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)

P 3-132

Effects of a walking rehabilitation robot on the sense of balance in patients with SCI

Jung-Eun Lim[1*], Duk Youn Cho[1], Sujeong Lee[2], Haeyoung Kim[2], Seung Hyun Kwon[2], Tayeun Kim[2], Hyejin Lee[2†]

National rehabilitation center, Department of rehabilitation and assistive technology[1], National rehabilitation center, Department of Rehabilitation Medicine[2]

Purpose

Walking training improves posture control, balance, standing, and walking ability of spinal cord injured patients. In some studies, the ability to maintain the balance of the trunk was improved when the gait rehabilitation robot was applied to patients with chronic incomplete spinal cord injury. The purpose of this study was to evaluate the effect of robotic-assisted gait training (RAGT) on the sense of balance in patients with spinal cord injuries.

Method

The study subjects criteria were as follows. 1) Adults aged 19 years or older 2) Less than 2 years of illness 3) Patients with spinal cord injury who are injured C2-T6 4) American Spinal injury Association Impairment Scale(AIS) A-D. The patient underwent RAGT using a Walkbot for 30 minutes, three times a week for 4 weeks, total 12 sessions. The evaluation was conducted before training and after training, and the evaluation lists were static center of pressure(COP) and dynamic COP, modified Sitting Balance Scale(SBS), Korean version of spinal cord independence measure-3 (KSCIM-3).

Result

A total of seven patients were recruited. The static COP measured by opening the eyes showed a decrease in the forward and backward movement, same as COP measured by closing the eyes. In the dynamic COP measurement, the area that can move by itself in all areas is increased, except for the left movement. The SBS evaluation result was improved from 3.57 ± 0.53 to 3.71 ± 0.48 after training, but no significant improvement was observed. The results of KSCIM-3 showed that the 'self-care' item decreased from 12.00 ± 7.57 to 11.85 ± 788, and the 'mobility in the room and toilet' was improved from 7.57 ± 3.99 to 7.71 ± 3.68. The 'mobility indoors and outdoors' was 10.85 ± 10.04 to 9.85 ± 11.06 and the total score decreased from 30.42 ± 19.14 to 29.42 ± 20.64. However, there was no statistically significant difference in all items.

Conclusion

In this study, it was confirmed that the RAGT improves the sense of sitting posture balance in spinal cord injured patients as a whole. Particularly, static COP, which keeps the posture without shaking, showed a decrease in back and forth shaking movements, and dynamic COP which can move maximal by itself improved the ability to move in most directions. However, there was no significant difference between before and after training, and no significant change was found in other clinical evaluations. More patients and RCT studies will be needed to confirm the objective results of RAGT on upper body balance sensation.

Acknowledgment :This research was supported by a grant(NRCTR-IN16001) of the Translational Research Center for Rehabilitation Robots, Korea National Rehabilitation Center, Ministry of Health & Welfare, Korea.