Incomplete supraclavicular brachial plexus block in an opioid-dependent patient: A case report

Dear Editor,

Incomplete effect of a nerve block can occur due to anatomical factors, pharmacological agents, and lack of expertise.[1] We describe a 34-year-old man of 70 kg, 170 cm height, American Society of Anesthesiologists physical status of 1, scheduled for right forearm both bone fracture surgery. During pre-anesthetic evaluation, the patient reported no comorbidity and all investigations were within normal limits. In the operating room, standard monitors were attached and intravenous fluid was started via 18 G cannula. A preprocedural ultrasound scan revealed normal anatomy of SCBP. Under all aseptic precautions, an ultrasound-guided SCBP block was performed by an experienced anesthesiologist using corner pocket technique. After giving 10 mL of 0.5% bupivacaine with 10 mL of lignocaine 2% lignocaine, local anesthetic (LA) spread was seen in doughnut shape and a catheter was placed. After 15 min, the patient exhibited incomplete sensory and motor effect in the territory of musculocutaneous nerve, radial nerve, median nerve, and ulnar nerve. An additional aliquot of 5 mL of 0.5% bupivacaine and 5 ml of 2 % lignocaine did not increase the sensory and motor effect of SCBP. After waiting for an additional 30 min, the patient was operated under general anesthetic technique. Surgery lasted 2 h 30 min and the trachea was extubated. Postoperatively, the patient revealed that he was regularly consuming opium (2–4 g per day) for the last 10 years. For postoperative pain relief, intravenous (IV) paracetamol 1 g every 6 h, diclofenac 75 mg every 12 h, and 6 ml of 0.2% ropivacaine with 2 μg/ml fentanyl was administered via catheter every hour. Postoperative period was uneventful and the patient was advised for follow-up.

In the present case, SCBP anatomy was normal, standard quality LA was used, and SCBP block was performed by an experienced anesthesiologist. The possible mechanism was LA resistance leading to reduced potency and hence incomplete block. In substance abuse, much of the work has been studied regarding opioids, which acts on mu, kappa, and delta receptors in the central nervous system and peripheral nervous system. During chronic opioid intake, there is a downregulation of opioid receptors' number and affinity and tolerance to sodium channels.[2] In animal models, LA block failure was attributed to dose-dependent morphine-induced tolerance, leading to a three-fold increase in the amount of lidocaine needed to block an isolated peripheral nerve.[3] In a rat model, morphine-induced reduction in LA potency due to intrinsic changes in the peripheral nerve was noted even after 35 days of discontinuation of morphine. In patients with chronic opioid intake, the choices for postoperative pain relief are limited. Incomplete effect due to LA resistance can lead to the use of higher LA dosage, which can cause LA toxicity. It is a known fact that intrathecal administration of 5% lignocaine results in shorter duration of analgesia in patients with opioid substance abuse.[4]

In conclusion, chronic opioid exposure in the present case possibly caused LA resistance, resulting in incomplete effect of SCBP block.

Declaration of patient consent

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

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

Deepak Thapa, Vanita Ahuja, Charmila C. Kosaraju, Karnjot Gill, Ankita Meena

Anaesthesia and Intensive Care, Government Medical College and Hospital, Sector 32, Chandigarh, India

Address for correspondence: Dr. Vanita Ahuja, Anaesthesia and Intensive Care, Government Medical College and Hospital, Sector 32, Chandigarh, India.
E-mail: vanitaanupam@yahoo.co.in

References

1. Honnannavar KA, Mudakanagoudar MS. Comparison between conventional and ultrasound-guided supraclavicular brachial plexus block in upper limb surgeries. Anesth Essays Res 2017;11:467-71.
2. Sehgal N, Smith H, Manchikanti L. Peripherally acting opioids and clinical implications for pain control. Pain Physician

2011;14:249-58.
3. Liu Q, Gold MS. Opioid-induced loss of local anesthetic potency in the rat sciatic nerve. Anesthesiology 2016;125:755-64.
4. Vosoughian M, Dabbagh A, Rajaei S, Maftuh H. The duration of spinal anesthesia with 5% lidocaine in chronic opium abusers compared with nonabusers. Anesth Analg 2007;105:531-3.

Access this article online

Quick Response Code:

Website: https://journals.lww.com/joacp

DOI: 10.4103/joacp.JOACP_212_20

How to cite this article: Thapa D, Ahuja V, Kosaraju CC, Gill K, Meena A. Incomplete supraclavicular brachial plexus block in an opioid-dependent patient: A case report. J Anaesthesiol Clin Pharmacol 2022;38:487-8.

Submitted: 25-Nov-2020 **Accepted:** 07-Mar-2021 **Published:** 05-Sep-2022