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Spinal Cord Stimulation in Refractory Postherpetic Neuralgia in Portugal: A Case Report

Neuroestimulador Medular no Tratamento da Nevralgia Pós-Herpética Refratária em Portugal: Um Caso Clínico

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ABSTRACT

Postherpetic neuralgia is one of the most severe complications after herpes zoster infection. Patients who experience persistent pain despite conservative treatment may benefit from interventional therapies, such as spinal cord stimulation. We present the case of a patient with severe refractory postherpetic neuralgia in the right T8 to L1 distribution who responded effectively to spinal cord stimulation. After its implantation, the patient had improvements in pain intensity, pain-related interference, quality of life, and satisfaction, with a simultaneous reduction of previous medications. This case report highlights the role of spinal cord stimulation in refractory neuropathic pain secondary to herpes zoster.
Keywords: Neuralgia, Postherpetic/therapy; Pulsed Radiofrequency Treatment; Spinal Cord Stimulation

RESUMO

A nevralgia pós-herpética é uma das complicações mais graves após infeção por herpes zoster. Os doentes que mantêm dor persistente, apesar do tratamento conservador, podem beneficiar de intervenções terapêuticas, como a neuroestimulação medular. Apresentamos um caso de nevralgia pós-herpética severa e refratária, localizada nos dermátomos direitos de T8-L1, que respondeu eficazmente à neuroestimulação medular. Após a sua colocação, houve uma melhoria na intensidade da dor, interferência relacionada com a dor, qualidade de vida e satisfação, com simultânea redução da medicação prévia. Este caso enaltece a relevância da neuroestimulação medular em situações refratárias de dor neuropática secundária a infeção por herpes zoster.
Palavras-chave: Neuroestimulação Medular; Nevralgia Pós-Herpética/tratamento; Tratamento por Radiofrequência Pulsada

INTRODUCTION

Postherpetic neuralgia (PHN) is one of the most severe complications after herpes zoster infection.[1] The typical presentation of PHN is neuropathic pain distributed over the dermatomal innervation of the affected nerve for more than three months.[2] Patients who experience persistent pain despite conservative treatment may benefit from interventional therapies. Spinal cord stimulation (SCS) is most often used to treat persistent spinal pain or complex regional pain syndromes, and can reduce chronic opioid use.[3] Additionally, it may be used to treat other chronic pain syndromes arising from the peripheral nervous system.[4,5] We present the case of a patient with severe refractory PHN in the right T8 to L1 distribution, who responded effectively to SCS.

CASE REPORT

A 48-year-old woman had a four-year history of PHN in the right T8 to L1 dermatomes. Her previous pharmacological regimen included many different gabapentinoids, serotonin norepinephrine reuptake inhibitors, tricyclic antidepressants, and opioid medicines without sustained improvement in symptoms. Capsaicin patch, quadratus lumborum block and lidocaine infusion were applied without adequate pain relief. Despite several therapeutic strategies, she remained with severe pain and was referred to our Chronic Pain Unit (CPU).

At first evaluation in the CPU, she reported a constant, sharp, deep, and burning pain on the right thoracic wall. The physical examination revealed allodynia and hyperalgesia in the right T8 to L1 dermatomes. On Brief Pain Inventory (BPI),[6] 'the average pain intensity' score was 9/10, the 'pain-related interference with general activity' score was 10/10 and the 'pain-related interference with sleep' score was 8/10. Oral morphine (40 – 50 mg/daily), pregabalin (450 mg/daily), paracetamol (3 g/daily), and duloxetine (60 mg/daily) were prescribed.

In the following evaluation, the patient denied improvement in pain severity pain and mentioned daytime drowsiness and constipation. The Brief Pain Inventory was obtained with the same previous scores.

Given her refractory pain, the decision was made to offer a trial of SCS. To ensure the patient was met eligibility criteria for SCS, a multidisciplinary evaluation was obtained. Psychiatric illness and other medical conditions were ruled out, namely coagulopathies or active infections.

After meeting the eligibility criteria, a unilateral octopolar electrode was placed on the epidural space,

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percutaneously under fluoroscopic guidance, at the T2-T4 level. The patient was awake during the procedure to guide the electrode placement and device programming. At the end of the procedure, the patient reported a substantial improvement in pain severity. On the next day, she was discharged from hospital.

One week later, the patient was reexamined in our CPU and reported an 'average pain intensity' score of 2/10, representing a 78% reduction compared to her initial assessment. Additionally, her 'pain-related interference with general activity' score was 3/10 and her 'pain-related interference with sleep' score was 0/10. According to this scenario, she was a candidate for permanent SCS, which she accepted. The procedure was uneventful, and she was discharged home on postoperative day one.

Two months after the procedure, she was very satisfied with the procedure and referred a substantial improvement in her quality of life. The Brief Pain Inventory was applied, and she reported an 'average pain intensity' score of 0/10, 'pain related interference with general activity' score of 0/10 and 'pain related interference with sleep' score remained 0/10. The physical examination revealed that allodynia was abolished and the presence of mild hyperalgesia in the right T9 to T12 dermatomes. Gradually, we attempted to deprescribe most of her medication. Presently (one year after SCS implant), her current medication is pregabalin 150 mg/daily and duloxetine 30 mg/daily.

DISCUSSION

According to the latest version of the International Classification of Diseases (ICD-11) and the International Association for the Study of Pain (IASP), PHN is defined as pain persisting for more than three months after the onset or healing of HZ. The innervation territory of the first (ophthalmic) branch of the trigeminal nerve and thoracic dermatomes are the most frequently locations affected in PHN.[7] Currently, the Neuropathic Pain Special Interest Group (NeuPSIG) of IASP presents Level A evidence for both first- and second-line treatments, which includes tricyclic antidepressants, serotonin-norepinephrine reuptake inhibitors, pregabalin, gabapentin, tramadol, capsaicin (8%) patches, and lidocaine patches.[8] The number needed to treat these treatments ranges from 11 to 25.[8] A recent systematic review regarding interventional treatments for PHN concluded that botulinum toxin A or triamcinolone, transcutaneous electrical nerve stimulation, peripheral nerve stimulation, and stellate ganglion block are recommended, followed by paravertebral block and pulsed radiofrequency.[9] If severe pain persists, SCS could be considered, especially in patients with comorbidities.[10] In our case, some interventional therapies were previously used without success. Due to the patient's severe allodynia in the affected area, cutaneous approaches were not considered. According to our clinical assessment, patient preferences, and the CPU's experience, SCS was proposed. Afterwards, a SCS trial was successful and a permanent implant maintained its efficacy in pain severity reduction, namely pain intensity and pain related interference.

Previous studies have used SCS to treat intractable HZ-related pain in subacute and chronic stages of PHN.[9] SCS mechanisms of action are complex and remain not fully understood.[11] Gate control theory mechanisms are implicated, namely, neural signal transmission regulation by the dorsal horn of the spinal cord, where A-beta fibers inhibit the transmission of pain signals carried by C-fibers. This explains why electrical SCS could reasonably modulate pain.[12] It has been suggested that patients suffering from pain and allodynia, caused by central sensitization, and those with preserved neuronal and dorsal column function would respond well to SCS,[10] like in the case of our patient. By contrast, patients with marked sensory loss and those experiencing constant pain without allodynia would not benefit from SCS, as deafferentation and degeneration of the dorsal column might be the dominant mechanism.[10]

A recent review of the literature about neuromodulation in PHN found 16 reports with permanent SCS. Long-term pain relief from a permanent SCS was achieved in 47.1% of the reported PHN patients, with an average pain reduction of 79.0%, and an average long-term pain relief of 50.84 months.[13]

Even though spinal cord stimulation is mainly used for persistent spinal pain or complex regional pain syndromes, its use in other chronic pain syndromes is evolving. Nevertheless, it is rarely offered to patients with PHN. To the best of our knowledge, this was the first PHN patient treated with SCS in Portugal. The implantation of SCS for PHN treatment may offer a worthwhile option for pharmacological non-responders with anatomically intact neural pathways. Although more studies are required to determine if SCS provides better and more sustainable analgesia than other interventional procedures, it could be considered in more resistant cases. As for the prevalence and impact of PHN, this case report is expected to highlight the possibility to consider SCS as a 'rescue therapy' in patients with severe or refractory PHN, particularly when there is presence of allodynia.

AUTHOR CONTRIBUTIONS

AS: Study design and writing of the manuscript.

MB: Critical review of the manuscript.

PB, AG: Study design, writing and critical review of the manuscript.

LG: Literature search and critical review of the manuscript.

All authors approved the final version to be published.

PROTECTION OF HUMANS AND ANIMALS

The authors declare that the procedures were followed according to the regulations established by the Clinical Research and Ethics Committee and to the Helsinki Declaration of the World Medical Association updated in 2013.

DATA CONFIDENTIALITY

The authors declare having followed the protocols in use at their working center regarding patients' data publication.

PATIENT CONSENT

Obtained.

COMPETING INTERESTS

The authors have declared that no competing interests exist.

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