Evaluation of pleth variability index for predicting hypotension during induction of anesthesia in surgical patients

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Objective

To evaluate the ability of pre-anesthesia pleth variability index (PVI) in supine and passive head raising (PHR) position at 30° for predicting hypotension during induction of anesthesia.

Methods

From September 2012 to October 2013, 106 patients scheduled for elective surgery under general anesthesia at Third Hangzhou Municipal Hospital with American Society of Anesthesiologists I - II were recruited. Pre-anesthesia values of blood pressure, heart rate, perfusion index, PVI in supine position and PHR at 30° were recorded. The minimum arterial blood pressure and minimum heart rate during anesthesia induction were recorded.

Results

Blood pressure and heart rate significantly decreased after induction. And the decline ratio of diastolic arterial blood pressure and mean arterial blood pressure were moderately correlated with pre-anesthesia PVI at 30° PHR position with Pearson’s coefficients of 0.492 and 0.463 respectively. The receiver-operating characteristic curve demonstrated that pre-anesthesia PVI in PHR at 30° position could predict hypotension during induction with a sensitivity of 67% and a specificity of 62% whereas pre-anesthesia PVI in supine position was non-reliable in predicting hypotension.

Conclusion

Pre-anesthesia PVI in PHR at 30° position may predict hypotension during induction with an acceptable accuracy. And this procedure is probably helpful for assessing high-risk patients susceptible to severe hypotension during induction.