

Predicting hypotension during anaesthesia: variation in pulse oximetry plethysmography predicts propofol-induced hypotension in children.

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BACKGROUND: The development of hypotension on administration of intravenous propofol is common, and independently associated with adverse outcomes.

Identifying patients with a high risk for anesthesia-induced hypotension may help anesthesiologists prepare for such an event.

AIM: The authors hypothesized that propofol-induced hypotension is predictable by variables related to fluid responsiveness and investigated such variables to determine the factors which can predict hypotensive events.

METHODS: Patients 3-6 years of age who underwent general were included. Intravenous midazolam 0.1 mg kg⁻¹ was administered as premedication, and preoperative noninvasive blood pressure, heart rate, perfusion index, pleth variability index and respiratory variation of pulse oximetry plethysmographic waveform were measured. Intravenous propofol 2.5 mg kg⁻¹ was given, and blood pressure was measured 5 times at 1-min intervals. Subjects with significant hypotension (mean blood pressure decrease \geq 20%) were allocated to the hypotensive group; those without significant hypotension were allocated to the relatively normotensive group.

RESULTS: Of 77 patients, 50 (64.9%) developed significant hypotension. Patients in the hypotensive group exhibited significantly higher respiratory variation of pulse oximetry plethysmographic waveform (mean difference 11 (3.3) [95% confidence interval 4.9-18.1]; P=0.001] and higher pleth variability index [mean difference 7.1 (2.8) [95% confidence interval 1.6-12.6]; P=0.013] than the normotensive group. The areas under the receiver operating characteristic curve for respiratory variation of pulse oximetry plethysmographic waveform and pleth variability index were 0.722 and 0.649, respectively.

CONCLUSION: High preoperative respiratory variation of pulse oximetry plethysmographic waveform and pleth variability index were both independently associated with propofol-induced hypotension in children.