

Masimo® Plethysmograph Variability Index as a Tool for Assessment of Fluid Responsiveness in Elective Major Abdominal Surgeries

Ahmed M. Essam, Mohamed Z. Ali, Mohamed A. Maher, Ali M. Mokhtar, Sohila H. Omar, Hossam H. El-Sabae and Mohame British Journal of Medicine and Medical Research, ISSN: 2231-0614, Vol.: 16, Issue.: 2d H. Hafez.

This study was designed to determine whether PVI, measured using finger co-oximetry is an efficient predictor of fluid responsiveness in low-risk patients undergoing elective major abdominal surgery.

Subjects and Methods: 60 ASA I-II patients of either sex, 25-60 years old, undergoing major abdominal surgery were enrolled in this study. A Masimo® Radical-7 Pulse Co-Oximeter probe & a Cardio Q TED probe were applied to each patient. In all patients, a fluid bolus of 500 ml of 130/0.4 tetrastarch colloid solution was administered rapidly via pressurized IV infusion. Maintenance & deficits were calculated routinely. If the SV decreased by 10%, a 250-mL bolus of colloid was given via fast infusion. Patients' demography, TED-derived measurements: (SV & Flow Time corrected (FTc)), Masimo®-derived measurements: (PVI & PI), HR and MAP were all collected and statistically analyzed. Measurements were done at five minutes post-induction T1, Ten minutes after volume expansion (500 ml colloid) T2, If the SV decreased by 10%, (guided by TED) T3, Then 250 ml colloid is given. Ten minutes after a 250-ml colloid bolus T4.

Results: A significant difference was found in FTc, SV, PI & PVI in T1 vs. T2 & T3 vs. T4 ($P=0.001$). There was a significant difference in PI & PVI between responders & non-responders for the 1st bolus ($P<0.05$) and in SV & PVI in subsequent boluses ($P<0.01$). There was no significant difference between percent changes of SV and PVI at T3 & T4.

Conclusions: Plethysmograph Variability Index (PVI) measured by Masimo® Co-Oximeter is an efficient predictor of fluid responsiveness as SV measured by TED in low risk patients undergoing elective major surgery.