

COMPARING REHABILITATION OUTCOME IN STROKE PATIENTS, PRESENTING WITHIN AND AFTER THREE MONTHS POST STROKE

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ABSTRACT

Objective: To compare rehabilitation outcome in stroke patients, presenting within and after three months post stroke.

Study Design: Quasi experimental study

Place and Duration of Study: This study was carried out at Armed Forces Institute of Rehabilitation Medicine Rawalpindi (AFIRM) from 13th Jan 2010 till 5th May 2011.

Patients and Method: Ninety six stroke patients were enrolled. Rehabilitation plan was devised according to their potentials and problem list. Multidisciplinary team approach supervised by Rehab physician was offered that included physiotherapy, occupational therapy, speech therapy, psychotherapy and use of orthotics. Interventions were also carried out according to the need of patients like Phenol blocks (for focal spasticity, interfering with function), intra articular steroids injections (for joints pain, interfering with function). Rehabilitation interventions were given for three months and Barthel Index was used as outcome measurement. Patients Barthel Index score was documented at first visit and after three months of rehabilitation.

Results: A total of 96 patients were studied as per inclusion criteria. 57(59.38%) patients presented within three months post stroke (Group A) while 39 (40.62%) presented after three months (Group B). Average age of group A was 59.15 years (SD =13.3), while in group B it was 56.69 years (SD =11.7). There were 87.7% males in group A, while in group B males were 66.7%. 50(52.08%) patients had right and 46(47.92%) had left CVA. 66(68.75%) were diagnosed cases of ischemic stroke while 30(31.25%) were having haemorrhagic stroke. Mean initial Barthel index score for Group A was 46.84 while final score after three months of Rehabilitation was 89.82 ($p<0.001$). For Group B mean initial Barthel index score was 63.58 and final score was 68.20 ($p=0.007$). Our interventions showed marked improvement in Group A in term of increased difference in mean initial and final Barthel index scores as compared to group B ($p<0.001$).

Conclusion: Earlier rehabilitation interventions in stroke patients result in better functional outcome as assessed by Barthel index.

Keywords: Stroke, Activities of Daily living, Phenol motor point Blocks, Rehabilitation, Intra articular injections. Quality of life.

INTRODUCTION

Stroke is the commonest neurological cause of morbidity and mortality all over the world. It is third cause of death and leading cause of functional impairments, 15%-30% being permanently disabled¹. True stroke incidence and prevalence is not known in Pakistan, but due to increased prevalence of diabetes, hypertension, ischemic heart disease, dyslipidemia and smoking the burden is assumed to be high².

Stroke leads to different impairments like aphasia, cranial nerves palsies, motor impairments, sensory impairments, balance coordination/postural problems, shoulder dislocation/subluxation, bowel/bladder problems, depression and dependence in activities of daily living³.

Most neurological recovery takes place in the first three months and only minor additional measurable improvement occurs after 6 months of stroke onset⁴. Initiation of early rehabilitation helps in prevention of complications like contractures, spasticity and hence dependence in activities of daily living gets decreased⁵.

In a country like Pakistan where rehabilitative management is least understood

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Received: 18 May 2012; Accepted: 05 Dec 2012

only acute stroke management is given to the patient and patient is discharged with no rehabilitation plan in mind. Due to this, impairments of stroke are not properly managed and hence the burden of disabilities due to stroke increases day by day. This study will highlight the importance of early rehabilitation in stroke patients.

PATIENTS AND METHODS

This quasi-experimental study was carried out at Armed Forces Institute of Rehabilitation Medicine Rawalpindi (AFIRM) from 13th Jan 2010 till 5th May 2011. Ninety six patients were enrolled in the study. Patients of both genders and all ages having either hemorrhagic or ischemic stroke, were included in the study. Stroke patients having previous disability, Parkinsonism and Alzheimer's disease were excluded.

Diagnosed cases of stroke were referred to our stroke rehab clinic from Military Hospital Rawalpindi and the quest was treatment of their hemiplegia. Patients were divided in two groups. Group A included those patients who presented within three months post stroke while group B included patients presented after three months of stroke. Patient informed consent was taken. Detailed history, clinical examination and laboratory investigations were performed. Patient activities of daily living were assessed on Barthel index at first visit and three months after rehabilitation.

Multidisciplinary team approach was designed, led by rehab Physician. Rehabilitation plan was devised according to their potentials and problem list. Rehabilitation interventions offered to the patient were Phenol motor point blocks (for focal spasticity, interfering with function), intra articular steroids injections (for joints pain, interfering with function). Other rehabilitation plans included physiotherapy, occupational therapy, speech therapy, psychotherapy and use of orthotics.

Data analysis

Data had been analyzed using SPSS version 17. Descriptive statistics was used to describe the results. Independent sample T test was applied for comparison of ages and chi-

square test used for comparison of genders. Wilcoxon signed rank test was used for comparing mean initial and final Barthel index scores of each study groups while Mann-Whitney test was applied for comparison of differences in change in mean Barthel index scores of both groups, p value < 0.05 considered as significant.

RESULTS

A total of 96 patients were studied as per inclusion criteria. 57(59.38%) patients presented within three months post stroke (Group A) while 39 (40.62%) presented after three months (Group B).

Average age of group A was 59.15 years (SD =13.3), while in group B it was 56.69 years (SD =11.7), ($p = 0.193$). There were 50 (87.7%) males in group A, while in group B males were 26 (66.7%), ($p < 0.001$).

Fifty(52.08%) patients had right and 46(47.92%) had left CVA. 66(68.75%) were diagnosed cases of ischemic stroke while 30(31.25%) were having haemorrhagic stroke.

Mean initial Barthel index score for Group A was 46.84 while final score after three months of Rehabilitation was 89.82 ($p < 0.001$). For Group B mean initial Barthel index score was 63.58 and final score was 68.20 ($p = 0.007$)(Table-1). Change of Barthel index score from initial to final is statistically significantly higher in group A at the end of three months of comprehensive rehabilitation as compared to group B ($p < 0.001$)(Table-2).

DISCUSSION

When we consider recovery in strokes patients, this recovery may be either neurological or functional. Neurological recovery is defined as recovery of neurological impairments and is often the result of brain recovery/reorganization⁶.

Following stroke there is resolution of oedema and reperfusion of ischemic penumbra. This process is called as early recovery. Second mechanism is central nervous system reorganization also called as later recovery. Process of reorganization is characterized by proliferation of surrounding tissues near to the damaged area or taking over function of

Table-1: Mean barthel index scores for group A and group B.

Group	Mean initial Barthel index score	Mean final Barthel index score	p- value
Group A (n= 57)	46.84 (SD= 26.90)	89.82 (SD= 8.18)	<0.001
Group B (n=39)	63.58 (SD= 24.19)	68.20 (SD= 20.97)	

Table-2: Difference in change of barthel index score from initial to final.

Difference in Barthel index score (Final –initial)	Mean change ± SD	p -value
Group A (n = 57)	43.42 (±24.49)	< 0.001
Group B (n =39)	2.76 (±2.15)	

damaged parts by other brain parts. This process of reorganization is also termed as neuroplasticity⁷.

Functional recovery is defined as improvement in mobility and activities of daily living; it has long been known that it is influenced by rehabilitation. Functional recovery is influenced by neurological recovery but is not dependent on it⁸.

Scoring system has been developed to evaluate the results of rehabilitation. Directly after presentation for rehabilitation at stroke unit there is demand for defining prognosis about mobility and independence in activities of daily living (ADL). In rehabilitation the interest in stroke scales has been aroused from the need of evaluation of functional state (ADL), disability, handicap, quality of life, statement of capacity for work or need of home-care. For evaluation of outcome after rehabilitation the most useful seem to be functional scales (ADL) and quality of life measures (QOL). It is also suitable to mention the scales that evaluate motor function; those functions are the most important task in

poststroke rehabilitation⁹. The following scales are used to measure ADL and QOL: Frenchay Activities Index, Barthel Index, Rankin scale and a set of socio-demographic variables¹⁰.

The most recent clinical practice guidelines (Duncan et al. 2005) endorsed by the American Heart Association recommend that stroke rehabilitation care should be provided by a multidisciplinary team and delivered in a setting which is formally coordinated and organized¹¹.

Improvement in stroke management focuses mainly on patient’s medical stability fibrinolytic treatment for ischaemic strokes and rehabilitation processes. Among these, rehabilitation has the longest therapeutic window, can be applied in both ischaemic and haemorrhagic strokes, and can improve functional outcomes months after stroke¹².

The results from several studies have suggested that stroke rehabilitation is most effective when initiated early¹³. Reviews by Cifu and Stewart (1999) reported a positive correlation between early rehabilitation interventions and improved functional outcomes⁴.

One prospective comparative trial by Paolucci et al. (2000) looked at the outcomes of stroke patients admitted to rehabilitation at differing times following stroke. They found that those stroke patients who received rehabilitation early did better functionally than those whose rehabilitation was delayed¹⁵.

Different studies show that best neurological recovery could be achieved by 11 weeks while some neurological recovery may continue to six months and even one year (5%) post stroke and best ADL function within 12.5 weeks¹⁶. While comparing our results with all these studies we know that both groups (Group A and B) showed significant functional improvement with rehabilitation interventions. If we have a glance on mean initial and final Barthel index score of Group A, we will appreciate that there is big difference in mean initial and final Barthel index score as

compared to Group B, which guide us that Group A showed better functional outcome.

CONCLUSION

Early comprehensive rehabilitation in stroke patient leads to decreased burdens of disability and increased functional independence. This helps not only in alleviating the sufferings of stroke patients but also to make them useful members of society.

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