Edaravone-Based Intervention In Spinal Cord Injury

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Purpose: Traumatic injury to the spinal cord triggers several secondary effects, including oxidative stress and compromised energy metabolism, which play a major role in biochemical and pathological changes in spinal cord tissue. Edaravone is a known neuroprotective potent antioxidant and may strongly scavenge free radicals, protecting against oxidative stress and neuronal apoptosis. Consequently, it may prove to be an effective strategy for therapeutic intervention of spinal cord injury (SCI).

Methods: The proposed study was conducted on 28 subjects of unstable thoracolumbar injuries (according to TLISS [Thoracolumbar Injury Severity Score). Group 1 were controls in which patient did not receive Edaravone and Group 2 were cases where 30 mg Edaravone was given twice a day for 14 days. The subjects were followed for 12 weeks and their neurological status recorded at baseline and at weeks 4 and 12.

Results: Neurological recovery was assessed in terms of Abbreviated Injury Scale (AIS) neurological grading and motor/sensory scores. The recovery was maximum in interventional group Group 2 (cases) in comparison to conventional group Group 1 (controls) at week 4 ($P = 0.001$, $P = 0.02$) and at week 12 ($P = 0.000$, $P = 0.03$).

Conclusion: The protective effects of Edaravone have been reported in studies on SCI in rats and on traumatic brain injury in humans. Since the pathophysiology of brain injury and SCI is quite similar, we hypothesized that Edaravone could be beneficial for treatment in SCI patients also. Edaravone may be involved in the prevention of secondary damage and/or restoration of neurological function in incomplete SCI lesions.