INTRODUCTION: Advanced hemodynamic monitoring using transpulmonary thermodilution (TPTD) is established for measurement of cardiac index (CI), global end-diastolic volume index (GEDVI) and extra-vascular lung water index (EVLWI). TPTD requires indicator injection via a central venous catheter (usually placed via the jugular or subclavian vein). However, superior vena cava access is often not feasible due to the clinical situation. This study investigates the conformity of TPTD using femoral access. METHODS: This prospective study involved an 18-month trial at a medical intensive care unit at a university hospital. Twenty-four patients with both a superior and an inferior vena cava catheter at the same time were enrolled in the study. RESULTS: TPTD-variables were calculated from TPTD curves after injection of the indicator bolus via jugular access (TPTDjug) and femoral access (TPTDfem). GEDVIfem and GEDVIjug were significantly correlated (rm = 0.88; P< 0.001), but significantly different (1,034 +/- 275 vs. 793 +/- 180 mL/m²; P< 0.001). Bland-Altman analysis demonstrated a bias of +241 mL/m² (limits of agreement: -9 and +491 mL/m²). GEDVIfem, Clfem and ideal body weight were independently associated with the bias (GEDVIfem-GEDVIjug). A correction formula of GEDVIjug after femoral TPTD, was calculated. EVLWIfem and
EVLWj jug were significantly correlated (rm = 0.93; P < 0.001). Bland-Altman analysis revealed a bias of +0.83 mL/kg (limits of agreement: -2.61 and +4.28 mL/kg). Furthermore, Clfem and Cljug were significantly correlated (rm = 0.95; P < 0.001). Bland-Altman analysis demonstrated a bias of +0.29 L/min/m² (limits of agreement -0.40 and +0.97 L/min/m²; percentage-error 16%). CONCLUSIONS: TPTD after femoral injection of the thermo-bolus provides precise data on GEDVI with a high correlation, but a self-evident significant bias related to the augmented TPTD-volume. After correction of GEDVIfem using a correction formula, GEDVIfem shows high predictive capabilities for GEDVj jug. Regarding CI and EVLWI, accurate TPTD-data is obtained using femoral access.