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Paroxysmal sympathetic storm and the role of beta-blockers in traumatic brain injury: a scoping review protocol

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Introduction: Most cases of paroxysmal sympathetic hyperactivity (PSH) result from traumatic brain injury (TBI). Little is known about its pathophysiology and treatment, and several neuroprotective drugs are used including beta-blockers. The aim of our study is to collate existing evidence of the role of beta-blockers in the treatment of PSH.

Method: We will search MEDLINE, Web of Science, EMBASE, Cochrane, and Google Scholar. The search terms used will cover the following terms: “paroxysmal sympathetic hyperactivity”, “traumatic brain injury” and “beta-blockers.”: No language or geographical restrictions will be applied. Two independent co-authors will screen the titles and abstracts of each article following predefined inclusion and exclusion criteria. If there is a conflict the two reviewers will find a consensus and if they cannot a third co-author will decide.

Using a pre-designed and pre-piloted data extraction form, data from each included citation will be collected (authors identification, study type, TBI severity, type of beta-blockers used, dosage of the drug, clinical signs of PSH, Glasgow Coma Scale, Glasgow Outcome Scale, mortality, morbidity and length of stay). Simple descriptive data analyses will be performed and the results will be presented both in a narrative and tabular form.

Results: The effectiveness of beta-blockers in post-TBI PHS will be evaluated through clinical signs of PHS (increased heart rate, respiratory rate, temperature, blood pressure, and sweating), Glasgow Coma Scale, and Glasgow Outcome Scale, mortality, morbidity and length of stay.

Conclusion: At the end of this scoping review we will design a systematic review with metaanalysis if there are a reasonable number of studies otherwise we will design a randomized controlled trial.