Chronic subdural hematoma systematic reviews

A proposed network meta-analysis aims to provide valuable insights into the optimal surgical strategies and medical treatments for patients with chronic subdural hematoma (CSDH). The complexity of this condition and the ongoing debate about the most effective interventions make such an analysis relevant and potentially impactful for clinical decision-making.

The adherence to the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) guidelines enhances the transparency and methodological rigor of the study. The plan to search a range of comprehensive databases, including both Western and Chinese sources, further ensures a broad representation of the existing literature.

The inclusion criteria, which encompass both randomized controlled trials and non-randomized prospective studies comparing different interventions, reflect a reasonable approach to capturing a wide array of evidence while acknowledging potential limitations in study design.

Quality assessment using established tools such as the Cochrane Collaboration's tool and the Newcastle-Ottawa Scale will provide a systematic evaluation of the included studies, enhancing the reliability and credibility of the analysis.

The choice of primary and secondary outcomes, recurrence rates, and functional outcomes respectively, aligns well with the clinical relevance of chronic subdural hematoma treatment. The consideration of both medical and surgical interventions in the analysis provides a comprehensive view of the available options.

The utilization of network meta-analysis, along with STATA software, offers a robust methodology for synthesizing and comparing various interventions. The assessment of mean ranks and the surface under the cumulative ranking curve provides a quantitative way to compare the effectiveness of different treatments.

Statistical inconsistency assessment, subgroup analysis, sensitivity analysis, and publication bias assessment are prudent steps to address potential sources of heterogeneity and bias, enhancing the robustness and credibility of the findings.

The ethical considerations are appropriately addressed, given that the study is based on published data and does not involve direct interactions with human participants.

The dissemination plan, including the publication of results in a peer-reviewed journal, is in line with best practices for sharing scientific findings.

In conclusion, the proposed network meta-analysis protocol has been well-structured and thought out. If executed with methodological rigor, this study has the potential to provide valuable insights into the comparative effectiveness of different interventions for patients with chronic subdural hematoma. The results could help guide clinical practice and inform treatment decisions for this complex condition [1)].

Henry et al. performed a systematic review and meta-analysis. PubMed/MEDLINE, EMBASE, SCOPUS, and Web of Science were searched from January 01, 2000, to July 07, 2021. The primary outcome was

chronic subdural hematoma recurrence, and secondary outcomes were morbidity and mortality. Component network meta-analysis (CNMAs) were performed for surgical and medical treatments, assessing recurrence and morbidity. Incremental risk ratios (iRRs) with 95% CIs were estimated for each component.

In total, 12 526 citations were identified, and 455 studies with 103 645 cases were included. Recurrence occurred in 11 491/93 525 (10.8%, 95% CI 10.2-11.5, 418 studies) cases after surgery. The use of a postoperative drain (iRR 0.53, 95% CI 0.44-0.63) and middle meningeal artery embolization (iRR 0.19, 95% CI 0.05-0.83) reduced recurrence in the surgical CNMA. In the pharmacological CNMA, corticosteroids (iRR 0.47, 95% CI 0.36-0.61) and surgical intervention (iRR 0.11, 95% CI 0.07-0.15) were associated with lower risk. Corticosteroids were associated with increased morbidity (iRR 1.34, 95% CI 1.05-1.70). The risk of morbidity was equivalent across surgical treatments.

Chronic subdural hematoma recurrence after evacuation occurs in approximately 10% of chronic subdural hematomas, and the various Chronic subdural hematoma surgery interventions are approximately equivalent. Corticosteroids are associated with reduced recurrence but also increased morbidity. Drains reduce the risk of recurrence, but the position of drain (subdural vs subgaleal) did not influence recurrence. Middle meningeal artery embolization is a promising treatment warranting further evaluation in randomized trials [2)].

A study aimed to quantify the heterogeneity of data elements in the pre-operative, operative, and post-operative phases of care, and build the basis for the development of a set of common data elements (CDEs) for CSDH. This systematic review adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement and was registered with the PROSPERO register of systematic reviews (CRD42014007266). All full-text English studies with more than 10 patients (prospective) or more than 100 patients (retrospective) published after 1990 examining clinical outcomes in CSDH were eligible for inclusion. One hundred two eligible studies were found. Only 40 studies (39.2%) reported the main presenting symptom/feature and 24 (23.5%) reported additional symptoms/features. Admitting neurological/functional status was classified by the Glasgow Coma Scale (25 studies; 24.5%), the Markwalder Score (26 studies; 25.5%) and the modified Rankin Scale (three studies; 2.9%). Fifty-four studies (52.9%) made some mention of patient comorbidities and 58 studies (56.9%) reported the proportion or excluded patients on anticoagulant medication. Eighteen studies (17.6%) reported baseline coagulation status. Sixty-four studies (62.7%) stratified or assessed severity based on radiological findings, although the methods used varied widely. There was variable reporting of surgical technique and post-operative care; 32 studies (31.4%) made no mention of whether the operations were performed under general or local anesthetic. This study, a part of the Core Outcomes and Common Data Elements in CSDH (CODE-CSDH) project, confirms and quantifies the heterogeneity of data elements collected and reported in CSDH studies to date. It establishes the basis for the consensus-based development of a set of common data elements, facilitating robust cross-study comparisons and resulting improvements in patient outcomes [3)].

1)
Li Y, Yang X, Zhou H, Hui X, Li H, Zheng J. Comparison of surgical strategies in patients with chronic subdural haematoma: a protocol for a network meta-analysis. BMJ Open. 2023 Aug 18;13(8):e070595. doi: 10.1136/bmjopen-2022-070595. PMID: 37597864; PMCID: PMC10441052.
2)
Henry J, Amoo M, Kissner M, Deane T, Zilani G, Crockett MT, Javadpour M. Management of Chronic

Subdural Hematoma: A Systematic Review and Component Network Meta-analysis of 455 Studies With 103 645 Cases. Neurosurgery. 2022 Dec 1;91(6):842-855. doi: 10.1227/neu.0000000000002144. Epub 2022 Sep 28. PMID: 36170165.
3)

Chari A, Hocking KC, Edlmann E, Turner C, Santarius T, Hutchinson PJ, Kolias AG. Core Outcomes and Common Data Elements in Chronic Subdural Hematoma: A Systematic Review of the Literature Focusing on Baseline and Peri-Operative Care Data Elements. J Neurotrauma. 2016 Sep 1;33(17):1569-75. doi: 10.1089/neu.2015.4248. Epub 2016 Jan 28. PubMed PMID: 26541092.