

Review Article

Comparison Of Functional Outcome Between Ischemic & Haemorrhagic Stroke Patients In Acute Stage

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Abstract

Objective- To determine whether there is a difference in functional outcomes of patients with ischemic and haemorrhagic stroke in acute stage. **Background-** Ischemic and hemorrhagic strokes have different pathophysiology and different long-term cerebral and functional implications. Hemorrhagic strokes expose the brain to irritating effects of blood and ischemic strokes reflect localized or diffuse cerebral vascular pathology **Method-** A comparative study was employed. The sample size was of 35 subjects. Each subject received physiotherapy for four weeks and motor performance for functional outcomes was compared between two groups on standard scales; Motor Assessment Scale & Functional Independence Measure. First scoring was done before starting the treatment, next scoring was done at the end of the first week, second week, third week and fourth week. Each subject received physiotherapy based on Motor Relearning Programme. **Result** -13 females and 22 males were included in the study after they met the inclusion criteria .19 subjects were present in group I (Ischemic) and 16 subjects were present in group II (haemorrhagic). The data were entered into SPSS version 13.0 for analysis .Results with a *P* value of <0.05 were considered statistically significant. There were 12 subjects of left sided stroke ischemic group and 6 in Haemorrhagic group. 7 of right sided stroke in ischemic group and 10 of right sided stroke in Haemorrhagic group. Hypertension was observed in 7 ischemic and 11 hemorrhagic stroke patients. **Conclusion** - The results of this study show that the haemorrhagic group improved better than ischemic group on MAS scale and FIM scale.

Keywords: Motor Assessment Scale (MAS), Functional Independence Measure (FIM), Motor Relearning Programme (MRP).

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Introduction

Stroke causes a wide range of neurologic deficits and is the leading cause of morbidity worldwide.^{1,2} In most countries, stroke is the most usual disease of the Central Nervous System (CNS) to warrant admission of patients to hospital. Although fatality rates and in some studies, even incidence rates have been reported to decrease during the last few decades (Mas and Zuber 1991) stroke remains one of the major concern of medicine because of its frequency, mortality and the danger of disabling sequel in survivors.³

Besides acute management, rehabilitation in the subacute and chronic stages helps lessen the disability caused by stroke. Stroke can be divided into two types, intracerebral hemorrhage and ischemic stroke, with the former accounting for about 10–24% of all strokes.⁴

As most of the neurologic and functional improvements occur within the first three months after a stroke,^{5,6} and time-dependent recovery of body function and activities has been shown to decline significantly 10 weeks after stroke,⁷ the post-acute phase becomes particularly important for rehabilitative and other interventional treatments. Stroke causes a variety of functional deficits, such as cognitive and language impairment, sensorimotor dysfunction, mood

Each subject received physiotherapy based on Motor Relearning Programme (MRP).

Inclusion Criteria

- First ever Stroke

disorder, and incontinence. Rehabilitation that consists physiotherapy, which aims at improving activities of daily living, improving balance, gait, and movement, and speech and language therapy, which aims at improving communication and swallowing difficulty, has been widely implemented for post-stroke care.⁸

Stroke-specific and demographic factors may influence the functional outcome after stroke, such as stroke severity,⁹ age,¹⁰ stroke type,¹¹ stroke location,¹² stroke volume and cognition.¹³

Having survived the instant aftermath of a stroke, patients are often concerned about their potential for recovery, likelihood of surviving in the long term free of being dependent on others. This information is understandably also of interest to families and to those physiotherapists providing or planning healthcare

Materials and Methodology

The study was a comparative study. This study was conducted in Chhatrapati Shivaji Subharti Hospital, Swami Vivekanand Subharti University Meerut. Each subject received physiotherapy for four weeks and motor performance for functional outcomes was compared between two groups on standard scales: Motor Assessment Scale & Functional Independence Measure. First scoring was done before starting the treatment, next scoring was done at the end of the first week then second week, third week and fourth week.

- CT based evidence of haemorrhagic or ischemic stroke
- Glasgow Coma Scale of 5 or above
- Age 35 and above

- Manifesting with neurological impairments of hemiplegia

Exclusion criteria

- Haemorrhage secondary to trauma or tumour
- Cerebellar, brainstem or subarachnoid haemorrhage.
- Severe cognitive impairment.
- Evidence of severe preexisting physical or mental disability

DATA ANALYSIS

The data was analyzed using statistical tests for 35 subjects. The data collected on forms were transferred to master chart. Two sample t-test with equal variance was used to compare functional outcomes on motor assessment scale and functional independence measure. The chi-square test was used to compare sex ratio, side of cerebrovascular accident, diabetes, hypertension, coronary artery disease, habit history and family history. The age, size of lesion and initial Glasgow Come Scale level were compared with t-test. The level of significance selected for the study was $p < 0.05$. The software programme used was SPSS 13.

RESULTS

The study included 35 subjects 19 of Group I (ischemic) and 16 of Group II (haemorrhagic) to compare their functional outcomes during acute stage. The results are as discussed below.

	Group I	Group II
Number of Patients	19	16
Sex male/female	13/6	9/7
Age (years)	54.05	60.69
Side right/left	7/12	10/6
Size of lesion	8.05	6.22
Initial GCS score	13.26	13.19
Diabetes (pr/ab)	2/17	3/13
Hypertension (pr/ab)	7/12	11/5
Coronary artery disease (pr/ ab)	4/15	1/15
Habit (pr/ ab)	10/9	2/14
Family history (pr/ ab)	2/17	2/14

Level of significance was taken $p < 0.05$
 NS= non-significant
 GCS= Glasgow coma scale

Table 1 - Results on Motor Assessment Scale (Total)

Group	Zero week		First Week		Second Week		Third Week		Fourth Week		Mass Gain	
	Mean (SD)	P value	Mean (S.D.)	P valve	Mean (SD)	P valve	Mean (SD)	P value	Mean (SD)	P value	Mean (SD)	P value
I	17.16 (9.9)	NS	25.32 (1.3)	NS	31.89 (12.48)	NS	37.74 (11.83)	NS	41.68 (10.35)	NS	24.53 (7.64)	*
II	15.06 (9.5)		24.81 (11.86)		31.13 (9.98)		38.31 (8.73)		45.94 (6.94)		30.88 (10.24)	

Significant at $p < 0.05$
 NS- Non Significant

Graph 1 Group Wise Mean Values of Motor Assessment Scale (MAS) Scores over 4 weeks period of study

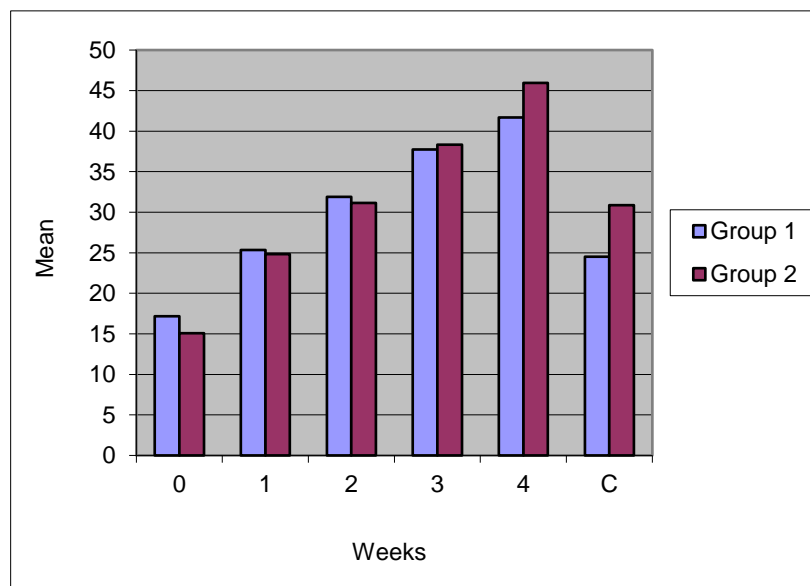


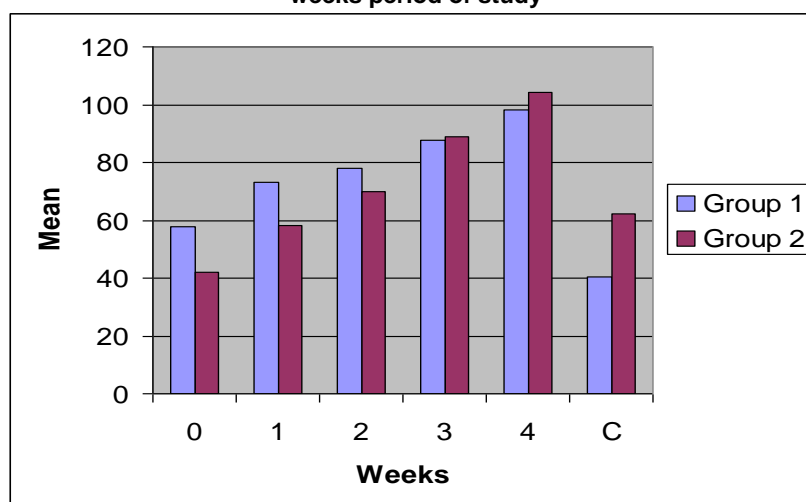
Table 2 - Results on Functional Independence Measure (Total))

Group	Zero week		First Week		Second Week		Third Week		Fourth Week		FIM Gain	
	Mean (SD)	P value	Mean (S.D.)	P value	Mean (SD)	P value	Mean (SD)	P value	Mean (SD)	P value	Mean (SD)	P value
I	57.7 (27.8)	NS	73.1 (34.2)	NS	78 (32)	NS	87.6 (33.2)	NS	98 (32)	NS	40.4 (25.7)	*
II	42.1 (16.7)		58.3 (25.5)		69.8 (24.3)		88.8 (24.3)		104 (24)		62.2 (23)	

Significant at $p < 0.05$

NS- Non Significant.

Graph 2 - Group Wise Mean Values of Functional Independence Measure (FIM) – Total scores over 4 weeks period of study



Group1-Ischemic

Group2-Haemorrhagic

DISCUSSION

The purpose of this study was to compare the functional outcomes in ischemic & hemorrhagic stroke patients in acute stage. The results of this study show that hemorrhagic group improved better than the ischemic group. In this study Functional Independence Measure & Motor Assessment Scale were used to measure functional outcome of patients. The hemorrhagic group showed greater gains on MAS as well as Functional Independence Measure, although both groups showed consistent improvement.

J. martin fabregas, R Belvis et al stated outcome following the amount of tissue destruction in intracranial hemorrhage is mainly related with mass effect of hematoma rather than any increase in level of intracranial pressure.¹⁴

In our study patients of hemorrhagic group had greater impairment on MAS at admission than the ischemic group. However by the second week both groups showed no difference in impairment level mean for hemorrhagic group and by end of fourth week hemorrhagic group improved more. The functional level was less for hemorrhagic group at the time of admission, for ischemic mean, however at the end of fourth week patients of hemorrhagic group improved more functionally than ischemic group. The mechanisms for initial neurologic deficit from intracerebral hemorrhage may be because of compressed brain tissue versus tissue infarction. As the hematoma resolves, neurologic functions returns. Because hemorrhages rarely occur at the same site, these patients make excellent neurologic and functional recovery.

Short term survival in haemorrhagic group was worse than ischemic-3 died in haemorrhagic and 2 in ischemic. Many individuals were in unconscious state in haemorrhagic group who later did not survive and were excluded from our study. Antonio Carolei et al in 1997 described that fatal events occurred early after stroke onset in all stroke types. Patients with intracerebral hemorrhage had a lower survival than patients suffering subarachnoid hemorrhage or cerebral infarction¹⁵. Differences in survival among stroke type persist until the end of the first year of follow up.

Keday et al study showed no differences in the functional recovery related to the nature of stroke. Rose F. C. et al stated that the stroke survivors may have better degree of recovery after cerebral hemorrhage than after a cerebral infarction, because blood may track between the nerve fibers without destroying them.¹⁶

Peter J. Kelly cited that total admission Functional Independence Measure (FIM) score was higher in patients with cerebral infarction than in patients with intracranial hemorrhage.¹⁷

CONCLUSION

The results of this study show that the haemorrhagic group improved better than ischemic group on MAS scale and FIM scale. The hypothesis stated in the beginning of this study was:

- There is a significant difference in functional outcomes of patients of ischemic

and haemorrhagic stroke on MAS scale during acute stage.

- There is significant difference in functional outcomes of patients of ischemic and haemorrhagic stroke on FIM scale during acute stage.

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