



503 - BLADDER MANAGEMENT IN SPINAL CORD INJURY PATIENTS

FROM AN ACADEMIC REFERRAL SPECIALTY HOSPITAL IN BRAZIL

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INTRODUCTION

Spinal cord injury (SCI) is a major health problem due to its physical, psychological, social and economic consequences. Most patients with SCI have neurogenic lower urinary tract dysfunction and may need different treatments to promote adequate bladder emptying. Clean intermittent catheterization (CIC) is an established treatment modality for patients with different forms of lower urinary tract dysfunction who cannot empty their bladders properly. For patients with spinal cord injury (SCI), CIC is recommended as the method of choice to promote bladder emptying. However, discontinuation rates of CIC range from 20 to 52% and the rate of SCI patients performing CIC around the world is close to 50% in most series.^{1,2,3} Reasons for discontinuation may include discomfort during catheterization, complications such as recurrent urinary tract infection or urethral trauma, difficulties to obtain catheters and dependence on caregivers. In Brazil, the use of CIC by SCI patients and the predictors of successful CIC are not known. In this study we present the bladder management options used by a large cohort of patients with SCI and the impact of patient and spinal cord injury characteristics regarding the choice of bladder-emptying methods.

METHODS

We evaluated a consecutive series of 348 patients (295 men and 53 women) with traumatic SCI from an academic referral specialty hospital. This study was approved by the Institutional Review Board of our hospital. Patients agreed to participate after full disclosure of its purposes and written consent was obtained from all participants. All subjects were older than 18 years of age and had SCI for more than one year. Patients were invited to participate when they presented for a routine medical visit with a physiatrist or for a physiotherapy session. The only exclusion criterion was the presence of associated traumatic brain injury with confirmed cognitive impairment. Clinical and epidemiological data such as gender, age, SCI duration, level and completeness of SCI, participation in a rehabilitation program and presence of pressure sores were evaluated. We investigated the method of bladder management in each patient and examined the factors that are associated with adherence to CIC.

DEMOGRAPHIC FEATURES	No. of patients (%)
Age (years)	
Range	17 - 78
Mean	35,2
Gender	
Male	295 (84.7)
Female	53 (15.3)
Method of bladder emptying	
CIC	235 (67.5)
Indwelling catheter	16 (4.6)
Spontaneous voiding	97 (27.9)
Level of SCI	
Cervical	148 (42.5)
Thoracic	160 (46.3)
Lumbar	38 (10.6)
Sacral	2 (0.6)

DEMOGRAPHIC FEATURES	No. of patients (%)
Severity of the injury (ASIA grades)	
ASIA-A	233 (67)
ASIA-B	40 (11.4)
ASIA-C	29 (8.3)
ASIA-D	37 (10.6)
ASIA-E	8 (2.7)
Time of injury (years)	
< 5 years	208 (59.7)
5 - 10 years	81 (23.3)
>10 years	59 (17)
Rehabilitation program	
Yes	320 (92)
No	28 (8)

RESULTS

The mean age at SCI was 35.2 ± 15.0 years. Mean time since SCI was 5.4 ± 5.0 years among men and 7.7 ± 10.6 years among women (p=0.564). Complete neurological SCI (ASIA A) comprised 233 (67.0%) patients. Incomplete lesions were observed in 115 (33.0%) patients. SCI level was cervical in 148 (42.5%) patients, thoracic in 160 (46.3%), lumbar in 37 (10.6%) and sacral in 2 (0.6%). A total of 235 (67.5%) patients were performing CIC as the method of bladder management, 97 (27.9%) used no catheters (maneuvers, condom catheter) and 16 (4.6%) used an indwelling catheter. Compared to the other patients, those performing CIC were younger (37.2 ± 12.9 vs 46.4 ± 15.8; p < 0.001) [Fig1], had shorter time since SCI (4.9 ± 4.3 vs 7.7 ± 8.8; p < 0.001) [Fig 2] and increased prevalence of complete SCI [79.1% vs 41.2%; OR= 5.3, 95% CI 3.28 to 8.62] [Fig 3]. Women and men had similar rates of CIC (64.2% vs 68.1%; p = 0.633) and the level of SCI (cervical vs non cervical) was not associated with the bladder management (p= 0.822). There was a trend towards higher rates of CIC for patients who participated in a rehabilitation program (p= 0.090). [Fig 4]

Figure 1: patients under CIC x other managements, distributed by age

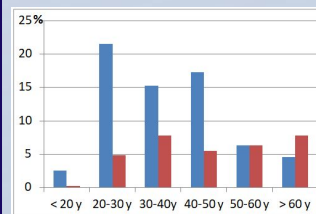


Figure 2: comparison between emptying bladder management by time since lesion.

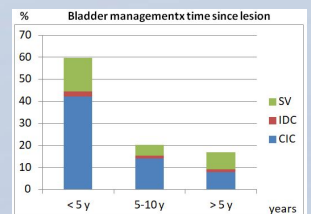


Figure 3: patients divided according to bladder maneuvers and severity of the lesion

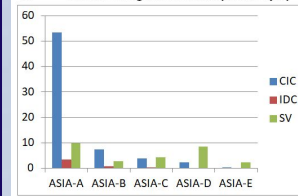
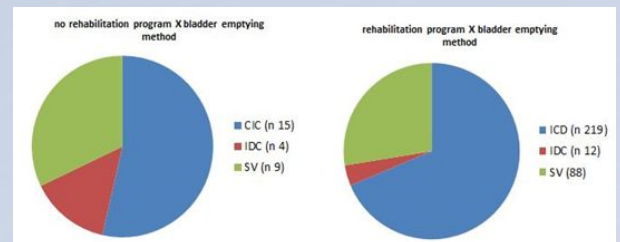


Figure 3: patients divided according to bladder maneuvers and severity of the lesion

Compared to the other patients, those performing CIC had an increased prevalence of complete SCI [79.1% vs 41.2%; OR= 5.3, 95% CI 3.28 to 8.62] (p<0.001). CIC = clean intermittent catheterization, IDC indwelling catheter, SV = spontaneous voiding.

Figure 4: comparison between patients that participated in rehabilitation program and patients that not participated



There was a trend towards higher rates of CIC for patients who participated in a rehabilitation program (p= 0.090). CIC = clean intermittent catheterization, IDC indwelling catheter, SV = spontaneous voiding.

	CIC	non CIC	P value
Age (years)	37.2 ± 12.9	46.4 ± 15.8	< 0.001
Gender (%)			
Male	64.2%	35.8%	0.633
Female	68.1%	31.9%	
Time since SCI (years)	4.9 ± 4.3	7.7 ± 8.8	< 0.001
SCI level (n)			
cervical	99	49	0.822
non cervical	136	64	
SCI severity (% ASIA A)	79.1%	41.2%	< 0.001

CONCLUSIONS

The overall adherence to CIC in our population of SCI patients is one of the highest in the world and the factors associated with it are younger age, shorter time since SCI, having a complete SCI and participation in a rehabilitation program. With time, the rates of CIC decrease among SCI patients.

REFERENCES

- Manack A, Motsko SP, Haag-Molkenteller C, et al. Epidemiology and healthcare utilization of neurogenic bladder patients in a US claims database. *Neurourol Urodyn*. 2011;30:395-401.
- Sacomani, C. A., Trigo-Rocha, F. E., Gomes, C. M., Greve, J. A., Barros, T. E., and Arap, S.: Effect of the trauma mechanism on the bladder-sphincteric behavior after spinal cord injury. *Spinal Cord*, 41: 12, 2003.
- Ku, J. H., Oh, S. J., Jeon, H. G., Shin, H. I., Paik, N. J., Yoo, T. et al.: Sexual activity in Korean male patients on clean intermittent catheterization with neurogenic bladder due to spinal cord injury. *Int J Urol*, 13: 42, 2006.
- Eliza Lamin1 · Diane K. Newman. Clean intermittent catheterization revisited *Int Urol Nephrol* (2016) 48:931–939.
- Cameron AP, Wallner LP, Tate DG, Sarma AV, Rodriguez GM, Clemens JQ. Bladder management after spinal cord injury in the United States 1972 to 2005. *J Urol*. 2010; 184: 213-217.
- Yunliang Gao, Teresa Danforth, and David A. Ginsberg. Urologic Management and Complications in Spinal Cord Injury Patients: A 40- to 50-year Follow-up Study *UROLOGY* 104: 52–58, 2017. © 2017 Elsevier Inc.