**Accuracy of cardiac output measured by fourth-generation FloTrac and LiDCOrapid and their characteristics regarding systemic vascular resistance in patients undergoing cardiac surgery**

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Objective: The clinical use of less invasive devices that calculate cardiac output from arterial pressure waveform is increasing. We aimed to evaluate the accuracy and characteristics of the systemic vascular resistance index (SVRI) of the cardiac index measured by two less invasive devices, fourth-generation FloTrac (CIFT) and LiDCOrapid (CILR), compared with the intermittent thermodilution technique using a pulmonary artery catheter (CITD).

Design: Prospective observational study.

Setting: Single University Hospital.

Participants: Twenty-nine adult patients undergoing elective cardiac surgery.

Interventions: Elective cardiac surgery.

Measurements and Main Results: Hemodynamic parameters, CIFT, CILR, and CITD were measured after the induction of general anesthesia, at the start of cardiopulmonary bypass, after completion of weaning from cardiopulmonary bypass, 30 min after weaning, and at sternal closure (135 measurements in total). CIFT and CILR had moderate correlations with CITD (r = 0.62 and 0.58, respectively). Compared with CITD, CIFT and CILR had a bias of −0.73 and −0.61 L/min/m2, limit of agreement of −2.14 to 0.68 L/min/m2 and −2.42 to 1.20 L/min/m2, and percentage error of 39.9% and 51.2%, respectively. Subgroup analysis for evaluating SVRI characteristics showed that the percentage errors of CIFT and CILR were 33.9% and 54.5% in low-SVRI (<1200 dyne•s/cm5/m2), 37.6% and 47.9% in moderate-SVRI (1200–1800 dyne•s/cm5/m2), 49.3% and 50.6% in high-SVRI (>1800 dyne•s/cm5/m2), respectively.

Conclusions: The accuracy of CIFT or CILR is not clinically acceptable for cardiac surgery. Fourth-generation Flotrac was unreliable in high-SVRI. LiDCOrapid was inaccurate across a broad range of SVRI and minimally affected by SVRI.