Spinal cord injury outcome

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Level II: the Functional Impairment MeasureTM (FIMTM) is recommended

Level III: the modified Barthel index is recommended [1].

Spinal cord injury (SCI) often results in irreversible and permanent neurological deficits and long-term disability. Vasospasm, hemorrhage, and loss of microvessels create an ischemic environment at the site of contusive or compressive SCI and initiate the secondary injury cascades leading to progressive tissue damage and severely decreased functional outcome.

They have a tremendous impact on individuals, families, and society as a whole, and they frequently require complex long-term multidisciplinary care [2] [3].

There was a small degree of neurologic recovery (between 1 and 5 y postinjury) after a traumatic SCI. Late conversion, between 1 and 5 years, from a neurologically complete to an incomplete injury occurred in 5.6% of cases, but in only up to 2.1% was there a conversion from motor complete to motor incomplete status. Limitations of this study included changes in the ASIA classification during the study and in the intra- and interrater reliability typically seen in longitudinal studies of the ASIA standards. Functional changes were not studied. Knowledge of the degree of late recovery may help in analyzing newer interventions to enhance recovery [4].

There is sparse data regarding the impact of alcohol on in-hospital complications associated with traumatic spinal cord injuries (TSCI).

The National Trauma Data Bank (NTDB) Research Data Set (RDS) version 7.2 (2000-2006) was utilized to gather data between 2007 and 2009.

Extracted cases of TSCI (ICD-9-CM codes 806.xx) without concurrent traumatic brain injury. Outcomes of interest were mortality, length of stay (LOS), ICU days, ventilator days, and complications. Continuous outcomes such as LOS, ICU days, and ventilator days were analyzed using linear regression. Risk adjusted analysis of risk factors for mortality and complication rates were performed using multiple logistic regression. Of the 10,611 persons identified in the NTDB, alcohol was present in approximately a fifth of all cases (20.76%). A majority of TSCI patients were young (mean age 39) Caucasian (65.07%) males (75.93%). Blunt injury was the most common mechanism of injury. The presence of alcohol did not significantly affect mortality or neurological complications. Alcohol in the blood was associated with extended LOS, longer ICU stays, more days spent ventilated, and increased risk of all-type complications. Furthermore, there was a statistically significant association with the presence alcohol and increased risk for pulmonary, pneumonia, DVT/PE, UTI, and ulcer/skin complications. Alcohol intoxication is associated with increased in-hospital morbidity. The significant association with in hospital complications increases health resource utilization after spinal cord injury

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Systematic reviews

A comprehensive search was conducted in Ovid MEDLINE, Embase, Scopus, and Web of Science Core Collection utilizing a combination of keywords. All in-vivo animal studies of acute or chronic spinal cord injury that evaluated the pharmacological effects of Rho/ROCK inhibitors in English literature were included in this study.

A total, of 2320 articles were identified, of which, 60 papers were included for further analysis. A total of 47 (78%) studies were conducted merely on rats, 9 (15%) on mice, 3 (5%) used both, and the remaining used other animals. Y-27632, Fasudil, C3 Transferase and its derivatives (C3-05/PEP-C3/CT04/C3bot154-182/C3bot26mer(156-181)), Ibuprofen, Electroacupuncture (EA), SiRhoA, miR-133b, miR-135-5p, miR-381, miR-30b, Statins, 17β-estradiol, β-elemene, Lentivirus-mediated PGC-1a, Repulsive guidance molecule (RGMa), Local profound hypothermia, Jisuikang (JSK), Hyperbaric oxygen (HBO), Lv-shRhoA (Notch-1 inhibitor), Anti-Ryk antibody, LINGO-antagonist, BA-210, p21Cip1/WAF1, ORL-1 antagonist, Epigallocatechin-3-gallate (EGCG), Tamsulosin, AAV.ULK1.DN, and Indomethacin were the 28 reported agents/procedures with anti-RhoA/ROCK effects. The pooled SMD for BBB scores was 0.41 ($p = 0.048$) in the first week, 0.85 ($p < 0.001$) in the second week, 1.22 ($p = 0.010$) in the third week, and 1.53 ($p = 0.001$) in the fourth week.

Of the 28 identified anti-RhoA/ROCK agents, all but two (C3bot and its derivatives and EGCG) demonstrated promising results. The results of the meta-analysis cautiously indicate a significant increase in BBB scores over time after SCI [6].

Khavandegar et al. (2025) provide a valuable systematic review of RhoA/ROCK inhibitors in Spinal cord injury outcomes, highlighting the potential of various agents in enhancing locomotor function. The study benefits from a comprehensive search strategy and a meta-analysis of functional outcomes. However, limitations such as heterogeneity in included studies, absence of quality assessment, and potential publication bias should be addressed in future research. Moving forward, standardized methodologies and rigorous risk-of-bias evaluations will be essential to strengthen the clinical relevance of these findings.

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