

## **Biphasic cardiac output changes during onset of spinal anaesthesia in elderly patients**

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**Background and objective:** In most studies of cardiac output changes after spinal anaesthesia, the time-resolution is limited. The aim of this study was to demonstrate cardiac output changes with high time-resolution during onset of spinal anaesthesia in elderly patients.

**Methods:** We investigated 32 patients aged 60 yr scheduled for elective lower limb surgery. Fourteen received concurrent cardiovascular medication. Cardiac output was measured every 10 s using a pulse wave algorithm derived from the radial artery pressure curve, after calibration with lithium chloride (LiDCOplus). Data collection ended when the patients were ready for surgery, or if ephedrine was given to raise the mean arterial pressure.

**Results:** Cardiac output increased initially reaching a maximum after a mean of 7 min. The average increase was 1.1 L min<sup>-1</sup> (P<0.0001). This occurred when mean arterial pressure was reduced 14 mmHg on average. At the end of data collection, cardiac output decreased 0.5 L min<sup>-1</sup> from baseline (P=0.02). Mean arterial pressure decreased progressively in all patients, and only minimal changes in heart rate were found.

**Conclusions:** Using this high time-resolution method, we detected biphasic changes in cardiac output during onset of spinal anaesthesia. Initially, cardiac output increased. Subsequently, it was significantly reduced from baseline, although this decrease was of minor clinical importance.