

Plethysmographic Variability Index does not Predict Fluid Responsiveness in Cardiac Surgery Patients.

Fischer M.O., Rebet O., Lecrivain V., Gérard J.L., Hanouz J.L., Fellahi J.L. *EJA* 2012; 29: May 2012 Supplement. Abs 799.

Background and Goal of Study

Plethysmographic variability index (PVI) has been proposed as a novel tool to predict fluid responsiveness in mechanically ventilated patients. Because of abrupt changes in vasomotor tone, the use of PVI in critically ill patients remains controversial. We hypothesized that PVI would be reliable in predicting fluid responsiveness in patients having undergone cardiac surgery.

Materials and Methods

Thirty-two consecutive adult patients were prospectively enrolled at the admission to the intensive care unit following conventional cardiac surgery. Four sets of measurements were recorded for each patient: at baseline; after passive leg raising; at return to baseline; and after fluid challenge. Transpulmonary thermodilution was used to define the positive response to fluid challenge as an increase in cardiac index of at least 15%. The correlation between PVI and arterial pulse pressure variation (PPV) was determined by linear regression. To assess the discrimination of PVI and PPV in predicting fluid responsiveness, ROC curves were computed with ROCAUC and their 95% confidence interval (CI) and used to describe the gray zones for both PPV and PVI by defining three classes of response: negative, inconclusive and positive.

Results and Discussion

Nine (30%) patients received a continuous infusion of norepinephrine and 18 (60%) patients were responders to fluid challenge. We found a significant moderate relationship between absolute values of PPV and PVI ($r = 0.60$; $P < 0.001$) which increased after removal of patients receiving norepinephrine ($r = 0.73$; $P < 0.001$). ROCAUC for both PVI and PPV to predict fluid responsiveness were 0.61 [95% CI: 0.40-0.82] and 0.71 [95% CI: 0.51-0.91]; $P=0.356$, respectively. The PVI gray zone ranged from 12 to 24%, including 70% of the study population while the PPV gray zone ranged from 9 to 20%, including 67% of the study population.

Conclusions

PVI cannot predict fluid responsiveness in patients having undergone conventional cardiac surgery.