Presentation Abstracts

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Transcranial doppler in post-cardiac arrest management: a systematic review

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Introduction: Post-cardiac arrest syndrome often involves significant neurological injury, necessitating early and accurate cerebral perfusion assessment to optimize patient management and prognostication. Transcranial Doppler (TCD) offers a non-invasive method for monitoring cerebral blood flow velocities, potentially aiding in the early detection of neurological impairment and guiding therapeutic interventions. **Methods:** A systematic search of PubMed, Scopus, and the Cochrane Library was conducted using keywords such as "transcranial Doppler," "cardiac arrest," and "neurological outcome." Studies were included if they assessed TCD in adult post-cardiac arrest patients, reported on neurological outcomes, and were published in English from 2000 to 2023. Data on study design, patient characteristics, TCD parameters, and outcomes were extracted and analyzed. The Newcastle-Ottawa Scale and Cochrane Risk of Bias Tool were used for quality assessment. **Results:** Out of 652 citations, 15 studies met inclusion criteria, encompassing prospective cohorts, retrospective analyses, and randomized controlled trials. Higher mean flow velocity (MFV) in the middle cerebral artery (MCA) was significantly associated with favorable neurological outcomes, with a pooled odds ratio of 3.21 (95%CI=2.05-5.02). Prospective cohort studies demonstrated higher sensitivity (0.85; 95%CI=0.75-0.92) and specificity (0.78; 95%CI=0.67-0.86) compared to retrospective analyses. Variability in TCD protocols affected results, with standardized protocols yielding more consistent findings. **Conclusion:** TCD is a promising tool for predicting neurological outcomes in post-cardiac arrest patients. Prospective studies and standardized protocols enhance its predictive utility. Further large-scale prospective trials and standardized methodologies are necessary to confirm these findings and integrate TCD into routine clinical practice for improving post-cardiac arrest patient outcomes.