

Abstract

Fluid infusion is a critical first-line therapeutic intervention for enhancing cardiac output and organ perfusion in patients experiencing acute circulatory failure. However, only approximately 50 % of intensive care patients are fluid responsive, meaning they respond to fluid administration with a significant increase in cardiac output (CO). Additionally, hypervolemia has been shown to increase both morbidity and mortality in critically ill patients. Except in cases of clear hypovolemia, fluid responsiveness should be routinely assessed before fluid expansion. Despite their widespread use in clinical practice, static parameters of preload, such as central venous pressure or pulmonary artery occlusion pressure, predict fluid responsiveness poorly. Dynamic parameters and tests, such as pulse pressure variation or passive leg raising, provide much higher accuracy but are burdened with significant limitations that reduce their reliability or even prevent their use in many clinical settings, emphasizing the usefulness of a combination of different tests. The aim of our study was to test some of the less explored parameters for the prediction of fluid responsiveness in patients after myocardial revascularisation surgery. In the first phase, we assessed the reliability of end-expiratory (EEOT) and end-inspiratory occlusion tests (EIOT) in sedated, mechanically ventilated patients. The second phase focused on the internal jugular vein dimensions and collapsibility (IJVC) evaluated with ultrasound in spontaneously breathing patients. Fifty-seven patients were included in the first phase of the study, fifty-four in the second. The changes in cardiac index (CI) were evaluated using uncalibrated pulse contour analysis. Both respiratory occlusion tests and IJV collapsibility showed low predictive values for fluid responsiveness in our study. After a combined EEOT and EIOT, a cut-off point for CI change of 16.7% predicted fluid responsiveness with a sensitivity of 61.8%, specificity of 69.6% and ROC AUC of 0.59. As for IJVC, a cut-off point of 20 % predicted fluid responsiveness with a sensitivity of 76.5 % and specificity of 38.9 %, ROC AUC 0.55. Our results do not support the routine use of these tests for predicting fluid responsiveness in patients after myocardial revascularisation surgery.