Evaluation of the corrected carotid flow time and the inferior vena cava collapsibility index in predicting post-spinal anesthesia hypotension in geriatric patients

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Abstract

Background: Hypotension following spinal anesthesia is frequent and can cause serious mortality or morbidity effects. Two commonly used parameters for evaluating the volume status of critically ill patients are the inferior vena cava collapsibility index and the carotid artery flow time.

Aim: to compare the efficacy of the ultrasonographic assessment of the corrected carotid flow time with that of the inferior vena cava collapsibility index in predicting post-spinal anesthesia hypotension in geriatric patients.

Methods: We conducted a prospective observational study at Fayoum University Hospital. We included 282 geriatric patients who underwent elective surgeries. Our primary outcome was receiver operating characteristic (ROC) under the curve with the best cut-off of the value of the corrected carotid flow time and IVC collapsibility index in predicting PSAH in geriatric patients.

Results: ephedrine requirement and fluid administration were significantly higher in patients with post-spinal anesthesia hypotension (PSAH). While heart rate remained comparable between groups, MAP was higher preoperatively in the PSAH group but significantly lower post-spinal injection. No significant differences were found between corrected carotid flow time (CFTc) and inferior vena cava collapsibility index (IVC-CI) values in predicting PSAH. ROC analysis indicated neither CFTc nor IVC-CI as significant predictors.

Conclusion: Our study found that neither CFTc nor IVC-CI were reliable predictors of PSAH in geriatric patients. Preoperative MAP emerged as a significant factor, emphasizing the importance of baseline hemodynamic evaluation. While CFTc and IVC-CI have demonstrated utility in other clinical contexts, their role in predicting PSAH in the elderly appears limited.

Clinical trial registration: Clinical Trials.gov, NCT0575953, unique protocol ID; D316

Keywords: Spinal anesthesia, Inferior vena cava, post-spinal anesthesia hypotension, corrected carotid flow time, geriatric patients