Utility of the Pleth Variability Index in predicting anesthesia-induced hypotension in geriatric patients.

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Abstract

Background/aim: Anesthesia-induced hypotension may have negative consequences in geriatric patients. Therefore, predicting hypotension remains an important topic for anesthesiologists. Pleth Variability Index (PVI) measurement provides information about the fluid status and vascular tonus of patients. In this study, the ability of the Pleth Variability Index to predict hypotension after general anesthesia induction was evaluated.

Materials and methods: PVI values obtained from pulse oximetry were recorded, in addition to preoperative standard anesthesia monitoring. The correlation between the PVI value and mean arterial pressure (MAP), systolic arterial blood pressure (SAP) changes, and the power of PVI values to predict the incidence of hypotension after anesthesia induction (>20% MAP decrease) was tested.

Results: Eighty patients over 65 years of age who were operated under general anesthesia were included in the study. Hypotension was observed in 20 patients (25%). PVI values were mild and positively correlated with MAP changes (r = 0.195 and P = 0.041). According to receiver operating characteristic (ROC) analysis, the incidence of hypotension increased in patients with PVI values above 15.45%. We also found the following diagnostic results for PVI value for predicting hypotension: P = 0.044 and area under the ROC curve of 0.651 ± 0.073 (95% confidence interval (CI): 0.507–0.794), 40% sensitivity, 80% specificity, a PPV of 40%, an NPV of 80%, a cut-off value of 15.45, a positive likelihood ratio of 2, a negative likelihood ratio of 0.75, and a Youden Index of 0.2.

Conclusion: Predicting hypotension in geriatric patients is an important issue for anesthesiologists. As an easily applicable test, the Pleth Variability Index is useful in predicting MAP reduction in patients. This practical technique can be used routinely in all geriatric patient groups.