

Erector spinae plane block and rhomboid intercostal block for the treatment of post-mastectomy pain syndrome

ABSTRACT

Post-mastectomy pain syndrome (PMPS) can have multiple pain generators, including neuropathic pain and myofascial pain syndrome (MPS). Erector spinae plane (ESP) block and rhomboid intercostal block (RIB) have been used to provide anesthesia of the thorax and also for some chronic pain conditions. We describe a 43-year-old man suffering from right PMPS after right mastectomy, full axillary, and mammary lymph node dissection. We treated her with ESP blocks and RIB to reduce neuralgia and MPS: Neuropathic pain disappeared and the patient experienced only slight residual pain. The result was maintained 3 months later. This report suggests that ESP block and RIB with local anesthetic and corticosteroids with might be useful to treat a PMPS.

Key words: Erector spinae plane block; fascial block; hydrodissection; post-mastectomy pain syndrome; rhomboid intercostal block

Introduction

Post-mastectomy pain syndrome (PMPS) affects from 20% to 50% of the patients submitted to mastectomy, it is a persistent pain soon after mastectomy affecting the anterior thorax, axilla, and/or medial upper arm and the conventional duration of the pain after a surgical procedure to be defined as “chronic” is 3 months; for many years PMPS has been considered as a pure consequence of an intercostobrachial nerve (ICBN) damage occurred during the intervention, but recent evidence has shown that the multiple pain generators can contribute to PMPS.^[1,2]


ICBN and intercostal nerve damage or dysfunction often play an important role, nevertheless, other factors as lymphedema, myofascial pain syndrome (MPS), adhesive capsulitis, brachial plexopathy, rotator cuff injury can be more important pain generators in some patients suffering from PMS.^[1,2]

Nerve and fascial plane blocks with local anesthetic (LA) as the erector spinae plane (ESP) block have been considered as valid options to treat neuralgias and chronic post-surgical pain and there are some experiences described in literature related to this techniques.^[3,4]

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The reasons why pain reduction usually lasts more than the anesthetic block are not fully understood, but the anti-inflammatory action of LA near the area of nerve dysfunction could be important.^[3,5]

Fascial plane blocks and hydro dissection are also useful to treat MPS anesthetizing the nerve branches that pass throughout muscular fascias and with the achievement of muscle relaxation together.^[3,6,7]

Case Report

A 43-year-old man with a normal Body Mass Index (BMI) presented to our hospital complaining of chronic right chest pain located in the dorsal area and external mammary region. She was submitted to radiation therapy, right mastectomy, full axillary and mammary lymph node dissection and 7 years before our evaluation and now she is still doing lipofilling injections and taking tamoxifen. We used a DN4 questionnaire to detect a neuropathic component of pain, this is a 10 items “yes or no” questions and 4 positive answers mean that the pain is likely to have a neuropathic component.^[8] DN4 score was 7, while his numerical rating scale (NRS) was 10. The physical examination revealed a taut band above the right Rhomboid major muscle with some tender points and the stimulation of these increased the pain. With these scores and clinical presentation, we suspected a mixed nociceptive and neuropathic mechanism of pain and a coexisting MPS. Paresthesia, dysesthesia, and pain were reported from the mid-clavicular right line to the dorsal area, located at T3 to T7 level. This problem increased during the night, thus the night-sleep quality was poor. The scar was not painful.

She had hypoesthesia to pinprick and temperature.

Treatment after this from his general practitioner was tramadol (maximal daily dose of 300 mg continued for 30 days), duloxetine 60 mg and pregabalin (maximal daily dose was 300 mg continued for 30 days). This treatment was discontinued because it did not relieve his symptoms.

We performed an ultrasound-guided ESP block at the right T5 transverse process with the patients placed in a prone position and we injected levobupivacaine 45 mg and triamcinolone 40 mg within 15 ml of normal saline. The linear transducer (13-6 MHz, Mylab One, Esaote) was placed perpendicular to the transverse T5 processes and we used an in-plane technique with a caudal to cranial approach in order to place the needle tip below the ESP

muscle by using the already described “deep needle approach.”^[7]

7 days later the NRS decreased to 8, and the DN4 was still 6, thus we decided to repeat the same injection, and after 7 days NRS decreased to 5 and DN4 decreased to 1.

The neuropathic component of the pain disappeared as the paresthesia, the night-sleep was markedly improved while the hypoesthesia was still there as the MPS.

We performed a Rhomboid intercostal block (RIB) and hydro dissection to reduce MPS. The patient was placed in the lateral position with the affected side uppermost and the scapula was moved laterally, the ultrasound probe was placed in the sagittal plane at the T4-5 level, just 2 cm medial to the scapula, to identify the trapezius muscles, the rhomboid major muscles, and the intercostal muscles. A 22-gauge needle was inserted into the plane between the rhomboid major and the intercostal muscles in a caudal to the cephalic direction. We injected levobupivacaine 45 mg and triamcinolone within 15 mL of normal saline and we confirmed the appropriate spread with the US.

14 days later NRS was 2 and DN4 was 0, 3 months later the result was the same and the patient did not assume any analgesic drugs. An informed consent was obtained from the patients for the treatment and the publication of the report.

Discussion

In this patient the pain generators were more than one, indeed in our opinion surgery and radiation therapy had both concurred to the genesis of the neuropathic component of PMPS and even tamoxifen therapy could have played a role, moreover, the MPS and the possible fascial adhesion, relieved by RIB, contributed as well to the PMPS.

Therefore the success of our treatment could be explained by several reasons; the ESP, through the drug spread to the intercostal nerve roots could have exerted its effects with the elimination of the central sensitization maintained by the peripheral input (the “old” vicious cycle of self-sustained pain hypothesized by Livingston in 1943 and better described and completed by subsequent researches).^[9] The local anesthetic blockade of nerves indeed allows the abnormal central processing to revert to normal, and also the use of local corticosteroids could serve to improve a continuous inflammatory condition that may happen in persistent post-surgical pain and contribute to the suppression of ectopic discharge in neural membranes.^[3,4,10]

The RIB and hydrodissection may have completed the treatment with its action on the other pain generator, which was MPS, with the mechanism previously described in this paper and published.^[3,6,7]

The results of our experience show that both RIB and ESP can have a role in the treatment of PMPS as part of multimodal treatment once understood the pain generators and mechanisms.

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.

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Conflicts of interest

There are no conflicts of interest.

References

1. Waltho D, Rockwell G. Post breast surgery pain syndrome: Establishing a consensus for the definition of post-mastectomy pain syndrome to provide a standardized clinical and research approach- a review of the literature and discussion. *J Can Chir* 2016;59:342-50.
2. Tain RC, Zoberi K, Ferguson M, Levenhagen K, Luebbert RA, Rowland K, *et al.* Persistent post mastectomy pain: Risk factors and current approaches to treatment. *J Pain* 2018;19:1367-83.
3. Piraccini E, Biondi G, Byrne H, Calli M, Bellantonio D, Musetti G, *et al.* Ultrasound guided transversus thoracic plane block, Parasternal block and fascial planes hydrodissection for internal mammary post thoracotomy pain syndrome. *Eur J Pain* 2018; 22:1673-7.
4. Piraccini E, Byrne H, Calli M, Corso RM, Maitan S. Ultrasound-guided pectoral nerves and serratus plane block for post thoracotomy pain syndrome. *Minerva Anestesiologica* 2017;83:888-9.
5. Kissin I, Xavier AV, McDanal J. Blockade of sciatic nerve branches relieves sciatic radicular pain. *Anesth Analg* 1989;69:262-3.
6. Piraccini E, Maitan S. Ultrasound guided rhomboid plane hydrodissection for fascial adhesion. *J Clin Anesth* 2020;59:13.
7. Piraccini E, Corso RM, Maitan S. Ultrasound guided erector spinae plane block for myofascial pain syndrome. *J Clin Anesth* 2019;57:121.
8. Bouhassira D, Attal N, Alchaar H, Boureau F, Brochet B, Bruxelle J, *et al.* Comparison of pain syndromes associated with nervous or somatic lesions and development of a new neuropathic pain diagnostic questionnaire (DN4). *Pain* 2005;114:29-36.
9. Gracely RH, Lynch SA, Bennett GJ. Painful neuropathy: Altered central processing maintained dynamically by peripheral input. *Pain* 1992;51:175-94.
10. Devor M, Govrin-Lippmann R, Raber P. Corticosteroids suppress ectopic neural discharge originating in experimental neuromas. *Pain* 1985;22:127-37.