

척수재활

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OP3-2-9

The Epidemiologic Study of Spinal Cord Injury Etiology and Complications in Northwest Gyeonggi-do

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Objective

Spinal cord injury (SCI) is a devastating condition resulting in high incidence of morbidity and disability. A study from the United States showed increased incidence of SCI in older patients associated with an increase in falls. Northwest Gyeonggi-do has a certain characteristics of mixed rural and urban population. The purpose of this study was to evaluate epidemiological patterns in age, etiology, and complications of SCI patients in this area.

Methods

Medical records of 289 SCI patients who were admitted to the department of Physical Medicine and Rehabilitation from January 2012 to June 2018 were reviewed. Unlike most studies where “falls” category includes fall off and trip over events, we separated “fall off” and “trip over” into two independent traumatic etiology because we believed each carried different injury mechanisms, occurring in different population.

Results

A total of 268 SCI patients were included after exclusion criteria. 195(72.8%) patients were traumatic SCI, while 73(27.2%) were non-traumatic SCI. Tetraplegia outnumbered paraplegia by 158 to 110. The mean age was 54.4±17.6 years. This was notably higher compared to other recent epidemiologic SCI study data in the country. Non-traumatic SCI was 61.1±14.9 years old, while traumatic SCI was 51.9±17.9 years old. Besides, SCI occurred predominantly in male, and this was significantly more evident in traumatic SCI (84.1%), when compared to non-traumatic SCI (56.2%). In traumatic SCI, the most common etiology was fall off (34.4%), followed by motor vehicle crash (28.2%) and trip over (23.1%). Overall, traumatic SCI patients from trip over (64.4±17.4 years) was significantly older than those from motor vehicle crash (p=0.001), motorcycle accidents (p=0.012), fall off (p=0.001), and diving injury (p=0.001) (Figure 1). Among the 45 tetraplegia caused by trip over, 38 presented with ossification of posterior longitudinal ligament. In non-traumatic SCI, tumor was the leading cause (32.9%). When comparing the distribution of American Spinal Injury Association Impairment Scale (AIS), AIS-D was the most common in both groups, but in traumatic SCI, AIS-A was the second most common, while in non-traumatic SCI, AIS-C followed thereafter (Table 1). When

evaluating the complications in elderly and non-elderly SCI, neuropathic pain was the most common in both groups, but urinary tract infection was significantly more common in age ≥ 65 compared to age < 65 (Table 2).

Conclusion

SCI patients in Northwest Gyeonggi-do was notable for its high mean age compared to other previous epidemiologic study in the country. In addition, the incidence of fall off was greater than motor vehicle crash. As we separated “fall off” and “trip over” into two categories, “trip over” was obviously the dominant etiology in the elderly. Among them, most of the tetraplegia were accompanied by degenerative changes of the spine. This suggests that elderly are at high risk of SCI from minor trauma.

Table 1. Characteristics & Complications in traumatic and non-traumatic spinal cord injury

Characteristics	Etiology		p-value
	Traumatic SCI	Non-traumatic SCI	
Male	164 (84.1)	41 (56.2)	<0.0001
Age (year) \pm SD	51.9 \pm 17.9	61.1 \pm 14.9	<0.0001
AIS			<0.0001
A	67 (34.4)	3 (4.1)	
B	9 (5.0)	1 (1.4)	
C	30 (15.4)	9 (12.3)	
D	89 (45.6)	60 (82.2)	
Total	195 (100)	73 (100)	
Complications	Traumatic SCI	Non-traumatic SCI	p-value
Pressure injury	59 (30.3)	8 (11.0)	<0.0001
UTI	54 (27.7)	13 (17.8)	0.107
Neuropathic pain	132 (67.7)	50 (68.5)	0.901
AH	13 (6.7)	0 (0)	0.024
HO	6 (3.1)	0 (0)	0.130

Values are presented as number (%) or mean \pm standard deviation.

Table 2. Characteristics & Complications in elderly and non-elderly spinal cord injury

Characteristics	Age		p-value
	Age <65	Age ≥65	
Male	139 (76.8)	42 (48.3)	0.001
Traumatic SCI	140 (77.3)	55 (63.2)	0.015
AIS			0.056
A	56 (30.9)	14 (16.1)	
B	6 (3.3)	4 (4.6)	
C	27 (14.9)	12 (13.8)	
D	92 (50.8)	57 (65.5)	
Total	181 (100)	87 (100)	
Complications	Age <65	Age ≥65	p-value
Pressure injury	44 (24.3)	23 (26.4)	0.706
UTI	42 (23.2)	25 (28.7)	0.005
Neuropathic pain	133 (73.5)	49 (56.3)	0.963
AH	8 (4.4)	5 (5.7)	0.636
HO	4 (2.2)	2 (2.3)	0.963

Values are presented as number (%).

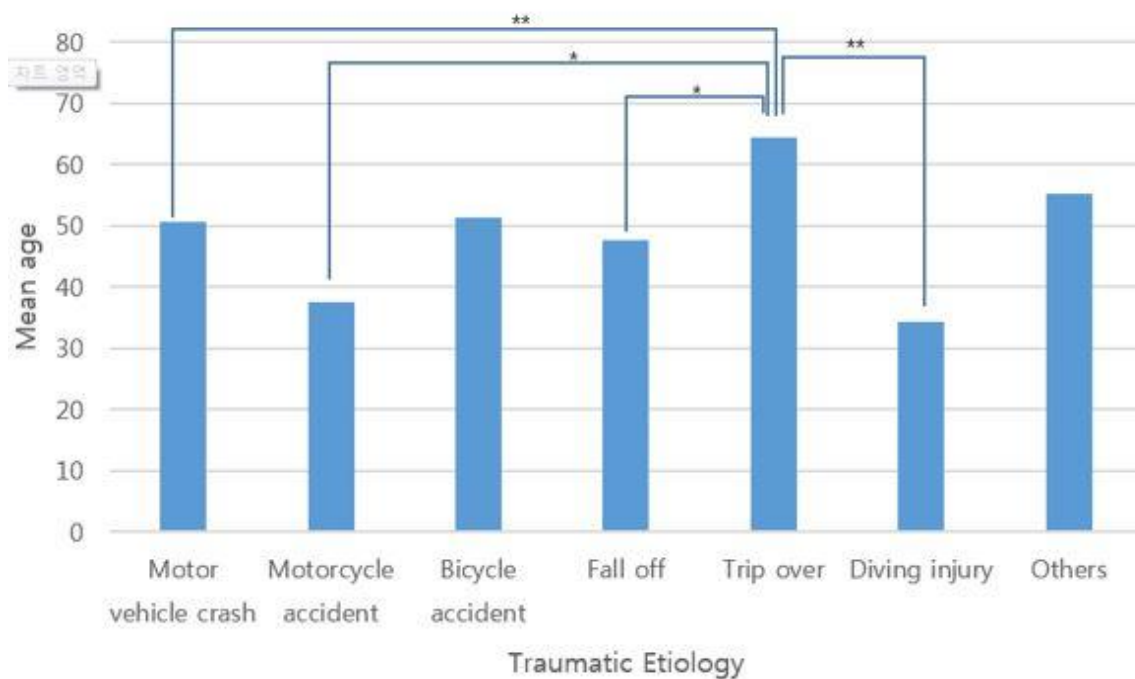


Figure 1. Difference of mean age in traumatic SCI etiology