Pulse Pressure Variation to Predict Fluid Responsiveness in Critically Ill Patients: a Systematic Review and Meta-analysis - Preliminary Results

Tema: Medicina

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INTRODUCTION Fluid therapy is a cornerstone in the management of patients with shock; however, fluid overload has been consistently associated with worse outcomes in critically ill patients. OBJECTIVE To conduct a systematic review and meta-analysis of dynamic tests used to assess fluid responsiveness, aiming to identify and rank the most accurate methods. METHODS This study followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines. A comprehensive search was performed in PubMed and COCHRANE databases. Two reviewers independently screened titles and abstracts, with disagreements resolved by a senior author. Prospective studies were included based on the following criteria: adult ICU patients (either mechanically ventilated or spontaneously breathing); use of any dynamic test to assess fluid responsiveness; a validated reference standard definition of responsiveness; and reporting of diagnostic accuracy data with sufficient methodological detail for risk of bias assessment. A meta-analysis comparing different methods was performed. Due to heterogeneity, separate network meta-analyses for ventilation subgroups were not feasible. Instead, direct pairwise meta-analyses were conducted within each subgroup. RESULTS Seventy-one test descriptions were included, comprising 6,221 patients (mean age 62 years). Pulse pressure variation (PPV) was the most frequently studied test. In spontaneously breathing patients, pooled sensitivity was 0.67 (95% CI: 0.51–0.79) and specificity 0.89 (0.75–0.95), with a partial AUC of 0.635 and I^2=0%. In mechanically ventilated patients, sensitivity was 0.80 (0.76–0.84) and specificity 0.83 (0.80–0.85), with a partial AUC of 0.831 and low heterogeneity (I^2=3.7–5.7%). CONCLUSION This is the largest synthesis to date comparing dynamic bedside tests for fluid responsiveness in critically ill adults. PPV showed good diagnostic performance, particularly in mechanically ventilated patients.