

Neurological Outcomes of Spinal Cord Injury

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Introduction

Neurological outcomes are commonly determined 72 hours after injury using the ASIA grading system in clinical management of SCI. This time frame has been demonstrated to provide a more accurate assessment of neurological deficits following a SCI. Determining whether the injury was incomplete or full is a key predictor of functional recovery. SCI patients have some spontaneous recovery of motor and sensory capabilities as time passes. The majority of functional recovery occurs in the first three months after injury and, in most cases, reaches a plateau by nine months. Additional recuperation may take up to 12–18 months after the injury. Long-term consequences of SCI are linked to the severity of the main damage, the advancement of secondary injury, and other factors that will be explored in this study.

Description

Patients suffer from paraplegia or tetraplegia, depending on the severity of their SCI. The impairment of sensory or motor function in the lower extremities is known as paraplegia. Patients with partial paraplegia have a good chance of regaining locomotor capacity after a year (76 percent of patients). If the NLI is greater than T9, paraplegic patients, on the other hand, have limited recovery of lower limb function. An NLI of less than T9 is linked to a 38% chance of regaining some lower extremity function. Only 4% of individuals with total paraplegia will recover to an incomplete condition, and only half of these patients will regain bladder and bowel control. Tetraplegia is the loss of sensory or motor function in all four limbs, either partially or completely. Patients with incomplete tetraplegia will recover more quickly than those with complete tetraplegia or paraplegia. [1,2]

In contrast to complete SCI, incomplete tetraplegia recovery frequently occurs at numerous levels below the NLI. Within 9–12 months following an injury, patients usually reach a recovery plateau. A better neurological prognosis is linked to regaining some motor function within the first month after an accident. Muscle flicker (a series of local involuntary muscle contractions) in the lower extremities is very strongly linked to functional recovery. Patients with total tetraplegia frequently regain function at one level below the damage (66–90 percent). In these patients, early muscle strength is a crucial predictor of functional recovery. When their initial muscular strength is 0 on a 5-point scale, complete tetraplegic patients with cervical SCI can restore antigravity muscle function in 27% of cases. When patients have initial muscle strength of 1–2 on a 5-point scale, the rate of restoring antigravity muscle strength at one caudal level below the injury climbs to 97 percent. [3-5]

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Conclusion

In SCI, there is a link between sensory and motor recovery, with spontaneous sensory recovery frequently following the pattern of motor recovery. The maintenance of pinprick sensation in the partial preservation zone or in the sacral segments has been proven to be a reliable predictor of motor recovery. One theory for this link is that pinprick fibres in the lateral spinothalamic tract travel close to motor fibres in the lateral corticospinal tract, and so sensory fibre preservation can be a signal of motor fibre integrity. The diagnosis of an incomplete damage is critical, because failure to detect sensory preservation at the sacral segments leads to an erroneous prognosis evaluation.

Acknowledgement

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Conflict of Interests

None.

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