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

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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.