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Electrocatheter-mediated High-voltage Pulsed Radiofrequency of the Dorsal Root Ganglion in the Treatment of Chronic Lumbosacral Neuropathic Pain: A Randomized Controlled Study

Simone Vigneri [1], Gianfranco Sindaco [2], Matteo Zanella [2], Valentina Paci [2], Francesca Maria Vinci [2], Chiara Sciacca [2], Alberto Merlini [2], Irene Grazzini [3], GIlberto Pari [2]

1. Pain Medicine Department, Occhiobello, Santa Maria Maddalena Hospital, Occhiobello, ITA 2. Pain Medicine Department, Santa Maria Maddalena Hospital, Occhiobello, ITA 3. Department of Radiology, Section of Neuroradiology, San Donato Hospital, Arezzo, ITA

Corresponding author: Simone Vigneri, s.vigneri@medicinadeldolore.org

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Abstract

Aim of Study
Despite the interest in scientific community, there is still poor evidence about pulsed radiofrequency (PRF) efficacy in the treatment of neuropathic pain. In order to determine whether high-voltage PRF and epidural adhesiolysis (PRF-EA) showed better results than epidural adhesiolysis alone (EA), a randomized, double-blind, comparative-effectiveness study was conducted in patients with chronic lumbosacral radiating pain and neuropathic features.

Methods
A total of 41 patients were randomly allocated to 2 groups. Twenty-one patients were randomized to receive 2 cycles of 240 seconds high-voltage PRF followed by the injection of local anesthetics, hyaluronidase, and betamethasone, whereas 20 patients underwent sham stimulation followed by adhesiolysis. The treatment was delivered at the affected lumbosacral roots and patients, treating physicians and assessors were blinded to intervention.

Results
A significant reduction of radiating pain was observed in mean Numeric Rating Scale score at follow-up. A change of -3.43 versus -1.75 (P=0.031) after 1 month and -3.34 versus -0.80 (P=0.005) after 6 months was reported in patients undergoing PRF-EA in comparison with EA, respectively. After 1 month, 57% of patients in the PRF-EA group experienced a pain reduction of ⩾50% versus only 25% of patients allocated to EA (P=0.037). Improvement decreased to 48% in the PRF-EA group whereas only 10% of EA reported significant pain relief after 6 months (P=0.008).

Conclusions
High-voltage PRF of dorsal root ganglion delivered through multifunctional electrode provided significant pain relief and may be considered a valuable treatment in chronic lumbosacral radicular pain with neuropathic features.

References

1. Vigneri S, Sindaco G, Gallo G et al. Effectiveness of pulsed radiofrequency with multifunctional epidural electrode in chronic lumbosacral radicular pain with neuropathic features. Pain Physician. 2014 Nov-Dec;17(6):477-86.
2. Shanthanna H. Investigating the effects of pulsed radiofrequency on dorsal root ganglion in chronic lumbar radicular pain patients: is it not important that we ask the right question, the right way, on an appropriate sample of patients? Pain Med. 2016;17:374–375.
3. Pope JE, Deer TR, Kramer J. A systematic review: current and future directions of dorsal root ganglion therapeutics to treat chronic pain. Pain Med. 2013;14:1477–1496.
4. Chua NH, Vissers KC, Sluijter ME. Pulsed radiofrequency treatment in interventional pain management: mechanisms and potential indications—a review. Acta Neurochir (Wien). 2011;153:763–771.

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