

Spinal Cord Injury

Types of Spinal Cord Injury

Complete lesion: A lesion to the spinal cord where there is no preserved motor or sensory function below the level of lesion.

Incomplete lesion: A lesion to the spinal cord with incomplete damage to the cord. There may be scattered motor function, sensory function or both below the level of lesion.

Specific Incomplete Lesions

Anterior Cord Syndrome

An incomplete lesion that results from compression and damage to the anterior part of the spinal cord or anterior spinal artery. The mechanism of injury is usually cervical flexion. There is loss of motor function and pain and temperature sense below the lesion due to damage of the corticospinal and spinothalamic tracts.

Brown-Sequard's Syndrome

An incomplete lesion usually caused by a stab wound, which produces hemisection of the spinal cord. There is paralysis and loss of vibratory and position sense on the same side as the lesion due to the damage to the corticospinal tract and dorsal columns. There is a loss of pain and temperature sense on the opposite side of the lesion from damage to the lateral spinothalamic tract. Pure Brown-Sequard's syndrome is rare since most spinal cord lesions are atypical.

Cauda Equina Injuries

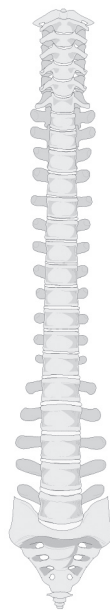
An injury that occurs below the L1 spinal level where the long nerve roots transcend. Cauda equina injuries can be complete, however, they are frequently incomplete due to the large number of nerve roots in the area. A cauda equina injury is considered a peripheral nerve injury. Characteristics include flaccidity, areflexia, and impairment of bowel and bladder function. Full recovery is not typical due to the distance needed for axonal regeneration.

Central Cord Syndrome

An incomplete lesion that results from compression and damage to the central portion of the spinal cord. The mechanism of injury is usually cervical hyperextension that damages the spinothalamic tract, corticospinal tract, and dorsal columns. The upper extremities present with greater involvement than the lower extremities and greater motor deficits exist as compared to sensory deficits.

Posterior Cord Syndrome

A relatively rare syndrome that is caused by compression of the posterior spinal artery and is characterized by loss of pain perception, proprioception, two-point discrimination, and stereognosis. Motor function is preserved.



Potential Complications of Spinal Cord Injury

Autonomic Dysreflexia

Autonomic dysreflexia is perhaps the most dangerous complication of spinal cord injury and can occur in patients with lesions above T6. A noxious stimulus below the level of the lesion triggers the autonomic nervous system causing a sudden elevation in blood pressure. Common causes include distended or full bladder, kink or blockage in the catheter, bladder infections, pressure ulcers, extreme temperature changes, tight clothing, or even an ingrown toenail. If not treated, this condition can lead to convulsions, hemorrhage, and death.

Symptoms: High blood pressure, severe headache, blurred vision, stuffy nose, profuse sweating, goose bumps below the level of the lesion, and vasodilation (flushing) above the level of injury.

Treatment: The first reaction to this medical crisis is to check the catheter for blockage. The bowel should also be checked for impaction. A patient should remain in a sitting position. Lying a patient down is contraindicated and will only assist to further elevate blood pressure. The patient should be examined for any other irritating stimuli. If the cause remains unknown, the patient should receive immediate medical intervention.

Deep Vein Thrombosis (DVT)

Deep vein thrombosis results from the formation of a blood clot that becomes dislodged and is termed an embolus. This is considered a serious medical condition since the embolus may obstruct a selected artery. A patient with a spinal cord injury has a greater risk of developing a DVT due to the absence or decrease in the normal pumping action by active contractions of muscles in the lower extremities. Homans' sign is a special test designed to confirm the presence of a DVT. Prevention of a DVT should include prophylactic anticoagulant therapy, maintaining a positioning schedule, range of motion, proper positioning to avoid excessive venous stasis, and use of elastic stockings.

Symptoms: Swelling of the lower extremity, pain, sensitivity over the area of the clot, and warmth in the area.

Treatment: Once a DVT is suspected there should be no active or passive movement performed to the involved lower extremity. Bed rest and anticoagulant drug therapy are usually indicated. Surgical procedures can be performed if necessary.

Ectopic Bone

Ectopic bone or heterotopic ossification refers to the spontaneous formation of bone in the soft tissue. It typically occurs adjacent to larger joints such as the knees or the hips. Theories regarding etiology range from tissue hypoxia to abnormal calcium metabolism.

