Original Article

Functional Outcome of Stroke Patients, Correlation with Scandinavian Stroke Scale

Keshav Dev[1], *Mrinal Joshi*[2]

Abstract

Present hospital based prospective study was conducted in Sawai Man Singh Hospital in Jaipur district of Rajasthan state (west part of India) during the year 2008-2009 to know functional outcome of stroke correlation with Scandinavian stroke scale score. Assessment severity of stroke on Scandinavian stroke scale (SSS) score and functional disability on Barthel Index (BI) were neasured. Out of 200 included cases 11 were dropped out and it was found that incidence of stroke in young individual is significantly less than older individual. Hypertension was most important risk factor. Ratio of R: U=1.38: 1, M: F=1.74: 1 and infarction: hemorrhage= 1.32: 1. Metabolic syndrome was a nonsignificant risk factor for women as well as men ($p>0.005$). The correlation between the SSS and on functionally outcome was significant ($p<0.005$).

Key words : **Stroke, Scandinavian stroke scale score, metabolic syndrome.**

Introduction:

Stroke is a major cause of long term disability. Every year a significant number of stroke survivors are left with residual disabilities which interfere in their daily routine and social integration , as it affect not only family but also society as majority of patients are only earning member of family and requiring medical and rehabilitative treatment for better outcome. Rehabilitation after stroke is a continuum, starting within days of stroke onset and ending only when it no longer produces any positive effect. Effective rehabilitation relies on a coordinated, multidisciplinary team approach. Regular team meetings, as well as meeting with the patients, his or her family and cares are essential.

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Materials and Methods:

This prospective study includes two hundred patients admitted to an inpatient stroke rehabilitation programme in department of physical medicine and rehabilitation in Sawai Man Singh Hospital between september 2008 and august 2009. The Sawai Man Singh Hospital is the tertiary care centre in the Jaipur district of Rajasthan state in the west part of India. The diagnosis of stroke was based on clinical assessment supported by CT scanning or MRI. Neurorehabilitation programme was started as early as possible after admission. The usual daily treatment consists of 2 to 3 hours of therapy, based on individual needs and tolerance.Along with neurological examination patients were also evaluated on Scandinavian stroke scale Score (SSSS) for assessment of severity of stroke in initial stage. The SSS evaluates level of consciousness, eye movement, power in arm, hand and leg, orientation, aphasia, fascial paresis, and gait on a total score from 0 to 58. Functional outcome of stroke was measured by Barthel Index (BI).Activity of daily living (ADL) was assessed on admission, weekly until death or ends of rehabilitation and again at the 6- month poststroke examination using the BI. The BI evaluates 10 different

abilities on a score from 0 to 100. According to the BI score functional disabilities was classified into five categories: Very severe disability (0 to 20 points); severe disability (25 to 45 points); moderates disability (50 to 70 points); mild disability (75 to 95 points); no disability (100 points). In our study very severe, severe, moderate disability patients (0 to 70 points) categorise into total and partial dependent (functional deficit) and mild, no disability patients (75 to 100 points) into independent (functional non-deficit) category.

Results:

Eleven patients dropped out due to various reasons, one hundred eighty-nine patients were followed for six months.Sociodemographic Profiles is shown in Table 1. The study showed an increasing frequency of stroke with advancing age excepting after 70 years when there was a decline of cases. Mean age of patients was 58.26 yrs± 2 SD. Ratio of rural to urban background was 1.38: 1.Ratio of male to female was 1.74: 1.

Table 1: ***Sociodemographic Parameter of Stroke Patients***

Parameter	Specific Examples	No. of Patients
Sex	Male Female	127 73
Marital status	Married Unmarried	192 8
Residence	Rural Urban	116 84
Age group	<40yrs 41-55 yrs 56-70 yrs >71 yrs	27 (13.5%) 60 (30%) 83 (41.5%) 30 (15%)
Occupation	Student Housewife Farmer/labourer Retired Service/businessmen	4 (2%) 68 (34%) 64 (32%) 33 (16.5%) 31 (15.5%)
Hand dominance	Right Left	184 16
Occurrence	First Recurrent	177 23

Stroke risk factors, type, motor impairment is shown in Table 2.Ratio of infarction: hacmorrhage = 1.32: 1. With reference to ATP III criteria twenty patients (10%) had metabolic syndrome. In our study population metabolic syndrome was a non-significant risk factor for women as well as in men (p>0.005).Even though the occurrence of metabolic syndrome had non-significant correlation with overall stroke but had significant correlation to ischacmic stroke. Fourteen patients (12.90%) out of one hundred eight ischacmic strokes had metabolic syndrome indirectly a significant correlation.On SSS a score of twenty-two and more direct a good prognosis had all the recruited patients were found on this scale during the initial stage of admission. Tables-3 and 4 show the relation between neurological severity and functionally outcome of stroke patients at initial and six months post-stroke stage. One hundred one had a score of less than twenty -two (53.43%) and eighty-eight had score of more than twenty-two (46.56%); 47 patients out of 189 patients had reached their best possible independent function according to the BI score. However, it cannot be excluded that further improvement may have occurred in some patients after rehabilitation was ended. The correlation between the SSS and rehabilitation functionally was significant (p<0.005). End of this study forty-seven patients recovered to a functional level (24.86%), one hundred two patients were deficit (53.96%), and forty patients were expired (21.16%) (Chart1).

Table 2: ***Descriptive Characteristics of the Stroke Rehabilitation Patients***

	No. of patients	%
Stroke type		
Infarction	108	54%
Hacmorrhage	82	41%
Other	10	5%
Stroke risk factors		
Hypertension	112	56%
Diabetes	18	9%
Smoking	70	35%
Metabolic syndrome	20	10%
Stroke motor impairment		
Left body	80	40%
Right body	116	58%
Both sides	4	2%
Associated symptom at admission		
Dysphasia	164	84%

Table 3: ***Number of Stroke Patients having Neurological Severity (SSS Score) and Functional Disability (BI Score) at the Time of Admission***

SSS score (0 to 58 points)	BI score (0 to 70 points)	BI score (75 to 100 points)	Total
<22	101	0	101
≥22	74	14	88

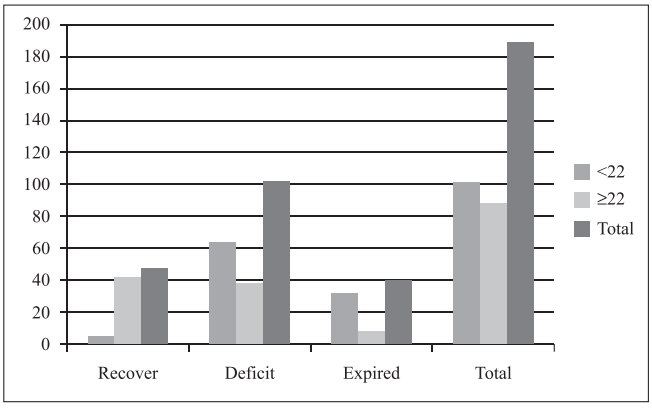
Eleven patients drop out from study.

Table 4: *At Six Month Poststroke Functional Outcome of Stroke Patients, Correlation with Initial Scandinavian Stroke Scale Score*

SSS score	Functional deficit BI score (0-70)	Functional non deficit BI score (75-100)	Expired	Total
<22	64 (63.36%)	5 (4.95%)	32 (31.68%)	101
≥22	38 (43.18%)	42 (47.72%)	8 (9.09%)	88

Eleven patients drop out from study.

Chart 1: *At Six Month Poststroke Outcome of Stroke Patient's, Correlation with Initial Scandinavian Stroke Scale Score*



Chi -Square-49.495 with two degree of freedom p=0.000 (p<.005)

Discussion :

In this study incidence of stroke in young individuals is significantly less than in older individuals; 13.5% patients were <40 years of age and remaining 86.5% patients were above forty. Similar finding were observed by Bharucha *et al*[1] Saha *et al*[2] study that prevalence of stroke increases with age. Our rural and urban background findings were similar to observed by Gourie *et al*[3] study stroke where was higher in rural area compared with urban area.Secondary/ repetitive stroke was present in 11.5% patients, which is near to the figure observed by Razdan *et al*[4] where such cases were 6.6%. As regard to the job working group 49.5%, house hold job done by 34% and retired 16.5%. Liet *at al*[5] in China saw the distribution as working group 80.7%, house hold 15.45% and other 3.7%. We cannot be conclusive regarding the relationship between occupation and stroke as the sample size is to small but it does indicate that most of the patients are from working group and that makes rehabilitation to be the most important component in stroke management. Ischacmia was the most pattern of stroke in our study when is using in the various western studies[1,6.] Hypertension was the most important risk factor which was present in 56% of cases with almost no sexual predominance. Most epidemiological studies[2,4,6-8.] have confirmed that blood pressure is among most important single risk factors of stroke.Along with that 9% (eighteen patients) had diabetes[2,7]. We screened our patients on ATP III criteria[9] validated for metabolic syndrome. Twenty patients (10%) had metabolic syndrome which was a non-significant risk factor either for men or women[10]. Ratio between infarction and hacmorrhage was 1.31. Banerjee and Das[6] found the ratio between infarction and hacmorrhage 2.2:1. SSS score which is valid to regarding prediction of recovery and relation to severity of stroke[11, 12], functional recovery was strongly related to initial stroke severity (SSS score). Best ADL function was reached in patients with initial mild stroke or higher SSS score and poor ADL functional in initial severe stroke or low SSS score [12]. At six months post-stroke the risk of death and dependency was higher in patients with SSS score less than twenty two compare with SSS Score more than twenty-two[11]. In Indian scenario the health system is not linked with community social services and also there is no government funded medicare system. It thus becomes more imperative that stroke survivor is taken in to rehabilitation and should be made as independent functionally as possible with short intensive programme. As soon as the patients enter the community he loses touches with health system and has no community reintegration programmes. This increase the burden of disability on society and community.

Conclusion:

SSS predicts death and dependency in stroke patients. Higher scorer patients had better outcome of stroke at the end of study. Stroke rehabilitation should be taken up with a precise formulated programme which should be short and intensive. Metabolic syndrome and survival age is increasing as India is emerging economically. This poses a challenging due to increase in incidence of stroke and their survival too. Intervention rehabilitation programme with appropriate follow-up so that with large patients group can be included. There is need to more multicentric and large population inclusion for modern policy for stroke rehabilitation in India.

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