척수재활

게시일시 및 장소 : 10 월 19 일(토) 08:30-12:30 Room G(3F)

질의응답 일시 및 장소 : 10 월 19 일(토) 11:00-11:30 Room G(3F)

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Skeletal Muscle Mass and Rehabilitative Outcome in Spinal Cord Injury patients

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Introduction

Lean soft muscle mass is an important indicator of the metabolism and functional independence. Muscle atrophy after SCI causes a reduction in metabolic rate, which is closely related to long term complication and functional independence of SCI patients. However, the importance of body composition management in SCI patients has been frequently neglected. Therefore, this study aims to demonstrate the relationship between the level of skeletal muscle mass and functional rehabilitation outcome of SCI patients.

Method

Participants: The medical charts of SCI patients who were admitted to a tertiary university hospital for rehabilitation treatment from June 2016 to March 2018 were reviewed. Patients older than or equal to 18 years of age who were within 6 months after the onset, with available records of initial and follow-up body composition analysis by bioelectrical impedance were included.

Body composition analysis& Outcome measure: Body composition was assessed by a body composition analyzer (InbodyS10, Biospace, Seoul, Korea). The independent variables were weight, height, body mass index (BMI, kg/m2), total skeletal muscle mass (kg), lean mass index (LMI, kg/m2, total skeletal muscle mass divided by height squared), total fat mass (kg), fat mass index (FMI, kg/m2, total fat mass divided by height squared). The outcomes of rehabilitative treatment were assessed using Spinal Cord Independent Measure (SCIM3) and the Functional Independent Measure (FIM).

Statistical analysis: Statistical analyses were performed using IBM SPSS Statistics 25 and considered statistically significant when the p-value was less than 0.05. The initial and follow-up results of SCIM3 and FIM were compared by paired t-test. The Pearson correlation coefficient was calculated among BMI, LMI, FMI, andSCIM3, and FIM scores at admission and prior to discharge.

Result

A total of 127 patients (102 males and 25 females) participated in this study (Table 1). SCIM3 and FIM scores showed significant improvement after rehabilitation treatment (Table 1). Initial and follow-up functional index, SCIM3 and FIM, showed significant correlation with initial BMI and LMI; whereas, no correlation with FMI values (Table 2).

Conclusions

As more initial muscle mass was related with better functional index both initially and at discharge, we carefully assert that the maintenance of muscle mass is important for better outcome of rehabilitative treatment. Further studies with more patients with various features of SCI patients (level, severity and chronicity) are needed to clarify the association between BMI, LMI changes and rehabilitative outcome.

Table 1. Participants' characteristics and rehabilitation outcome

	Admission	Discharge	*P*
Age at injury	51.09±15.66		
Male/Female (%)	102/25(80.3/19.7)		
Height (cm)	168.99±7.81		
Body weight (kg)	64.15±10.14	64.38±9.93	.471
BMI (kg/m2)	22.41±2.81	22.48±2.46	.178
SMM (kg)	26.26±5.08	26.21±5.67	.946
LMI (kg/m2)	9.13±1.30	9.11±1.53	.909
Total fat mass (kg)	15.30±5.76	15.80±6.40	.204
FMI (kg/m2)	5.41±2.15	5.58±2.34	.213
SCIM3	24.16±17.96	33.49±23.72	.000**
FIM	61.24±17.57	70.38±22.79	.000**

Values are mean±standard deviation. BMI, Body mass index; SMM, Skeletal muscle mass, LMI, Lean muscle index; FMI, Fat mass index

**p<0.01, *p<0.05, compared to initial result

Table 2 Correlation between the initial and follow up body composition and functional rehabilitation outcome

	Initial		Follow up	
	SCIM 3	FIM	SCIM 3	FIM
Initial BMI	0.225**	0.445**	0.247**	0.440**
Initial LMI	0.251**	0.445**	0.275**	0.438**
Initial FMI	0.056	0.097	0.055	0.094

BMI, Body mass index; LMI, Lean muscle index; FMI, Fat mass index

**p<0.01, *p<0.05, Values are correlation coefficient r^2