Functional Independent Recovery among Stroke Patients at King Hussein Medical Center

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ABSTRACT

Objective: To describe the functional independent recovery and to assess compliance effect to rehabilitation therapy among acute stroke patients at King Hussein Medical Center.

Methods: A total of 100 first time acute stroke (87 ischemic, 13 hemorrhagic) patients aged 60-70 years, who were admitted to King Hussein Medical Centre between June 2006 and June 2007 with acute stroke and at the same time were eligible for rehabilitative care were included in this descriptive study. Data was collected using a specially designed medical abstract form for demographic characteristics, risk factors, functional independent recovery measure, follow-up for six months, and compliance to rehabilitation therapy. Simple descriptive statistics were used to analyze the data.

Results: The results were classified into three groups. Group I: patients who were independent within the first 72 hours (12%). Group II: patients who were independent after six months (53%). Group III: patients who were dependent with variable degrees (28%). Four percent of the patients died during the 6-month follow-up period, and 3% were lost to follow-up. Compliance to rehabilitation therapy was highest among group II (84.9%) however the lowest compliance percentage to rehabilitation therapy was among group III (17.9%). The major causes of non-compliance to rehabilitation were financial, transportation difficulties, and family misconception of the irreversibility of this disease respectively.

Conclusion: A general health care policy is needed in order to improve the compliance of stroke patients to rehabilitation therapy.

Key words: Functional independent measures, Stroke, Rehabilitation outcome

Introduction

Stroke is one of the leading causes of disability[1] and the social and economic burden of stroke is expected to expand. Despite some advances in acute stroke intervention such as tissue plasminogen activator, which had no large impact on stroke-related disability, primarily because this treatment can be offered to only a minority of ischemic stroke survivors.[2] Greater levels of adherence to post acute stroke rehabilitation have been associated with improved patient outcomes.[3,4] There is evidence from European studies, indicating that stroke rehabilitation programs in the post acute period reduce death or dependency.[5,6]

The Rehabilitation Service at King Hussein Medical Center (KHMC) follows the most recent clinical guides for best stroke rehabilitation care. This situation provides the opportunity to assess the

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Table I. The functional independent recovery measure (FIM)

	Admission	Discharge	Follow-Up (6-Months)
Self-Care			
A. Eating			
B. Grooming			
C. Bathing			
D. Dressing-Upper body			
E. Dressing-Lower body			
F. Toileting			
Sphinicter Control			
G. Bladder Management			
H. Bowel Management			
Transfers			
I. Bed, Chair, Wheelchair			
J. Toilet			
K. Tub, Shower			
Locomotion			
L. Walk/Wheelchair			
M. Stairs			
Motor Subtotal Score			
Communication			
N. Comprehension			
O. Expression			
Social Cognition			
P. Social Interaction			
Q. Problem Solving			
R. Memory			
Cognitive Subtotal Score			
Total FIM score			

* If the patient is not testable due to risk, a value of 1 is evaluated.

relationship between processes of stroke rehabilitation care and outcomes. We hypothesized that patients who received the best quality of care as measured by compliance with the stroke rehabilitation guidelines would have better functional outcomes. The purpose of this study was to describe the functional independent recovery and to assess compliance effect to rehabilitation therapy among acute stroke patients at King Hussein Medical Center.

Methods

A total of 100 first time acute stroke (87 ischemic, 13 hemorrhagic) patients aged 60-70 years who were admitted to King Hussein Medical Centre between June 2006 and June 2007 with acute stroke and at the same time were eligible for rehabilitative care were included in this descriptive study. Inpatient rehabilitation was performed from admission day till discharge day, when outpatient rehabilitation commenced for the following six months. Data was collected using a specially designed medical abstract form for demographic characteristics, risk factors, functional recovery independent recovery measure, follow-up for six months, and compliance to rehabilitation therapy. Simple descriptive statistics in the form of means and percentages were used to analyze the data.

During the study period, patients considered candidates for rehabilitation were screened by the treating physicians during their acute stroke admission to confirm diagnosis of stroke (defined as symptoms of rapid onset lasting more than 24 hours and of presumed vascular origin reflecting a focal disturbance of cerebral function, excluding isolated impairment of higher function). The diagnosis was based on clinical assessment (side of hemi paresis, sensory loss, hemianopsia, dysphasia, dysphagia, inattention, impulsivity, or impaired problem solving) supported by Computerized Tomography (CT) or Magnetic Resonance Imaging (MRI).
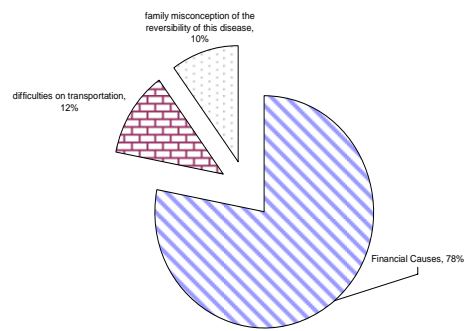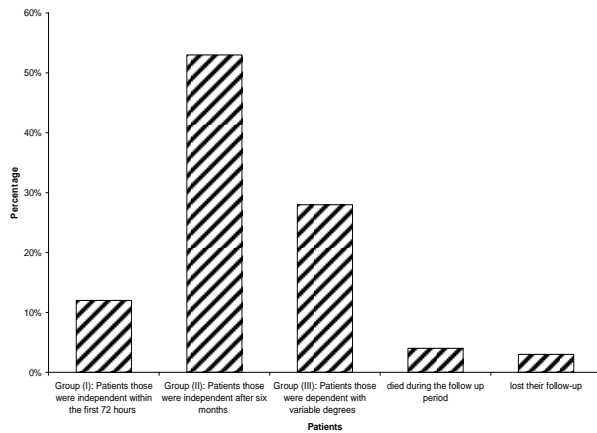
Fig. 1. Stroke patient distribution during the study period

Fig. 2. Main causes of poor compliance to rehabilitation

Table II. Demographic and risk factors among the study group

No. of patients	100
Mean Age	64 (SD±4)
Gender	
Males	64
Females	36
Diabetes mellitus	17
Hypertension	72
Smoking	67
Heart disease	12

Our primary outcome was the functional independent recovery at six months post stroke through physical examination of the patients. Functional status was evaluated by means of the Functional Independence Measure (FIM). FIM scores as shown in Table I was recorded by each patient's treating therapists within 48 hours of admission and discharge. FIM is composed of six sections (self-care, sphincter control, transfers, locomotion, communication, social cognition) with a total of 18 items. The highest achievable score is seven for each item and the maximum total score possible on the tool is 126. The higher the score, the greater the functional independence is. An FIM value more than 110 was considered completely independent in this study.

FIM scores can be represented in three different ways, including a global score (full-scale), two domains (cognitive and motor), and six subscales, including self-care, mobility, locomotion, sphincter, social cognition, and communication. This study specifically used the six subscales scores.

Results

Out of the 100 acute stroke patients in the current study, 93% of them were interviewed at six months post stroke to obtain the study outcome measures.

Demographic and risk factors of the study group is presented in Table II.

The results were classified into three groups as shown in Fig. 1. Group I patients were independent within the first 72 hours, and constituted 12% of the patients. Group II patients were independent after six months, and constituted 53% of the patients. Group III patients were dependent with variable degrees, and constituted 28% of the patients. Four percent died during the follow up period, and 3% were lost to follow up.

Compliance to rehabilitation was studied among patients during the physical examination and through interview with their families. It was found that among group II, there were 45 patients (84.9%) who were adherent to rehabilitation. On the other hand, among group III only five patients (17.9%) were adherent to rehabilitation. The causes of poor compliance to rehabilitation were studied. Fig. 2 shows the main causes of poor compliance with rehabilitation.

Financial causes were the primary cause (78%) and this was accompanied by lack of family caregivers. Difficulties in transportation were the second most common cause (12%) mostly involving patients who were living in a place more than 80 kilometers away from the center with no direct transportation method

available. Family misconceptions of the irreversibility of the disease (10%) were the third most common cause of poor compliance with rehabilitation.

Discussion

Despite this study's limitation of its small sample size, the percentages of patients observed in groups I and II were comparable with other studies,[1,6] however a lower percentage rate of independent recovery was demonstrated in the study conducted by Bagg and colleagues[2] for group III.

An evaluation of 11 published studies reporting estimates of reliability for FIM scores reported acceptable reliability across a wide variety of settings, raters, and patients, and an excellent level of reliability has also been demonstrated. The FIM has good internal consistency and better than average face validity.[2,7]

Stroke unit treatment reduced the relative risk of death within five years after stroke.[8] In the United States, post stroke care in hospitals was proved to be more efficient than rehabilitation in nursing homes.[9] Therefore, the majority of stroke survivors will need rehabilitation services to enhance their recovery and to minimize disability.

In a previous study[3] the average compliance scores in acute and post acute care settings were 68.2% and 69.5%, respectively. After case-mix adjustment, level of compliance with post acute rehabilitation guidelines was significantly associated with FIM scores.[3]

Based on the results obtained in this study, a local health care policy is suggested to be introduced. Previous studies[13] have suggested recommendations such as the delivery of post stroke care in a multidisciplinary rehabilitation setting or stroke unit, early patient assessment via the NIH Stroke Scale, early initiation of rehabilitation therapies, swallow screening testing for dysphagia, an active secondary stroke prevention program, and proactive prevention of venous thrombi. Standardized assessment tools should be used to develop a comprehensive treatment plan appropriate to each patient's deficits and needs. Medical therapy for depression or emotional liability is strongly recommended. A speech and language pathologist should evaluate communication and related cognitive disorders and provide treatment when indicated. The patient, caregiver, and family are essential members of the rehabilitation team and should be involved in all phases of the rehabilitation process.[13]

Stroke is the third leading cause of death and a leading cause of disability in the United States. Globally, it is the second leading cause of death with about 5.7 million deaths world wide, equivalent to 9.9% of all deaths.[14] Therefore, follow up for stroke patients should be done on a routine basis. This, to be successful, will require special emphasis on the importance of rehabilitation to the family caregivers, and offering transportation facilities for each patient.

Conclusion

The majority of the patients were independent within the first six months. Compliance to rehabilitation showed improvement among stroke patients. A general health care policy is needed in order to improve the compliance of stroke patients to rehabilitation therapy.

Further analytical studies with larger numbers of acute stroke patients are needed which consider the use of multivariate analysis for risk factors including diabetes mellitus, hypertension, smoking, and cardiovascular diseases.

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