

A025 A Comparative Evaluation of Effects of Desflurane and Sevoflurane Anesthesia on Emergence Characteristics and Early Postoperative Cognitive Function after Neurosurgical Procedures

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Introduction: Early emergence and cognitive recovery after neurosurgery not only allows better postoperative neurological assessment but also expedites patient's functional recovery. Sevoflurane and desflurane, with low blood:gas and fat:blood partition coefficients have been found to allow rapid return to awareness and ability to obey commands. The present study was conducted to compare the postoperative recovery profiles and early cognitive dysfunction between sevoflurane and desflurane in neurosurgery.

Methodology/Description: After the institutional ethics committee's permission and a written valid informed consent, the study was conducted on 60 patients aged 18 to 65 years of either sex undergoing craniotomy under general anesthesia. Patients were randomly divided into two groups of 30 patients each receiving desflurane or sevoflurane. Recovery characteristics like time to eye opening, obeying commands, hand squeeze, tracheal extubation, and orientation to place and person were recorded. Early cognition was assessed using short orientation memory concentration test (SOMCT), digit symbol substitution test (DSST), and the Trieger dot test (TDT) preoperatively and then after 30, 60, and 90 minutes postoperatively.

Statistical: Analysis (SPSS 15) Intergroup hemodynamics, recovery characteristics were analyzed using unpaired *t*-test. Paired *t*-tests and Mann-Whitney were used for intragroup hemodynamics, intra and intergroup cognitive function. A *p*-value < 0.05 was considered significant.

Results: Recovery times were statistically higher in sevoflurane as compared with desflurane (*p* = 0.000). Cognitive function tests at 30 and 60 minutes postoperatively showed significantly lower scores for sevoflurane than desflurane group in SOMCT and DSST (*p* < 0.05). Both the groups achieved their baseline values at 90 minutes. For the TDT, sevoflurane group showed significantly more number of dots missed (30 minutes, *p* = 0.007; 60 minutes, *p* = 0.003) and more line-dot distance as compared with desflurane (30 and 60 minutes, *p* = 0.000). Three patients in sevoflurane group could not perform the TDT postoperatively. No group reached baseline values at 90 minutes.

Conclusion: Although desflurane and sevoflurane both provide rapid emergence, desflurane was associated with earlier return of orientation and faster cognitive recovery in neurosurgical patients.

Keywords: emergence characteristics, postoperative cognitive recovery, sevoflurane, desflurane

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A026 Does Manipulating Cardiac Output and Blood Pressure Cause Associated Parallel Change in Cerebral Blood Flow in Patients of Traumatic Brain Injury?

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Aim: To study changes in cerebral hemodynamics following augmentation of blood pressure (BP) and cardiac output in patients of traumatic brain injury.

Methodology/Description: After institutional ethics committee clearance and informed consent, this prospective and observational study was performed on 30 adult traumatic brain injury patients admitted to ICU and requiring pharmacological support to manage BP. Cardiac hemodynamic parameters were recorded by a noninvasive cardiac monitor (NICOM). MCA flow velocity was recorded on both sides using transcranial Doppler. Autoregulation was assessed bilaterally using THRR. BP augmentation was performed using noradrenaline infusion to achieve systolic arterial pressure augmentation of 20% and 40% of the baseline. All observations were repeated subsequently once target BP is achieved after initiation of vasopressor therapy. Linear mixed effect model was used for assessing the time course change between variables.

Results: The hemodynamic variables (SBP, MAP, and HR), NICOM variables (CO, CI, and SVI) and TCD variables (mean flow velocity and pulsatility index) showed significant changes over all the time points (*p* < 0.001). Regression model showed a significant prediction of ipsilateral (estimate = 0.27) and contralateral mean flow velocity (estimate = 0.141) by MAP (*p* < 0.001 for both) and ipsilateral mean flow velocity (estimate = 1.5) by cardiac output (*p* < 0.008).

Conclusion: Use of vasopressor therapy to improve systemic hemodynamics (BP and cardiac output) augmented cerebral blood flow when assessed with transcranial Doppler, in patients of traumatic brain injury irrespective of autoregulation status.

Keywords: NICOM, MCA, vasopressor therapy

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