



Radial artery spasm treatment by radial, median, or musculocutaneous nerve block? A potential therapeutic dilemma

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To the Editor,

We read with great interest the recent article by Bhakta *et al.*¹ describing two cases of radial artery spasm relieved by block of the radial nerve. In that study, 5 mL of 0.5 % levobupivacaine was injected, under ultrasound guidance, 5 cm distal to the elbow crease just lateral to the radial artery where pulsatile arterial movement was visible. It was presumed that the block was affected by inhibiting the sympathetic postganglionic axons innervating the radial artery. The preganglionic sympathetic innervation of the upper limb is derived from cell bodies located predominantly in upper-mid thoracic spinal segments (T2-T6). Their axons emerge from the ventral roots, course through the sympathetic chain, and synapse onto postganglionic cells located in the stellate ganglion. The postganglionic fibres, in turn, project to the arm via the brachial plexus. Anatomical studies in human cadavers indicate that the radial artery receives its sympathetic innervation from the radial, median, and musculocutaneous nerves. Moreover, the radial artery may receive variable innervation from these nerves in its proximal, middle, and distal portions.^{2,3} Functionally, the contributions of the median and radial nerves to the sympathetic innervation of the radial artery have been inferred by the demonstration in patients of increases in radial artery blood flow after blocking the median or radial nerves, with no effect following block of the musculocutaneous nerve.⁴ In

another study on human patients, an increase in hand temperature was observed following block of the ulnar or median nerves but no effect was observed after block of the radial or musculocutaneous nerves.⁵ These observations suggest that more than one nerve may carry sympathetic fibres innervating the radial artery and, in some cases, radial artery spasm may require block of a variable combination the radial, musculocutaneous, and median nerves for maximally effective treatment.

Conflicts of interest None declared.

Editorial responsibility This submission was handled by Dr. Steven Backman, Associate Editor, *Canadian Journal of Anesthesia*.

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This letter is accompanied by a reply. Please see *Can J Anesth* 2018; 65: this issue.

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