

The Effects of Rehabilitation Programs on Spinal Cord Injury Patients at Dr. Soetomo General Hospital

Agustina Mufidah, Martha Kurnia Kusumawardani

Department of Physical Medicine and Rehabilitation, Dr. Soetomo General Hospital, Faculty of Medicine, University of Airlangga, Surabaya, Indonesia

Keywords: SCI, Rehabilitation, Barthel Index, Discharge Condition

Abstract: Acute medical management of people with SCI focuses on minimising further neurological damage to the spinal cord and optimising recovery. Dr Soetomo Hospital Surabaya as a referral center in eastern Indonesia often gets referral of patients with spinal cord injury severely cases. This research is a descriptive study. Sample of study were all inpatients who were consulted at the medical rehabilitation, from January 2018 until Desember 2018. All patients received rehabilitation programs while in care (\pm 17,73 days). Level of injury severity of SCI (AIS criteria), changes barthel index (BI) and discharge condition were investigated. There were 1264 inpatients, 166 patients (13,13%) were SCI patients who were consulted at the department of medical rehabilitation. The most cases are caused by tumor 31,32 %, AIS A 37,95%, location of injury at thoracal region 51,20 %. Complications were bladder disturbance at 77 patients, bowel disturbance 74 patients, and ulcus decubitus there were 31 patients, home return rate 68,07% , death 19,28%, and discharge against medical advice 12,6%. From Neurology ward that received rehabilitation programs 68,57% increased Barthel index. Management SCI patients with multidisciplinary teams between neurologi, surgery and rehabilitation department at Dr. Soetomo Hospital can increased barthel index and home return rate.

1 INTRODUCTION

The incidence of Spinal Cord Injury (SCI) in various countries is quite high every year. With the expansion of human activities, the incidence of SCI also increased gradually. The incidence varied from 13.019 per million to 163.420 per million people. Among them, the incidence rates of developed countries ranged from 13.121 to 163.420 per million people. The rates of non developed countries varied from 13.019 to 220.022 per million people . The epidemiology in different regions is of significant difference, which may be resulted from economic, science and technology, medical, geographical and even social conditions (Kang Y et al, 2018).

The most obvious consequence of spinal cord injury (SCI) is paralysis. However, SCI also has widespread consequences for many body functions, including bladder, bowel, respiratory, cardiovascular and sexual function. It also has social, financial and psychological implications, and increases people's susceptibility to late-life renal complications as well as musculoskeletal injuries, pain, osteoporosis and

other problems. Acute medical management of people with SCI focuses on minimizing further neurological damage to the spinal cord and optimizing recovery. Stability of the spine is clearly a priority . Physiotherapy is predominantly focused on treating respiratory complications and preventing secondary musculoskeletal problems related to prolonged bed rest (Lisa, 2016).

In Indonesia, several hospitals have SCI-related treatments in intensive care, surgery, and anesthesiology. Rehabilitation services for people with SCI are provided by well-trained health professionals such as physiatrists, nurses, and allied health professionals (Angela et al, 2017).

Dr Soetomo Hospital Surabaya as a referral center in eastern Indonesia often gets referral of patients with severe cases of spinal cord injury. Team collaboration is needed in dealing with SCI patients. The neurological and surgery department often consults SCI patients to the rehabilitation department to help improve quality of life and

prevent SCI complications. The aim of this study to know that effects of rehabilitation programs to increase the barthel index (increase functional outcome) and to know about discharge condition.

2 METHODS

This research is a descriptive study. Sample of study were all inpatients who were consulted at the medical rehabilitation. The data were obtained through Chat Round reports (Weekly inpatient reports from the surgical and neurological ward) from January 2018 until December 2018.

2.1 Intervention

SCI patients were on average consulted in the rehabilitation department in the acute period. Patients get medication, surgery according to the indication and rehabilitation programs according to their severity. Rehabilitation programs pre and post surgery include : proper positioning to prevent complications from prolonged immobilization such as decubitus and prevent the severity of the disease, rehabilitation for respiratory functions, ROM exercise, complication management such as bladder and bowel management, and prescription orthosis that adapted to the level of injury .

In this study will be noted about the level of spinal cord injury, American Spinal Injury Association Impairment Scale (AIS) classification, causes of SCI, Barthel index before and after getting a rehabilitation programs and discharge condition were investigated.

Table 1: Baseline characteristics

Variable		Frequency (n/%)		Variable		Frequency (n/%)	
Sex	Male	119	71,68%	Level of injury	Cervical	63	37,95%
	Female	47	28,31%		Thoracal	85	51,20%
Age	0-10	2			lumbal	18	10,84%
	11-20	17			Tumor	52	31,32%
	21-30	26			Accident	33	19,88%
	31-40	36			Trauma	50	30,12%
	41-50	33			Spondylitis TB	26	15,66%
	51-60	30			Canal stenosis	1	0,6%
	61-70	18			Transverse myelitis	1	0,6%
71-80	4		unknown		3	1,8%	
Complication	Bladder disturbance	77		AIS	A	63	37,95%
	Bowel disturbance	74			B	42	25,30 %
	Ulcus decubitus	31			C	30	18,07 %
			D		28	16,86%	
			E		3	1,8%	

TB : tuberculosis, AIS : American Spinal Injury Association Impairment Scale

3 RESULTS

Based on the data, there were 1264 inpatients from the department of neurology and surgery, of which 166 patients (13,13%) were SCI patients who were consulted at the department of medical rehabilitation. The numbers of males were always

more than the number of females among 3 : 1, the age of the patients 2 - 77 years old, with the most age in productive age 31-40 years old, most cases of SCI are caused by tumor 31,32 % , most level of SCI are AIS A 37,95% , and most location of injury at thoracal region 51,20 % . Complications at SCI patients were bladder disturbance at 77 patients,

bowel disturbance 74 patients, and ulcus decubitus there were 31 patients (Table 1).

Barthel index before the rehabilitation program tended to be low with an average of 22,07 and after the rehabilitation program experienced a shift to increase by an average 40.07 (figure 1). Discharge condition from surgery and neurological ward are home return rate 68,07% with wheelchair ambulation status, death 19,28%, and discharge against medical advice 12,6% (figure 2).

Patients SCI on average undergo rehabilitation program for 17,73 days. There were 53 patients from

the neurological ward that returned home 35 patients and 18 patients died. From the 35 patients who returned home, 24 patients (68,57%) underwent a complete rehabilitation program and showed increase of barthel index. The other 11 patients (31,43%) who returned forcibly (not medical advice) and did not attend the rehabilitation program completely showed no increase of barthel index (figure 3). In this study we didn't analyze for the significancy the barthel index increasing.

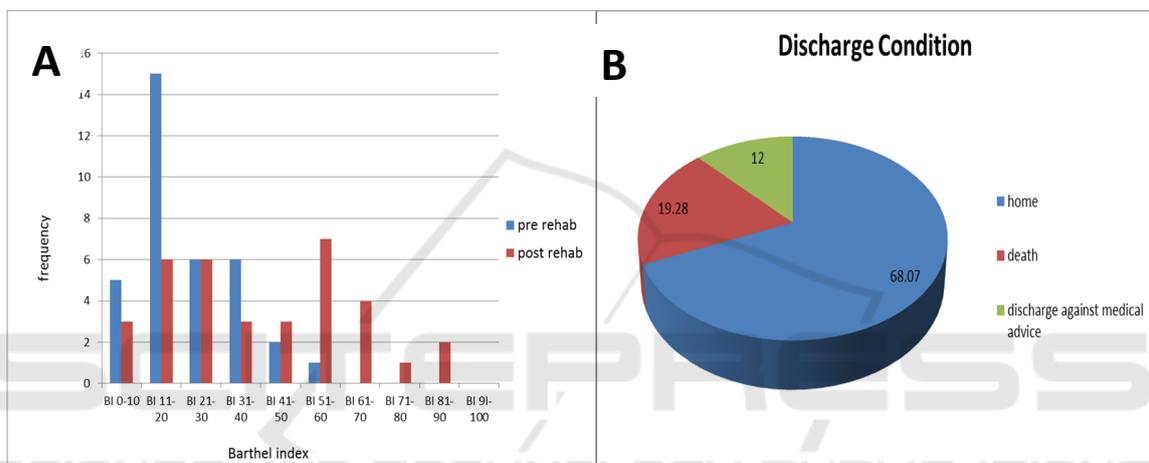


Figure 1: A. Barthel index. B. Discharge Condition.

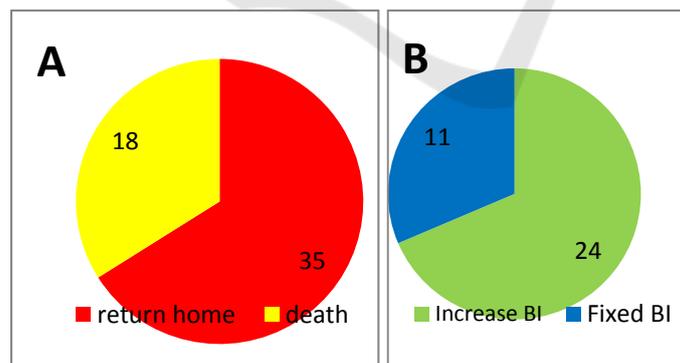


Figure 2: A. Outcome 53 SCI patients from neurological ward. B. Functional status from SCI patients that return home. BI : Barthel index

4 DISCUSSIONS

Patients with SCI have many problems in the society. They have problems with accessibility to travel from home to the outpatient care in assigned hospitals because of lack of facility, money, functional status that depends on others or caregiver (Angela et al, 2017).

Early rehabilitation is important to prevent secondary complication, and to improve functional outcome with independent activities in daily living. Functional outcome can evaluate with barthel index (Kemal et al, 2015 and Michael et al, 2017).

Dr Soetomo Hospital as a referral hospital in eastern Indonesia has a multidisciplinary management team which includes: neurological, surgical, and rehabilitation. SCI patients receive treatment, surgery as indicated and an early rehabilitation program before and after surgery. The patients who participated in the complete rehabilitation program during the treatment, their barthel index were increased compared with patients who discharge against medical advice that did not carry out a complete rehabilitation program, their barthel index tends to stay. Most SCI patients treated can return to their homes in wheelchair ambulation status.

The limitation of this study is the incomplete chatround report, there are not report barthel index from surgical ward. There are no specific data for the increased barthel index items. For the future the chat round report must be make by same format between surgical and neurological division, it can be easy to make a report.

5 CONCLUSIONS

Management SCI patients is therefore complex, involving many healthcare professional. Dr. Soetomo hospital as a referral center have multidicipliner team for threatening SCI patiens. Dr. Soetomo Hospital often gets severe SCI patients, patients with rehabilitation programs completely can increased the barthel index compared with patients who discharge against medical advice that didn't carry out a complete rehabilitation programs. Most SCI patients treated can return to their homes in wheelchair ambulation status.

REFERENCES

- Angela Bibiana Maria Tulaar, MD, PhD, Muhammad Karyana, MD, MPH, Luh Karunia Wahyuni, MD, Anitta Florence Stans Paulus, MD, Damayanti Tinduh, MD, Fitri Anestherita, MD, and Grace Wangge, MD, MSc, PhD, 2017. People with Spinal Cord Injury in Indonesia, Physical Medicine and Rehabilitation Association (PERDOSRI), Pulo Gadung National Institute of Health, Research and Development, Ministry of Health Indonesia, Johar Baru (MK); and Department of Community Medicine, University of Indonesia, Menteng (GW), Jakarta, Indonesia.
- Kang Y, Ding H, Zhou HX, Wei ZJ, Liu L, Pan DY, Feng SQ, 2018. Epidemiology of worldwide spinal cord injury: a literature review,
- Kemal Nas, Levent Yazmalar, Volkan Şah, Abdulkadir Aydın, Kadriye Önes, 2015. Rehabilitation of spinal cord injuries, Department of Physical Medicine and Rehabilitation, School of Medicine, Sakarya University, Korucuk, Sakarya, Dicle University, Erzurum University Mengucek Gazi Training and Research Hospital, Turkey
- Lisa A Harvey, 2016. Physiotherapy rehabilitation for people with spinal cord injuries, John Walsh Centre for Rehabilitation Research, Kolling Institute, Sydney Medical School/Northern, University of Sydney, Australia
- Michael G. Fehlings, MD, PhD, FRCSC, FACS, Lindsay A. Tetreault, PhD, Jefferson R. Wilson, MD, PhD, Brian K. Kwon, MD, PhD, Anthony S. Burns, MD, PhD, Allan R. Martin, MD, Gregory Hawryluk, MD, PhD, and James S. Harrop, MD, 2017. A Clinical Practice Guideline for the Management of Acute Spinal Cord Injury: Introduction, Rationale, and Scope, Toronto Western Hospital, University Health Network, Canada.