

Stellate ganglion block as a limb salvaging technique

Sir,

Radial artery thrombosis is a rare but serious limb-threatening complication of arterial cannulation. We report a case of radial artery thrombosis that developed after decannulation of the vessel being managed using ultrasound-guided stellate ganglion block.

A 35-year-old male (72 kg) sustained a road traffic accident and was diagnosed with fracture mandible, gross haemoperitoneum, fracture pelvis with fracture left femur and tibia. On admission, his pulse rate was 132/min, blood pressure was 74/56 mmHg, respiratory rate was 18 breaths/min, Glasgow Coma Scale was 11 (E2V3M6) and pupils were bilaterally reacting to light. As focussed assessment sonography in trauma (FAST) scan was positive, emergency laparotomy was performed and left internal iliac artery was ligated. In the intra-operative period, the left radial artery was cannulated under aseptic precautions for invasive blood pressure monitoring. Vasopressors were started because of haemodynamic instability and the patient was shifted to Intensive Care Unit (ICU) for post-operative ventilatory support. The arterial canula was removed after 4 days once the haemodynamics improved. Few hours later, the patient's left hand appeared cyanosed and cold. Radial artery pulse was absent and ulnar artery was feeble, with other peripheral pulses normally palpable. Pulse oximeter showed absence of any waveform. The limb was raised and the surgical team was informed immediately. Ultrasound Doppler examination of the left radial artery revealed distension in its distal part, which was non-compressible and non-pulsatile, with dilation distal to the obstruction suggestive of thrombosis. But, the proximal part up to 5 cm above the wrist was pulsatile and compressible. The surgeons planned to explore the vessel for thrombectomy. Meanwhile, search of the literature for conservative methods available to manage vasospasm of radial artery was done. It was decided to perform stellate ganglion block in the ICU. We administered the block under ultrasound guidance using 10 mL of 0.25% bupivacaine after informed consent from the attendants. Twenty minutes later, the hand became pink. It was warm, with an increase in capillary refilling. The pulse oximeter showed saturation of 99% and a proper pulse

contour waveform. However, the patient succumbed to his injuries after 10 days of ICU stay.

Invasive monitoring is the standard of care in patients who are haemodynamically unstable and on vasopressors,^[1] as was done in our patient. Serious complications of radial artery cannulation are less than 0.2% and include sepsis, local infection, pseudoaneurysm, haematoma, bleeding, compartment syndrome and arterial thrombosis, skin necrosis proximal to the site of cannulation.^[2] Prospective studies have revealed radial artery flow reduction or thrombosis after decannulation in 25–33% of the patients, but hand ischaemia is reported in less than 1 in 500 cases.^[3] Thrombotic complications may occur 2 h after cannulation and even up to 1 week after the removal of the catheter. Data on catheter-related infection by the Centre for Disease Control (CDC) does not recommend frequent change of catheters.^[4] In our patient, the catheter was kept *in situ* for 4 days, maintaining the patency with closed heparin flush. The distal perfusion to hand was adequate and there were no obvious features of obstruction or impaired perfusion.

In our patient, Doppler ultrasound examination done at the bedside confirmed the presence of thrombus in radial artery. Normally, radial artery thrombosis is inconsequential because majority of the patients have intact arches with efficient collateral circulation. Perhaps our patient had compromised arches so his hand became cyanosed after the removal of radial artery catheter. Possibility of systemic embolism was ruled out as there were no other suggestive features.

There is no consensus on the optimal treatment for ischaemic injuries resulting from radial artery cannulation. Immediate consultation with a vascular surgeon is imperative. The radial artery catheter should be removed. Aspiration of thrombus and intra-arterial vasodilators including nitrates, calcium channel blockers, lidocaine, prilocaine and phentolamine have been used to reverse ischaemic symptoms.^[2,5] Sympathetic nerve block or cervicodorsal sympathetic block may be considered for suspected arterial vasospasm.^[6] Surgical exploration is the last resort if all the conservative methods fail, and has a poorer outcome.

Timely intervention is important during the ischaemia of the limb to prevent grave repercussions, including gangrene and amputation. In this particular case, performance of stellate ganglion block proved to be the most definitive intervention as it avoided hazards of subjecting the patient to surgery.

**Kapil Dev Soni, Chhavi Sawhney, Manpreet Kaur,
Sarita Ramchandani, Maneesh Singhal¹**

Departments of Anaesthesia & Critical Care and ¹Surgery, JPNA
Trauma Centre, All India Institute of Medical Sciences, New Delhi, India

Address for correspondence:

Dr. Manpreet Kaur,
426 Masjid Moth Resident Doctor's Hostel, AIIMS,
New Delhi - 110 029, India.
E-mail: manpreetkaurrajpal@yahoo.com

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