New understanding of nerve damage caused by spinal cord injury could improve treatment design

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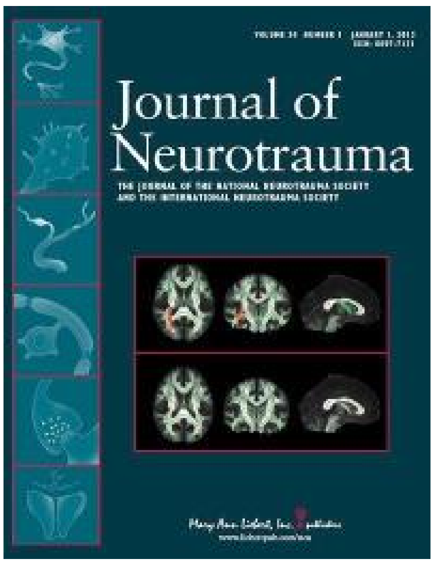

Journal of Neurotrauma is an authoritative peer-reviewed journal published 24 times per year in print and online that focuses on the latest advances in the clinical and laboratory investigation of traumatic brain and spinal cord injury. Credit: ©2013 Mary Ann Liebert, Inc., publishers

More than half of traumatic spinal cord injuries (SCI) in humans are cervical lesions, resulting in chronic loss of limb function. A better understanding of the link between the neurologic damage caused by SCI, spontaneous motor function recovery, and long-term motor deficits would lead to better therapeutic approaches, as discussed in an article in

Journal of Neurotrauma, a peer-reviewed journal from Mary Ann Liebert, Inc., publishers. The article is available free on the *Journal of Neurotrauma* website.

About 70% of human traumatic SCIs are incomplete, but the destruction of critical nerve fibers disrupts the signals normally sent between the brain and spinal cord beyond the site of the injury, resulting in locomotor impairment and paralysis. Elisa López-Dolado, Ana Lucas-Osma, and Jorge Collazos-Castro, Hospital Nacional de Parapléjicos Finca La Peraleda, Toledo, Spain, simulated a C6 partial SCI in adult rats and analyzed their recovery of motor function over four months.

The authors report extensive kinetic, anatomical, and electrophysiological data that demonstrate how the animals compensate for the permanent loss of some motor function. In the article "Dynamic Motor Compensations with Permanent, Focal Loss of Forelimb Force after Cervical Spinal Cord Injury," they propose that a premotoneuronal system in the cervical spine may be involved in the production and chronic nature of limb impairment, which could have important implications for the design of future treatment methods.

"This paper is important to the spinal cord injury field because it provides a comprehensive assessment of motor performance up to four months after cervical spinal cord injury," says Deputy Editor of Journal of Neurotrauma W. Dalton Dietrich, III, PhD, Scientific Director, The Miami Project to Cure Paralysis, and Kinetic Concepts Distinguished Chair in Neurosurgery, Professor of Neurological Surgery, Neurology and Cell Biology at University of Miami Leonard M. Miller School of Medicine, Lois Pope LIFE Center. "Force and kinematic data identifying progressive sensorimotor compensatory processes indicate new targets for therapeutic strategies to promote recovery and repair."

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