**Assessment of the effect of rapid crystalloid infusion on stroke volume variation and pleth variability index after a preoperative fast.**

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OBJECTIVE: Stroke volume variation (SVV) during controlled mechanical ventilation is a useful predictor in response to volume expansion, and pleth variability index (PVI), a novel algorithm allowing for automated and continuous calculation of the respiratory variations in the pulse oximeter waveform amplitude, can also predict fluid responsiveness non-invasively in mechanically ventilated patients. The aim of this study was (1) to determine whether acute fluid infusion affects SVV and PVI, and (2) to compare the two values in the case of acute fluid infusion after a preoperative fast following general anesthesia induction.
METHODS: After tracheal intubation, the patients' lungs were mechanically ventilated. Subjects were anesthetized using sevoflurane and were given a rapid, constant-rate infusion of crystalloid (500 ml in 15 min). Systolic arterial pressure (SAP), diastolic arterial pressure (DAP), heart rate (HR), cardiac output (CO), cardiac index (CI), SVV, and PVI were measured at baseline and after 250 and 500 ml had been infused, and these values were compared.
RESULTS: SAP, DAP, CO, and CI were unchanged after the infusion. HR and SVV decreased significantly after the infusion. SVI increased significantly after the infusion. There was a significant difference in PVI only between the post 250 ml and post 500 ml infusions.
CONCLUSIONS: A rapid infusion of 250-500 ml of a crystalloid in nearly healthy subjects who had fasted overnight returned their SVV to within the normal range. In such cases, SVV is a more sensitive predictor of fluid responsiveness than is PVI, and the infusion gradually increased SVI.