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A 74-year-old male patient, came to our pain clinic with bilateral distal medial thigh pain for more than 10 years which was severe and refractory to medical management and other interventions. He had undergone multiple diagnostic tests and imaging, but the cause was not established. Finally, a diagnostic saphenous nerve block with local anesthetic and steroid provided almost complete relief for couple of days. Subsequently, PRF of bilateral saphenous nerve provided him excellent long-lasting pain relief. This case report highlights the importance of having high index of suspicion for entrapment neuropathy and a simple diagnostic nerve block can either confirm or refute the diagnosis. In other words, an early diagnosis and treatment can be started and unnecessary tests can be avoided.

Key words: Adductor canal; Saphenous nerve entrapment neuropathy; Pulsed radiofrequency; Pain

ABSTRACT

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INTRODUCTION

Pain from entrapment neuropathy is not uncommon. This can lead to significant and refractory pain if it is not diagnosed in appropriate time. Another important aspect is the high incidence of missed diagnosis and number of diagnostic tests patients had to undergo. High index of suspicion is the key to early diagnosis and hence, multiple unnecessary tests can be avoided. This will enhance patient satisfaction and ensure better care.

CASE REPORT

A 74-year-old male patient came to our pain clinic with bilateral distal medial thigh pain. The pain was there for more than 10 years, but it has worsened since last two years. His pain was stabbing, dull aching, with radiation up to medial knee. His pain score ranged from 5/10 to 8/10 on a scale of 0 to 10 on visual analogue scale. Prolonged standing and climbing stairs aggravated his pain. He had undergone bilateral adductor tenotomy during childhood because of adductor spasm. Initially patient obtained pain relief
Pulsed radiofrequency for saphenous nerve entrapment neuropathy

with paracetamol, non-steroidal anti-inflammatory drugs (NSAIDs), tramadol, pregabalin, but later the pain became refractory to medical management.

Physical examination revealed bilateral symmetrical point tenderness approximately 10 cm proximal to the medial femoral condyle. It was associated with hyperalgesia and slight hypoesthesia. Neurological examination of both lower limbs was normal.

MRI spine showed degeneration of L3, L4, and L5 disc and postero-central disc bulge at L3-4 compressing L3 nerve root bilaterally. Patient was prescribed amitriptyline 10 mg, topical lidocaine 5% patch, and advised a trial of L3 selective nerve root block later. As planned, L3 selective nerve root block was given using 1 ml of 0.25% bupivacaine 4 weeks’ later which slightly reduced the pain. As distal thigh is also supplied by obturator nerve, he was given a trial of obturator nerve block, which failed to provide any relief. Meanwhile, we ordered MRI of both thighs and nerve conduction studies (NCS) of lower limbs.

MRI of thighs showed signal intensities involving medial compartments of thigh in adductor muscles, more in adductor magnus and longus suggesting adductor strain. This led to suspicion of bilateral saphenous nerve entrapment neuropathy (SNEN) at the exit of adductor canal. NCS showed normal study in femoral, obturator, tibial and common peroneal nerve bilaterally.

Hence, a diagnostic injection of 10 ml 0.25% bupivacaine and 40 mg methyl prednisolone was planned at the point of maximum tenderness. Patient had 80-90% pain relief immediately. Happy with the result, other side nerve block on other day gave similar result. But pain relief lasted only 3-4 days. For longer duration of pain relief, we suggested pulsed radiofrequency ablation (PRF) to which he consented.

PRF was done one week later in operation theatre under strict asepsis and standard monitoring. A 5 cm radiofrequency (RF) cannula with 2.5 mm active tip (Cosman RFG-1A Generator; Cosman Medical, Inc. Burlington, MA, USA) was inserted at the point of maximum tenderness. Proper needle tip position was accepted when sensory stimulus produced concordant pain and paresthesia along the distribution of saphenous nerve at 0.3 volt and 50 Hz frequency. At this point, one ml of 1% lidocaine was injected to decrease patient discomfort. Then, PRF of 40 volts was applied with 20 ms bursts at a temperature of 42°C for 120 secs at 2 Hz frequency, which was repeated one more time after rotating the cannula. Same procedure was repeated on the other side. Before withdrawing the needle, 5 ml of 0.25% bupivacaine and 20 mg methyl prednisolone was injected on both the sides. He was very happy during monthly follow-ups till 7 months. The pain returned after a period of 7 months with lesser severity. Same procedure was repeated this time after which he experienced similar pain relief.

**DISCUSSION**

SNEN is an uncommon syndrome, accounting for less than 1% of adult patients presenting with lower extremity pain. Chief complaint associated with SNEN include distal thigh, medial knee and/or leg pain after prolonged walking or standing. The saphenous nerve is the terminal sensory branch of the femoral nerve. The nerve can become entrapped in multiple locations, from the thigh to the leg. The roof of the adductor canal is a dense bridge of connective tissue and it is here that the nerve exits the canal and becomes subcutaneous making it a potential site for entrapment.1 2

Diagnosis is frequently missed unless there is a high index of suspicion. One consistent finding of SNEN described by Worth et al,3 and Romanoff et al.4 in a case series is the presence of point tenderness where nerve exits the adductor canal. Our patient demonstrated similar feature of bilateral point tenderness approximately 10 cm proximal to the medial femoral condyle. Conditions like L3 or L4 radiculopathy, vastus medialis myofascial pain syndrome, obturator neuropathy can mimic SNEN, but can be excluded by history, pain pattern, sensory and motor examination.3 NCS can provide a diagnosis of neuropathy, but might not be helpful.1 Hence, in suspected cases, positive response to a diagnostic injection of local anaesthetic can confirm the diagnosis.3 4

Radiofrequency thermocoagulation of various nerves have been proved to be the treatment of choice to provide longer pain relief after positive response to a diagnostic nerve block. Conventional radiofrequency (CRF) produces temperatures at the tip of the cannula of 45°C to 85°C leading to irreversible thermocoagulation of nerve structure, whereas PRF avoids structural damage to nerve tissue as the tip temperature is typically kept below 42°C. This temperature delivery is believed to temporarily block the nerve conduction, but the exact mechanism by which PRF provides pain relief is unclear. At this moment, most studies point towards an alteration in synaptic transmission, in a neuromodulatory type effect. It has been used in different pain syndromes
including cervical radicular pain, trigeminal neuralgia, sacroiliac joint pain, facet arthropathy, shoulder pain, postsurgical pain, radicular pain, groin pain, cervicogenic headache, and myofascial pain conditions with varying success.6-8

Treatment modalities for SNEN include local anaesthetic block, and in refractory cases, neurectomy or decompression.3,4 Surgical procedures have its inherent complication associated with it. PRF as a newer modality can be tried after initial response to diagnostic block as it is minimal invasive, virtually devoid of side effects and complications, and can be repeated as required.

CONCLUSION
Saphenous nerve entrapment neuropathy is frequently overlooked and a high index of suspicion based on clinical presentation, demonstration of point tenderness at the site of nerve exit, and response to local anaesthetic and steroid injection can confirm diagnosis. Pulsed radiofrequency ablation can be offered to provide prolonged pain relief and is an attractive alternative to decompression surgery. However, controlled studies are required to confirm this finding.

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REFERENCES