ABSTRACT

BACKGROUND: Clinical studies have shown that after incomplete spinal cord lesions at the thoracic level, patients can develop functional gait patterns through gait training. To date, however, training has been ineffective in producing gait in patients with clinically motor complete spinal cord lesions.

OBJECTIVE: Here we report a patient with chronic motor complete spinal cord injury who regained locomotor function with assistance after intensive gait rehabilitation treatment.

METHODS: A fifteen year old female patient had sustained motor complete spinal cord injury (T6, AIS B) 2 years earlier, with severe bilateral extensor spasticity, and ineffective previous gait training with robotic systems. The therapy consisted of two months of gait training with a robotic system combined with bilateral functional electrical stimulation (FES) of the peroneal nerve, and one month of gait training with a special walker and FES of the left leg and occasionally on the right leg, due to flexor reflex could sometimes be initiated by the patient in the right leg without electrical stimulation. Neurophysiological studies and ten metres test were done.

RESULTS: At the end of training, the patient was able to cover a distance of 200 metres without FES with a walker and assistance from a physiotherapist, who pulled the walker with each step to help her to accomplish effective overground stepping. Motor and somatosensory evoked potentials were absent in the lower limbs.

CONCLUSION: Even after a motor complete lesion with some preservation of sensory pathways, the spinal cord may be able to retain some of its locomotor function through intensive gait rehabilitation.