Postoperative continuous non-invasive cardiac output monitoring on the ward: a feasibility study

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Postoperative hypotension is common (occurring in one third of patients) and is associated with worse clinical outcomes. The LiDCO CNAP (continuous non-invasive arterial pressure) device measures haemodynamics but has not been widely adopted in ward environments. Improved early detection of hypotension by CNAP might guide interventions to improve clinical outcomes. We aimed to find the proportion of patients who tolerated LiDCO CNAP for 12 h postoperatively, to unmask episodes of hypotension detected by continuous monitoring and to characterise the haemodynamic profile at the time of hypotension. In this feasibility study, patients undergoing major elective surgery were continuously postoperatively monitored using CNAP. Haemodynamic data gathered from CNAP, including nSVRI (nominal systemic vascular resistance index), nSVI (nominal stroke volume index), SVV (stroke volume variation) and blood pressure, were analysed using Microsoft Excel and GraphPad Prism 8. 104 patients (age (mean ± sd): 68 ± 14, male (56%)) had CNAP sited postoperatively. 39% tolerated the CNAP device for at least 12 h. Within the 104 patients a mean of 81.2 min of hypotension detected by CNAP was not detected by usual care. The proportion of low/normal/high nSVI was 71%, 27% and 2%, nSVRI was 43%, 17% and 40%, respectively. CNAP monitoring was not tolerated for 12 h in the majority of patients. There were many episodes of hypotension unmasked through continuous monitoring. Based on the advanced haemodynamic data provided it is possible that the underlying cause of a third of postoperative hypotensive episodes is vasodilation rather than hypovolaemia.