

Stroke volume and arterial pressure fluid responsiveness in patients with elevated stroke volume variation undergoing major vascular surgery: a prospective intervention study

Fischer A, Menger J, Mouhieddine M, Seidel M, Edlinger-Stanger M, Bevilacqua M, Brugger J, Hiesmayr M, Dworschak M. *Journal of Cardiothoracic and Vascular Anesthesia*. 2022 Nov 25. doi: 10.1053/j.jvca.2022.11.028

Objectives: Identification of potential hemodynamic indicators to increase the predictive power of SVV for MAP and SV fluid responsiveness

Design: Prospective intervention study

Setting: Single-center university hospital

Participants: 19 patients during major vascular surgery with 125 fluid interventions

Interventions: When SVV $\geq 13\%$ occurred for more than 30 seconds, 250 ml of Ringer's lactate were given within 2 minutes.

Measurements and Main Results: Hemodynamic variables, such as pulse pressure variation (PPV) and dynamic arterial elastance (Edyn), were measured by pulse power wave analysis. The outcomes were MAP and SV responsiveness, defined as an increase of at least 10% of MAP and SV within 5 minutes of the fluid intervention. 48% of the fluid interventions were MAP responsive and 66% SV responsive. Addition of PPV and Edyn cut-off values to the SVV cut-off decreased sensitivity from 1 to 0.66-0.82 and concomitantly increased specificity from 0 to 0.66-0.82 for prediction of MAP and SV responsiveness in our study setting. The area under the ROC curve (AUROC) of PPV and Edyn for prediction of MAP responsiveness were 0.79 and 0.75, respectively. The AUROC for PPV and Edyn to predict SV responsiveness were 0.85 and 0.77, respectively.

Conclusions: PPV and Edyn showed good accuracy for prediction of MAP and SV responsiveness in patients with elevated SVV during vascular surgery. PPV or Edyn may be used in conjunction with SVV to better predict MAP and SV fluid responsiveness in patients undergoing vascular surgery.