.37 ± 3.38	0.55 (NS)
Post	51.83 ± 14.84	55.37 ± 11.43	0.35 (NS)
P value	<0.001 (HS)	<0.001 (HS)	

In both Group A and Group B, patients with middle cerebral artery involvement showed substantial and statistically significant improvements in Barthel Index (BI) scores after intervention:

- **Group A**: Mean BI score increased from 5.87 (SD 2.46) before intervention to 51.83 (SD 14.84) after, with a highly significant p-value (<0.001).
- **Group B**: Mean BI score increased from 5.37 (SD 3.38) before intervention to 55.37 (SD 11.43) after, also with a highly significant p-value (<0.001).

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IV. DISCUSSION:

The study found that patients with middle cerebral artery (MCA) strokes, whether affecting the left or right MCA territory, achieve similar levels of recovery when given the same early mobilization treatment. This indicates that the effectiveness of the treatment is not dependent on the specific brain region impacted by the stroke. In other words, the recovery outcomes are comparable regardless of whether the stroke involves the left or right MCA.

The study utilized two assessment tools to evaluate recovery: the Modified Rankin Scale (mRS) and the Barthel Index. Both tools showed significant improvement in stroke patients treated with early mobilization, confirming that the treatment leads to positive outcomes across different MCA territories. The mRS measures overall disability and functional outcomes, while the Barthel Index assesses the level of independence in daily activities.

The consistent improvements observed in both scales across patients with left and right MCA strokes underscore that early mobilization is effective for stroke rehabilitation, irrespective of the stroke's location. This suggests that with appropriate and timely treatment, stroke patients can expect comparable recovery benefits, demonstrating the broad efficacy of early mobilization as a rehabilitation strategy for MCA stroke cases.

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