Clinical Features of Pain Improvent in Five Patients with Traumatic Spastic Paraparesis and Neuropathic Pain Treated by Spinal Cord Stimulation

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Abstract

Introduction: The objective of this study is to study the long term characteristics of Pain evolution Refractory spasticity and pain are common complications in paraplegia and their treatment by spinal cord stimulation (SCS) has been widely reported in the international literature.[1,2] However, although pain is present in 57% of cases of spastic paraplegia,[3] little has been described about its independent evolution when treated by SCS.[4] The aim of this presentation is to show preliminary results in four cases from an ongoing clinical trial.
Clinical description: Five patients, 4 men and 1 woman with Spastic traumatic paraparesis (3 cases Asia C and 2 ASIA D Scale) at lower dorsal spinal level with Spasticity and Neuropathic Pain were treated by dorsal spinal cord stimulation. Pre and post interventional Ashworth and Penn scales assessments, as well as Visual Analogue Scale (VAS) were monthly performed, 3 months before and after surgeries.
Results: Pre- and postoperative Ashworth and Penn scale assessments showed significant improvement, whereas the visual analogue scale showed little or no improvement during initial postoperative assessments, with modest improvement over time. Two patients regained some walking ability due to decreased severity of spasticity and spasms.
Discussion: In our 5 cases, we found a more favorable evolution of spasticity and spasm frequency than in the improvement of pain. Improvement of neuropathic pain has been described in isolated cases of complete paraplegia (ASIA A).[5] A recent extensive review describes the high prevalence of neuropathic pain in tetraplegics and below the lesion.[6] Other authors,[7,8] focused on spasticity have extensively described the pathophysiology of both. There are also authors who have extensively described the benefits and complications of spinal cord stimulation (SCS) in refractory spasticity.[9,10,11] However, none of these works provide data on the parallel evolution of both neurological signs.
Conclusions: While spasticity improved markedly and rapidly in our cases, pain showed unparalleled, slightly positive results, with some increase in benefits over time.

References

1. Cioni B, Meglio M, Pentimalli L, Visocchi M.Spinal cord stimulation in the treatment of paraplegic pain
2. Nagel SJ, Wilson S, Jhonson M, et al. Spinal cord stimulation for Spasticity: Historical approaches, Current Status, and Future Directions. Neuromodulation 2017;20: 307-32.
3. Priebe MM, Sherwood AM, Thornby JI, Kharas NF, Markowski J. Clinical assessment of spasticity in spinal cord injury: a multidimensional problem. Arch Phys MedRehabil1996;77: 713–6.
4. Pain severity and mobility one year after spinal cord injury: a multicenter, cross-sectional study. 4) Marcondes BF, Sreepathi S, Markowski J, Nguyen D, Stock SR, Carvalho S, Tate D, Zafonte R, Morse LR, Fregni .Pain severity and mobility one year after spinal cord injury: a multicenter, cross-sectional study..Eur J Phys Rehabil Med. 2016;52(5):630-636.
5. Reck TA, Landmann G.Successful spinal cord stimulation for neuropathic below-level spinal cord injury pain following complete paraplegia: a case report. Spinal Cord Ser Cases. 2017;3:17049.
6. Burke D, Fullen BM, Stokes D, Lennon O. Neuropathic pain prevalence following spinal cord injury: A systematic review and meta-analysis. Eur J Pain 2016; 24: 905.
7. Billington Z.J., Henke A.M., Gater D.R. Spasticity management after spinal cord injury: The here and now. J. Pers. Med. 2022;12:808.
8. Guest J , Datta N, Jimsheleishvili G, Gater DR. Pathophysiology, Classification and Comorbidities after Traumatic Spinal Cord Injury.J Pers Med. 2022;12(7):1126.
9. Dones I, Levi V. Spinal Cord Stimulation for Neuropathic Pain: Current Trends and Future Applications. Brain Sci. 2018;8(8):138.
10. Dekopov AV, Shabalov VA, Tomsky AA, Hit MV, Salova EM. Chronic Spinal Cord Stimulation in the Treatment of Cerebral and Spinal Spasticity. Stereotact Funct Neurosurg. 2015;93(2):133-139.
11. Mayr W, Krenn M, Dimitrijevic MR. Epidural and transcutaneous spinal electrical stimulation for restoration of movement after incomplete and complete spinal cord injury. Curr Opin Neurol. 2016;29(6):721-726