

Stroke Volume Variation and Pleth Variability Index to Predict Fluid Responsiveness during Resection of Primary Retroperitoneal Tumors in Hans Chinese

Fu Q., Mi W.D., Zhang H. *Biosci Trends*. 2012 Feb;6(1):38-43.

Respiration variation in arterial pulse pressure (ΔPP) and pulse oximetry plethysmographic waveform amplitude (ΔPOP) are accurate predictors of fluid responsiveness in mechanically ventilated patients. We hypothesized that stroke volume variation (SVV) and pleth variability index (PVI) can predict fluid responsiveness in mechanically ventilated patients during major surgical procedures in Hans Chinese.

This prospective study consisted of fifty-five Hans Chinese patients undergoing resection of primary retroperitoneal tumors (PRPT). During the surgical procedures, hemodynamic data [central venous pressure (CVP), cardiac index (CI), stroke volume index (SVI), SVV, and PVI] were recorded before and after volume expansion (VE) (8 ml•kg⁻¹ of 6% hydroxyethyl starch 130/0.4). Fluid responsiveness was defined as an increase in SVI \geq 10% after VE.

Four patients were excluded from analysis for arrhythmia or obvious hemorrhage during VE. Baseline SVV correlated well with baseline PVI and the changes in SVV was correlated with the changes in PVI ($p < 0.01$) after VE. There were significant increases of CI, SVI and decreases of SVV, PVI in responder (Rs) after VE. ROC results showed that the areas for SVV, PVI were significantly higher than the areas for CI, MAP, CVP, PI ($p < 0.05$). The best threshold values to predict fluid responsiveness were more than 12.5% for SVV and more than 13.5% for PVI in the real surgical setting.

The baseline value of SVV, and PVI correlated significantly with volume-induced changes in SVI ($p < 0.01$). Both SVV and PVI could be used to predict intraoperative fluid responsiveness during resection of PRPT in Hans Chinese.