

## Effects of vasodilation on cardiac output measured by PulseCO

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**Background:** The instability of cardiac output (CO) measured by PulseCO (LiDCO Ltd.) during cardiac surgery has been reported. In the present study, we investigated the effects of vasodilation by prostaglandin E1 (PGE1) on the relation between cardiac output measured by PulseCO and that by thermodilution.

**Methods:** Twenty patients who underwent off-pump coronary artery bypass grafting (OPCAB) were enrolled in this study. After premedication with oral diazepam 10 mg, anesthesia was induced with midazolam, fentanyl and vecuronium. CO was measured after anesthesia induction, at PGE1 0.01, 0.02 and 0.04 microg/(kg min) and at 15 min after the stop of the infusion.

**Results:** Systemic vascular resistances (SVRs) by PGE1 at 0.02 and 0.04 microg/(kg min) were significantly lower than the control value. The correlation coefficient (R<sup>2</sup>) between the two techniques at each point, percentage error and limits of agreement (bias +/-2SD of bias) were 0.78, 3, 0.05 +/- 0.17 at 0.01 microg/(kg min), 0.20, 10, -0.18 +/- 0.12 at 0.02 microg/(kg min), 0.46, 28, -0.50 +/- 0.24 at 0.04 microg/(kg min) and 0.97, 1, 0.02 +/- 0.27 L/min at 15 min after stop of infusion, respectively.

**Conclusion:** PulseCO might underestimate CO compared to that by bolus thermodilution method when simply decreasing the SVR by infusion of PGE1. Therefore, PulseCO might be unsuitable in cardiac surgery.