Non-invasive blood haemoglobin and plethysmographic variability index during brachial plexus block.


(1)Department of Anaesthesia, Faculty of Health Sciences, Linköping University, Linköping 585 85, Sweden christian.bergek@lio.se. (2)Department of Anaesthesia, Faculty of Health Sciences, Linköping University, Linköping 585 85, Sweden. (3)Department of Anaesthesia, Faculty of Health Sciences, Linköping University, Linköping 585 85, Sweden Research Unit, Södertälje Hospital, Södertälje, Sweden.

BACKGROUND: Plethysmographic measurement of haemoglobin concentration ([Formula: see text]), pleth variability index (PVI), and perfusion index (PI) with the Radical-7 apparatus is growing in popularity. Previous studies have indicated that [Formula: see text] has poor precision, particularly when PI is low. We wanted to study the effects of a sympathetic block on these measurements.

METHODS: Twenty patients underwent hand surgery under brachial plexus block with one Radical-7 applied to each arm. Measurements were taken up to 20 min after the block had been initiated. Venous blood samples were also drawn from the non-blocked arm.

RESULTS: During the last 10 min of the study, [Formula: see text] had increased by 8.6%. The PVI decreased by 54%, and PI increased by 188% in the blocked arm (median values). All these changes were statistically significant. In the non-blocked arm, these parameters did not change significantly.

CONCLUSIONS: Brachial plexus block significantly altered [Formula: see text], PVI, and PI, which indicates that regional nervous control of the arm greatly affects plethysmographic measurements obtained by the Radical-7. After the brachial plexus block, [Formula: see text] increased and PVI decreased.