Cureus

Pulsed radiofrequency in a rare right obturator nerve injury: a case report

Open Access
Abstract
Published 09/06/2023

Caterina D. Morelli [1] , Maddalena Zampi [2] , Pasquale Buonanno [1] , Giuseppe Servillo [1] , Fabrizio Schonauer [3]

1. Dipartimento di Neuroscienze e Scienze Riproduttive ed Odontostomatologiche, A.O.U. Federico II, Napoli, ITA 2. U.O.C. Anestesia Rianimazione, Terapia intensiva e del dolore,, A.O.U. Federico II, Napoli, ITA 3. Dipartimento di Sanità Pubblica, A.O.U. Federico II, Napoli, ITA

Corresponding author: Caterina D. Morelli, enricate@hotmail.it

Categories: Pain Management
Keywords: nerve injury, pulsed radiofrequency

How to cite this abstract
Morelli C D, Zampi M, Buonanno P, et al. (September 06, 2023) Pulsed radiofrequency in a rare right obturator nerve injury: a case report. Cureus 15(9): a1006

Abstract

Introduction: Pulsed radiofrequency (PRF) is a therapeutic strategy with unexplored applications (1). PRF mechanism is far from being fully elucidated: some authors suggested that only a minimal structural change of target nerve occurs, and it cannot totally explain the analgesic effect. PRF is supposed to act through a modification of gene expression in the sensory nerves with a consequent reduction of the transmission of painful stimuli (2). The indications of PRF include the neuropathic, discogenic, and radicular pain (3,4).

Methods: A 54-year-old woman suffering from severe obesity underwent abdominoplasty surgery under spinal anesthesia (SA) in November 2022. She reported the development of neuropathic symptoms four days after. The pain enhanced markedly when sitting or standing in the anatomical areas innervated by the right obturator nerve (NRS = 9-10), resulting in an inability to walk; the nerve lesion was confirmed by electromyography. She was initially treated with drugs including gabapentinoids, opioids, and SSRI, but with no pain relief, so we decided to try a PRF treatment of dorsal root ganglions. Patient was placed in a prone position and, after skin disinfection, landmarks were determined using fluoroscopy. Needles were placed at the level of L2-L3-L4 right dorsal root ganglions through intervertebral foramina. After sensory and motor stimulation testing, we proceeded with a 4-minute PRF treatment at 42°C. Dexamethasone 2,0 mg and ropivacaine 2,0 mg were injected at the end of the procedure at every treated level.

Results: After 15 days, the severity of pain at rest and during movement decreased (NRS = 6). There were no flare-ups related to both sitting and walking. The patient restarted walking with a support during everyday activities. Sleep quality and mood improved noticeably, with no changes of pharmacological therapy. One month following the procedure, pain relief was stable (NRS=6), and the pharmacological therapy was reduced (halving opioids and gabapentinoid dosages) with no worsening of symptoms.

Conclusions: The failure of pharmacological treatment often requires alternative approaches for chronic pain and PRF could be a promising option. We successfully used PRF to treat peripheral neuropathic pain in a severe case of obturator nerve lesion with a remarkable improvement of pain and quality of life of the patient. Interestingly, pain relief was achieved treating the dorsal root ganglions from which obturator nerve originates thus supporting the gene expression modification mechanism. Additional studies are required to confirm the potential role of PRF in the treatment of peripheral neuropathic pain.

Bibliography

(1) Sluijter ME, Imani F. Evolution and Mode of Action of Pulsed Radiofrequency. Anest Pain 2013; 2(4): 139-141 doi:10.5812/aapm.10213

(2) Han BR, Choi HJ, Kim MK, Cho YJ. Pulsed radiofrequency neuromodulation for the treatment of saphenous neuralgia. J Korean Neurosurg Soc. 2013 Aug;54(2):136-8. doi: 10.3340/jkns.2013.54.2.136. Epub 2013 Aug 31. PMID: 24175030; PMCID: PMC3809441.

(3) Imani F. Using Pulsed Radiofrequency for Chronic Pain. Anesth Pain. 2012;1(3):155–6. doi:10.5812/kowsar.22287523.4047.

(4) Hagiwara S, Iwasaka H, Takeshima N, Noguchi T. Mechanisms of analgesic action of pulsed radiofrequency on adjuvant-induced pain in the rat: roles of descending adrenergic and serotonergic systems. Eur J Pain. 2009;13(3):249–52. doi: 10.1016/j.ejpain.2008.04.013.