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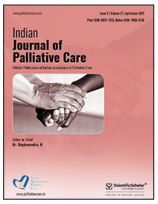

Case Report

Hydro-dissection of Dorsal Scapular Nerve for Neuropathy Post Radical Neck Dissection and Radiation: A Case Report

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ABSTRACT

Neuropathy of dorsal scapular nerve (DSN) following neck dissections or radiotherapy has not been reported so far nor has its treatment in the form of hydro-dissection. Hydro-dissection of nerve under ultrasound guidance has been receiving more attention in the recent past and it is a minimally invasive procedure. We report here a case of neuropathy of DSN following radiotherapy in a patient for whom we could at least provide pain relief as a palliative measure during his last 6 months of life.

Keywords: Dorsal scapular nerve, Hydro-dissection, Ultrasound-guidance, Radiotherapy

INTRODUCTION

The common causes of neuropathy of the dorsal scapular nerve (DSN) are work-related strain, vehicle trauma, or sports injuries.[1] Although, various nerve injuries or neuropathies either due to neck dissections[2] or radiotherapy[3] have been reported in the literature, neuropathy of DSN associated with head and neck malignancy or the sequelae of treatment has not been reported so far. Recently, hydro-dissection of nerve under ultrasound guidance has been receiving more attention in the pain medicine field. "Hydro-dissection" is a technique wherein the fluid (local anesthetic or saline or 5% dextrose in water) is injected under pressure so as to separate the nerve from the adjacent structures.[4] It is a minimally invasive procedure predominantly applied for carpal tunnel syndrome in the beginning, while it is used for other various neuropathies as well subsequently.[4] We report here a case of neuropathy of DSN following radiotherapy in a young patient with salivary ductal carcinoma for whom we could at least provide pain relief by performing hydro-dissection of DSN as a palliative measure. To the best of our knowledge, hydro-dissection of DSN has not been reported in the literature so far.

CASE REPORT

A 22-year-old male student was referred to our pain clinic in May 2020 with a history of severe pain (VAS 8/10) and discomfort involving his left arm and median scapular area which was unrelenting despite taking Gabapentin 100 mg and Tapentadol 50 mg every 8th hourly. The symptoms were present at rest or with activity, and there were no exacerbating or relieving factors. He underwent the left radical submandibular excision followed by radiotherapy 14 months ago. He had to undergo modified radical neck dissection in August 2019 because of recurrence of salivary ductal carcinoma followed by radiotherapy also. Physical examination demonstrated the left-sided winged scapula. Motor examination revealed generalized M4 motor function of his left arm, forearm, and hand in contrast to normal M5 motor function of his contralateral upper limb. Biceps and triceps reflexes were normal. The sensory examination demonstrated minimally reduced global superficial cutaneous sensation in the arm, forearm, and hand.

High-resolution ultrasound of the neck showed fibrotic infiltrate and nodular ill-defined edematous DSN, consistent with nerve entrapment changes [Figure 1]. We planned

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for hydro-dissection of DSN with continuous brachial plexus block and explained the patient. This decision was taken as the patient did not want to take any further medications and opted the interventional pain management to have a quicker relief. After informed consent, under local anesthesia infiltration with 2% lignocaine, the patient underwent ultrasound-guided hydro-dissection of the left DSN with 2 ml of 2% lignocaine and 2 ml of 0.9% normal saline with 20 mg of triamcinolone using the in-plane approach and 21G echogenic needle. Furthermore, the left-sided inter- scalene brachial plexus catheter was placed with ultrasound guidance using the in-plane technique and a bolus of 12 ml of 0.2% ropivacaine was given. Infusion at 3 mL/h of 0.2% ropivacaine was continued for 3 days using the mechanical self-deflatable pump and the catheter was removed. The pain score remained three (VAS 3/10) since then and the pain medications were gradually tapered and stopped.

DISCUSSION

Injury to the spinal accessory nerve (SAN) or the marginal mandibular branch of the facial nerve has been reported following various types of neck dissections.[2] Besides, radiation-induced neuropathies of brachial plexus, cranial nerves, optic neuropathies, etc., have also been reported.[3] Yet, no case has been reported so far involving the DSN following NDs or radiotherapy for head and neck cancers. Although injury to SAN also could produce swinging scapula such as in our case, the fibrotic changes found in the ultrasound as well as the pain in the medial portion of the scapula classically suggest the involvement of DSN. Furthermore, the most probable cause of the fibrosis could be radiotherapy-induced as it has happened within the field of the previous radiotherapy.

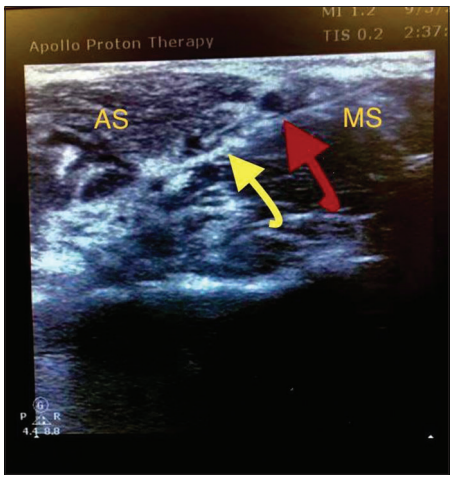

Figure 1: Ultrasound image showing hydro-dissection needle reaching dorsal scapular nerve at the origin of C5 root. AS: Anterior Scalene muscle, MS: Middle Scalene muscle, Yellow Arrow: Interscalene Brachial plexus, and Red Arrow: Edematous and nodular Dorsal Scapular nerve.

We provided the continuous inter-scalene brachial plexus block for acute pain relief, while the hydro-dissection of DSN was done for treating the chronic pain associated with radiation-induced fibrosis. We have used a combination of steroid, saline, and a local anesthetic in this case. However, 5% dextrose is also preferred recently, as it appears safer and effective.[5] Although, we could not save this very young patient from succumbing to this dreaded malignancy, we could provide him a very good quality of pain relief during the last 6 months of his life which was a great solace for his relatives as well as for our team members.

CONCLUSION

The application of high-resolution ultrasound is very helpful in diagnosing the rare condition as reported in this case, besides its accurate guidance in performing the hydro-dissection or other regional blocks. The rare condition such as radiation- induced fibrosis of DSN should be considered as one of the differential diagnostic conditions in patients with shoulder pain or medial scapular pain with or without winging of scapula.

Declaration of patient consent

Patient's consent not required as patients identity is not disclosed or compromised.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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