

Multiple injection costotransverse block for chronic pain in a patient with granulomatous mastitis

Sir,

Granulomatous mastitis is a rare, benign, inflammatory disease of the breast that mimics an abscess or carcinoma. The presence of a painful mass warrants immediate attention. Conventional treatment includes steroids, immunosuppressants or surgery. We report a case of severe pain managed with pharmacotherapy and multiple injection costotransverse block (MICB) described by Nielsen.^[1]

A 28-year-old female, with right granulomatous mastitis, was referred from the surgical ward for pain management. She had severe, sharp, stabbing pain (Numeric pain rating scale (NRS)-8/10) in the right breast, shoulder, axilla and right-paraspinal region (T1–T3) [Figure 1]. Examination revealed oedema over right breast, shoulder, arm and forearm. Shoulder joint movement was painful but not restricted. Blood investigations were normal except a total leucocyte count of 15,000/mm³. The

patient was receiving antibiotics and antifungals. Ultrasound (US) of the right breast revealed oedema in subcutaneous-glandular tissue.

We prescribed oral diclofenac 50 mg twice daily for 5 days, pregabalin 75 mg twice daily, paracetamol 650 mg 6 hourly and later intravenous fentanyl infusion 40 µg/hour. After 10 days of oral medication and 2 days of fentanyl infusion, the patient had partial pain relief over the breast (NRS-5/10); however, pain persisted in the paraspinal region (T1–T3) and axilla (T2) (NRS-9/10). Considering the location of pain, MICB was planned for breaking the pain cycle. The procedure was performed in pain clinic under standard monitoring after taking the patient's consent. In sitting position, sonographic identification of T1, T2, T3 transverse processes (TP) was done using low-frequency (2–5MHz), curvilinear probe (Sonosite-M-turbo, Bothell, WA-USA) placed longitudinally in para-sagittal region. The base of TP and the neck of inferior rib (NR) were visualised. Under aseptic precautions and after infiltrating 2%-lignocaine, 22G-spinal (Quincke's) needle was inserted in-plane, in cephalo-caudad direction parallel to superior costotransverse ligament (SCTL) at T2–T3 levels and 5mL of ropivacaine 0.25% with dexamethasone 4 mg was deposited after hitting the NR [Figure 2]. Another injection was done at T1–T2



Figure 1: (a) The arrow marked towards the oedematous right breast. (b) The annotation shows the widespread area of her pain. The arrow marking the involved axillary lymph node area

levels. After 20 min, there was decreased sensation to pin-prick at C7, C8, T1, T2, T3 and T4 dermatomes. The patient had 80% pain relief in the affected areas (NRS-1/10) after 30 min. She was shifted to ward and advised to continue all non opioid medications. She had complete pain relief in 2 days, and no fentanyl rescue was required. In a week's time, the patient was completely pain-free (NRS 0/10) and off medications.

Costotransverse foramen (CTF) is bound medially by lamina of spine, laterally by SCTL, superiorly by base of TP, inferiorly by NR and anteriorly by paravertebral space (PVS).^[2] US-guided MICB has been found with consistent spread to thoracic PVS, staining the ventral rami, communicating rami and sympathetic trunk.^[1] It is a novel technique, purported to be safer than thoracic paravertebral block (TPVB).^[1] The needle endpoint is superficial to SCTL; hence, it avoids identification and piercing of SCTL. The risk of pneumothorax is less as the needle tip lies in a bony space (away from pleura). It requires less expertise and has lesser chances of injury to dorsal ramus, intercostal nerves and vessels. There is no epidural spread as in TPVB.^[1,2]

When comparing MICB to erector spinae plane block (ESPB), in ESPB the injectate percolates through SCTL and also passes through the CTF into PVS. Hence, it requires a larger volume of injectate and is associated with inconsistent spread.^[2,3] However, in MICB, the drug is deposited at the CTF and need not

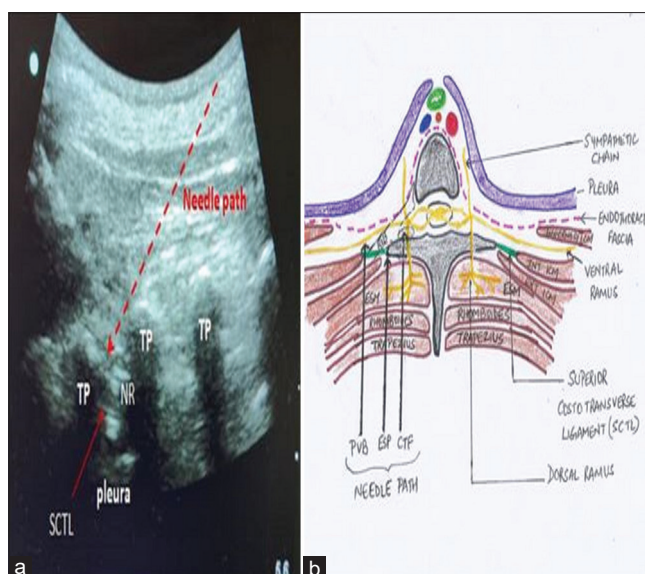


Figure 2: (a) Ultrasound image showing the costotransverse block, needing from cranial to caudal end. The arrow showing the needle tip location at the cranial end of the neck of the rib. TP: Transverse process SCTL: Superior costotransverse ligament NR: Neck of rib (b) Diagrammatic representation of the needle entry point for PVB: Paravertebral block (by piercing the SCTL) ESP: Erector spinae plane block (between the tip of the transverse process and ESM; posterior to SCTL) CTF: Costotransverse foramen block (between the neck of the rib and the base of the transverse process; medial to SCTL) ESM: Erector spinae muscle ICM: Intercostal muscle

percolate through the inter-transverse tissue; hence, it has a faster onset and requires less volume of injectate. In a cadaveric study, ventral rami staining was better with CTF block, whereas cephalocaudal spread was better with ESPB.^[2]

In our patient, pain was limited to paraspinal area (T1–T3) and axilla (T2). So, we decided to perform MICB at T1–T2 and T2–T3 levels. The patient experienced significant pain relief in 30 min, which emphasises the rapid spread of injectate into PVS. The loss of pinprick was experienced from C7 to T4, which also emphasises the cephalocaudal spread, and this finding is consistent with that of Shibata *et al.*, who found analgesia from T3 to T5 after injection at the T4 level.^[2] Few case reports have shown effective postoperative analgesia with single injection CTF block after breast surgery.^[2,4] Serratus plane and PECS block can also be considered safe; however, sparing of dorsal ramus precluded these for the current case.^[5-7]

We conclude that MICB is a safer and effective alternative to conventional TPVB in acute and chronic pain situations. Randomised controlled studies are required to validate its use in these scenarios.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that her name and initials will not be published and due efforts will be made to conceal her identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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