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Titel des Beitrags: Pulmonary vascular permeability index and global end-diastolic volume: are the data consistent in patients with femoral venous access for transpulmonary thermodilution: a prospective observational study.

Abstract: Transpulmonary thermodilution (TPTD) derived parameters are used to direct fluid management in ICU-patients. Extravascular lung water EVLW and its ratio to pulmonary blood volume (pulmonary vascular permeability index PVPI) have been associated with mortality. In single indicator TPTD pulmonary blood volume (PBV) is estimated to be 25% of global end-diastolic volume (GEDV). A recent study demonstrated marked overestimation of GEDV indexed to body-surface area (BSA; GEDVI) when using a femoral central venous catheter (CVC) for indicator injection due to the additional volume measured in the vena cava inferior. Therefore, a correction formula derived from femoral TPTD and biometric data has been suggested. Consequence, one of the commercially available TPTD-devices (PICCO; Pulsion Medical Systems, Germany) requires information about CVC site. Correction of GEDVI for femoral CVC can be assumed. However, there is no data if correction also pertains to unindexed GEDV, which is used for calculation of PBV and PVPI. Therefore, we investigated, if also GEDV, PBV and PVPI are corrected by the new PICCO-algorithm. In this prospective study 110 triplicate TPTDs were performed within 30 hours in 11 adult ICU-patients with PICCO-monitoring.
and femoral CVC. We analyzed if the femoral TPTD correction formula for GEDVI was also applied to correct GEDV. Furthermore, we compared PVPl displayed to PVPl calculated which was calculated as EVLWdisplayed / (0.25 * GEDVdisplayed). Multiplication of GEDVdisplayed by BSA resulted in GEDVcalculated which was not significantly different to GEDVdisplayed (1459 ± 365 mL vs. 1459 ± 366 mL) suggesting that correction for femoral indicator injection also pertains to GEDVdisplayed. However, PVPl displayed was significantly lower than PVPl calculated (1.64 ± 0.57 vs. 2.27 ± 0.72; p< 0.001). In addition to a bias of -0.64 ± 0.22 there was a percentage error of 22%. Application of the correction formula suggested for GEDVI to PVPl displayed reduced the bias of PVPl displayed compared to EVLW/PBV from -0.64 ± 0.22 to -0.10 ± 0.05 and the percentage error from 22% to 4%. Correction for femoral CVC in the PiCCO-device pertains to both GEDVdisplayed and GEDVcalculated, but not to PVPl displayed. To provide consistent information, PVPl should be calculated based on GEDVcorrected in case of femoral CVC.

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