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Effect of preoperative fluid therapy on hemodynamic stability during anesthesia induction

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Abstract

Introduction: Preserved perfusion pressure during induction of anesthesia is crucial to avoid perioperative complications. Standardized anesthesia methods, alert fluid therapy and vasoactive drugs may contribute to maintain adequate hemodynamic circumstances thorough the induction procedure. Fluids are commonly used to increase venous return (VR) and/or compensate decreased level of VR caused by anesthetics.

In this randomized study (DNR 2016/361-31, ClinicalTrials.gov Identifier NCT03394833), we hypothesized that a preoperative volume bolus based on lean body weight could preserve mean arterial pressure during both target controlled infusion of anesthesia (TCI) and rapid sequence induction of anesthesia (RSI) in non-cardiac, non-morbidly obese surgery.

Main outcome measures: Blood pressure drop (BPD) below 65 respective 55 mmHg, levels of mean arterial blood pressure during first 20 minutes after induction of anesthesia.

Methods: 80 individuals scheduled for non-cardiac surgery were anesthetized by TCI or RSI, and randomized for a preoperative colloid fluid bolus of 6 ml/kg lean body weight.

Results: There was no difference in hemodynamic stability between the anesthesia methods. BPDs were more common in both groups without preoperative fluids compared to those who had received a pre-induction fluid bolus, $p < 0.001$. Pre-induction fluid management decreased the incidence of BPDs five-fold. No correlation was shown between BPDs and increasing age, medication, hypertension, diabetes, renal failure or low physical capacity.

Conclusions: Preoperative fluid bolus decreased the incidence of significant blood pressure drops during TCI and RSI induction of anesthesia. No correlation was shown between BPDs and patient demographics.