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Cervical Spine Injuries (CSI) and their Association to Blunt Cerebro-Vascular Injuries (BCVI): A Danish Nationwide register-based cohort study.

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Background: Neck and spine trauma are often presented in the Emergency Ward. Blunt cerebrovascular injuries (BCVI) are rare but carry high mortality and morbidity rates if undetected. The vast majority of BCVI remain clinically silent, but early detection and appropriate management of high-risk pat. with BCVIs is crucial to prevent devastating neurological deficits such as posterior circulation stroke or death

Aim: To determine predictors of BCVI in cervical spine injury (CSI)

Methods: Nationwide study in Denmark analyzed data from all 4 Level 1, Traumacenters between 2017-22, identifying CSI and BCVI cases using Abbreviated Injury Scale (AIS). Factors including mean GCS, Injury Severity Score (ISS), age, and gender were explored. Univariate and multivariable logistic regression models were used. OR with 95% confidence intervals (CI) was computed together with means and standard deviation

Results: Age or sex were not significant predictors of BCVI ($p = 0.12$ and $p = 0.65$; OR = 0.86; 95% CI, 0.44-1.66). The presence of any CSI ($p < 0.001$; OR = 26.3; 95% CI = 16.84-41.12) and cervical spine ligamentous injuries ($p = 0.0007$; OR = 5.4; 95% CI = 2.3-12.89) were strong predictive factors. An increase in ISS by one unit significantly correlated with BCVI ($p = 0.001$; OR = 1.03; 95% CI = 1.01-1.05). Fractures involving the atlanto-axial, odontoid, facet subluxations/dislocations and transverse foramen were not independent predictors of BCVI

Discussion: The study establishes a significant link between CSI and BCVI. Notably specific CSI patterns, particularly ligamentous injuries, hold predictive value for BCVI occurrence. Clinically recognizing these patterns are vital in identifying high-risk BCVI pat. Early detection protocols are crucial to prevent devastating neurological outcomes associated with undiagnosed BCVI. Tailored screening and management protocols are warranted to reduce BCVI-related complications post-trauma, potentially reducing severe neurological deficits and fatalities