Case Report

Combination of diagnostic medial calcaneal nerve block followed by pulsed radiofrequency for plantar fascitis pain: A new modality

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

Access this article online

Website: www.ijaweb.org

DOI: 10.4103/0019-5049.130824

Quick response code

Deepak Thapa, Vanita Ahuja

Department of Anaesthesia and Intensive Care, Government Medical College and Hospital, Chandigarh, Punjab and Haryana, India

ABSTRACT

Plantar fasciitis (PF) is the most common cause of chronic heel pain which may be bilateral in 20 to 30% of patients. It is a very painful and disabling condition which can affect the quality of life. The management includes both pharmacological and operative procedures with no single proven effective treatment modality. In the present case series, we managed three patients with PF (one with bilateral PF). Following a diagnostic medial calcaneal nerve (MCN) block at its origin, we observed reduction in verbal numerical rating scale (VNRS) in all the three patients. Two patients has relapse of PF pain which was managed with MCN block followed with pulsed radio frequency (PRF). All the patients were pain-free at the time of reporting. This case series highlights the possible role of combination of diagnostic MCN block near its origin followed with PRF as a new modality in management of patients with PF.

Key words: Medial calcaneal nerve, plantar fasciitis, pulsed radiofrequency

INTRODUCTION

Plantar fasciitis (PF) is an inflammatory condition of plantar fascia which is very painful and disabling.[1] Bilateral involvement of PF occurs in 20 to 30% of patients. The pathogenesis of PF involves physical-mechanical overload and micro tears within the fascia.[2,3] The treatment of PF includes operative and non-operative management with no single treatment proved as most beneficial.[1,2]

In chronic pain management, interruption of nociceptive transmission produces pain relief. Medial calcaneal nerve (MCN), a branch of the posterior tibial nerve provides sensory innervation in heel and its antero medial aspect. We anticipated that blocking the MCN near its origin could possibly have a role in managing pain in patients of PF.[3] The literature search, regarding the role of combined diagnostic block of MCN, followed by pulsed radiofrequency (PRF) application near its origin for management of PF pain yielded no results.

CASE REPORTS

Case 1

A 27-year-old male presented with bilateral PF pain since five years which increased with prolonged walking and upon getting up from bed in the morning. On examination, the patient had excruciating tenderness upon compression of the left heel. The verbal numerical rating scale (VNRS) for pain in left foot was 9/10 on getting up from bed and on prolonged walking. The MCN in left foot was identified near its origin by transcutaneous nerve stimulation (NM-20©, Inmed Equipments Pvt. Ltd., Vadodara, India). This site was marked as 'X' on skin for MCN block [Figure 1a] (the same is demonstrated in a cadaver by the authors [Figure 1b]). Under aseptic precautions, 1 ml of 1:1 mixture of 2% lignocaine and 0.2% ropivacaine with 20 mg methyprednisolone acetate was injected at the site marked as 'X'. Following the block, VNRS reduced from preblock value of 9/10 to postblock value of 0/10 both on getting up from bed and on prolonged walking. After three months, patient

How to cite this article: Thapa D, Ahuja V. Combination of diagnostic medial calcaneal nerve block followed by pulsed radiofrequency for plantar fascitis pain: A new modality. Indian J Anaesth 2014;58:183-5.

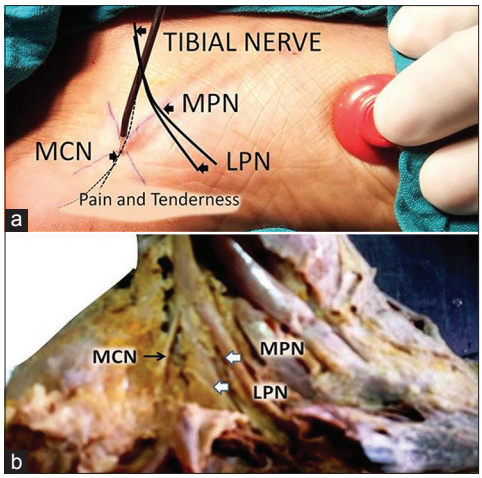

Figure 1: (a) Showing the anatomical landmarks for medial calcaneal nerve (MCN) block on left foot of first patient. Medial plantar nerve (MPN), Lateral plantar nerve (LPN). (b) Anatomical demonstration of MCN in a cadaver

developed VRNS of 5/10 on prolonged walking. It was decided to perform MCN block with 1.5 ml of solution (1 ml of 0.2% ropivacaine + 0.5 ml (20 mg) of methylprednisolone) at site 'X' (described earlier) and was followed with PRF (Cosman Medical Inc., Burlington, MA, USA) for two minutes done at 42.5° (three cycles). Following the combined block, patient's VNRS reduced from preblock 5/10 to postblock 0/10 on prolonged walking.

After one week, MCN block was performed in right heel with 1.5 ml of solution at site 'X'. A similar reduction of VNRS from pre block of 6/10 and to post block 0/10 was observed. Following this, the patient was painfree at the time of reporting, for ten months.

Case 2

A 40-year-old female presented with recalcitrant PF pain in right heel since three years which was refractory to pharmacological treatment. She had severe heel pain which increased in the morning. X ray of right foot was inconclusive. A diagnostic block of MCN nerve was performed with 1.0 ml of solution (0.5 ml of 2% lignocaine and 0.5 ml of 0.2% ropivacaine) and VRNS reduced from preblock score of 8/10 to postblock score of 1/10 (on getting up in the morning). However, VRNS reduced marginally from preblock score of 8/10 to postblock score of 4/10 on prolonged walking. After 10 days, patient received MCN block with 1.5 ml of solution (1 ml of 0.2% ropivacaine + 0.5 ml (20 mg) of methylprednisolone) followed with PRF due to persistent VNRS of 5/10 on prolonged walking. Following this, patient was pain-free for six months (at the time of reporting) but complained of experiencing pain of VNRS of 3/10 at midpoint of heel during prolonged walking.

Case 3

A 50-year-old male presented with excruciating pain on the medial aspect of right heel which was refractory to medical management of PF. Patient received a diagnostic MCN block on right foot with 1.0 ml of solution (0.5 ml of 2% lignocaine and 0.5 ml of 0.2% ropivacaine). Following MCN block, patient's VNRS score reduced from pre-block score of 7/10 to postblock score of 2/10 on prolonged walking and getting up from bed in morning. Following MCN block, patient was pain-free for three months (at the time of reporting).

DISCUSSION

PF pain is described as medial plantar heel pain, especially during the first weight-bearing steps in the morning and after prolonged period of rest.[3] The pathogenesis of PF involves localised inflammation and degeneration of the proximal plantar aponeurosis, near its origin (medial tuberosity of the calcaneum).[1] PF was diagnosed in the present case series after detailed clinical history, examination and excluding the other differential diagnoses of heel pain (calcaneal stress fracture, achilles tendinopathy and tarsal tunnel syndrome).[4] None of the patients had neuropathic symptoms.

PF pain is usually a self-limiting condition, with spontaneous resolution of symptoms occurring in 80 to 90% of patients within ten months. At times, drug management of refractory cases of PF prolonged immobilisation or extra corporeal shock wave therapy may be required.[4] In the present case series, a diagnostic MCN block at its origin benefitted the patients with reduced VNRS score both during early morning pain and on prolonged walking. The possible explanation for pain relief in these patients was the interruption of pain pathways of sensory nerves of MCN which provides sensory supply to the medial side of heel and flexor retinaculum.[5] We decided to perform the MCN block near its origin rather than inside the flexor retinaculum to avoid direct heel puncture, atrophy of heel pad and plantar fascia rupture.[6] After observing reduction in VNRS in case 1 after diagnostic MCN block, we did not use steroid in the subsequent patients. Steroid injections in the foot pad is discouraged due to possibility of plantar fascia rupture and atrophy of heel pad in these patients.

Steroid was subsequently used only during PRF at the origin of MCN to prevent PRF-related neuritis.[3]

Two patients had relapse of PF pain which was successfully managed with MCN block at its origin followed with PRF. Recently, use of radiofrequency for recalcitrant plantar heel pain of medial calcaneal neuritis has proved to be beneficial in 93.3% of patients with pain relief observed up to 18 months.[3] In the present series, case 1and case 3 were pain-free after a follow up of ten and three months, respectively. Persistence of mild pain in case 2 could be due to presence of additional MCN nerves in the heel which were spared during block placement.

CONCLUSION

The combination of MCN block followed with PRF for successful management of PF in the present case series highlights its potential as new treatment modality for patients of PF.

REFERENCES

1. Irving DB, Cook JL, Young MA, Menz HB. Impact of chronic plantar heel pain on health-related quality of life. J Am Podiatr Med Assoc 2008;98:283-9.
2. Cione JA, Cozzarelli J, Mullin CJ. A retrospective study of radiofrequency thermal lesioning for the treatment of neuritis of the medial calcaneal nerve and its terminal branches in chronic heel pain. J Foot Ankle Surg 2009;48:142-7.
3. Tracey I. Imaging pain. Br J Anaesth 2008;101:32-9.
4. Tu P, Bytomski JR. Diagnosis of heel pain. Am Fam Physician 2011;84:909-16.
5. Didia BC, Horsefall AU. Medial calcaneal nerve. An anatomical study. J Am Podiatr Med Assoc 1990;80:115-9.
6. Ahadian FM. Pulsed radiofrequency neurotomy: Advances in pain medicine. Curr Pain Headache Rep 2004;8:34-40.

Source of Support: Nil, **Conflict of Interest:** None declared