



New Insights into the Pathophysiology and Treatment of Spinal Cord Injury: Current and Future Directions

SEMINAR & VISITING SPEAKER SERIES

DATE

Friday, May 5th, 2017
12:00 Noon

LOCATION

Apotex 071

SPEAKER

W. Dalton Dietrich, PhD

Scientific Director, The Miami Project to Cure Paralysis

Departments of Neurological Surgery,
Neurology and Biomedical Engineering,
University of Miami Miller School of
Medicine, Miami

ABSTRACT:

Each year thousands of new spinal cord injuries (SCI) occur throughout the world leading to long-term deficits and serious quality of life issues. Currently, there are millions of people living with the detrimental consequences of SCI that could benefit from reparative strategies to enhance ability and function. Although a large number of exciting preclinical studies have been conducted to test therapeutic interventions, to date no proven therapeutic modality exists that has been demonstrated to significantly improve neurological outcome.

This fact emphasizes the need for continued research on the pathophysiology and treatment of this serious clinical condition. In the area of neuroprotection, our research programs have focused on the beneficial effects of therapeutic hypothermia on reducing multiple secondary injury mechanisms and improving outcomes. Studies conducted in multiple laboratories have now reported that mild reductions in core or spinal cord temperature early after SCI reduce overall histopathological damage and improves long-term functional outcomes. Recently, we have been successful in translating this experimental therapy to severely injured cervical SCI patients using a well described cooling and rewarming strategy. To date, we have cooled over 60 AIS A patients and at 1 year, over 43 percent of patients have converted to incomplete status (AIS B, C). A new randomized multicenter trial to assess the long-term beneficial effects of therapeutic hypothermia on sensory and motor function is now underway. In addition to acute protection, work has also emphasized the use of cell therapies and rehabilitation to improve outcomes by replacing damaged cells or producing a more permissive environment for axonal repair. We have studied the beneficial effects of autologous Schwann cell transplantation in multiple models of SCI. Schwann cell transplantation enhances axonal remyelination, growth promoting factor production and axonal regeneration. We have submitted an IND to the FDA and obtained permission to test autologous human Schwann cell transplantation in SCI. We have completed a dose escalation safety study in subacute patients with severe thoracic SCI. Based on encouraging data, we are now recruiting and transplanting Schwann cells into chronically injured spinal cord subjects that have undergone extensive rehabilitation. In addition, the benefits of neural modulation including transcranial magnetic stimulation that may act synergistically with other treatments are being assessed. Discovery and translational studies continue to provide new knowledge to fuel our future clinical studies and trials. This presentation will review progress in these areas of SCI research and other related topics.

For more information:

T: 204-235-3939

E: Networking@manitobaneuroscience.ca