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Abstract

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Usefulness of PENS therapy in a case of entrapment nerve syndrome

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Abstract

Introduction

Scar tissue pain occurs at or around the site of scar formation due to the body's healing process following injury or surgery, where collagen fibers form to repair damaged tissue. This scar tissue may extend below the skin, creating an opportunity for nerve injury or entrapment¹. Various medications can treat painful scars before using interventional methods²: local anesthetics, NSAIDs, antidepressants, sodium-channel modulators, gabapentinoids, capsaicin, and more. Interventional methods include injections (local anesthetic, steroid, and botulinum) and neuromodulation (Transcutaneous Electrical Nerve Stimulation – TENS, Peripheral Nerve Stimulation – PNS, Dorsal Root Ganglion Stimulation – DRGs, and Spinal Cord Stimulation – SCS). Among neuromodulation therapies, Percutaneous Electrical Nerve Stimulation (PENS) is a minimally invasive technique suggested as a therapeutic intervention for managing mixed and refractory pain in different clinical conditions³. PENS uses fine-gauge needles inserted through the skin of the painful area, providing alternate electrical stimulation for a predetermined period. PENS works by electrically modulating the peripheral nerve, inhibiting nociceptive signals at the dorsal horns of the spinal cord, activating descending pathways, and releasing endogenous opioids. We present the case of a 40-year-old male who visited our outpatient facility, complaining of left groin and leg pain following five hip surgeries. He had a complex texture of scars in the left groin and pain in the distribution territory of the lateral cutaneous femoral nerve and the femoral branch of the genitofemoral nerve. Given the neuropathic symptoms and a positive block test, he was initially treated with ultrasound-guided pulsed radiofrequency ablation with no benefit.

Methods

Considering the mixed nature of the pain, we evaluated the efficacy of PENS. The patient underwent a block of the two major symptomatic scars with a local anesthetic, resulting in transient resolution of both nociceptive and neuropathic pain, confirming entrapment syndrome. Therefore, we used the i-STIM® device with a 120 mm i-PROBE® monopolar needle. After a sensitivity test confirmed stimulation in the usual pain area, the treatment was carried out up to 5 V with 2-100 Hz alternating stimulation. The treatment lasted 30 minutes for the two major scars.

Results

One month after the treatment, the patient reported 100% resolution of pain and initial recovery of tactile sensitivity in the distribution area of the two nerves.

Conclusions

Painful scars can develop after scar tissue forms due to various triggers. Patients typically experience a range of symptoms that can be treated with medical and interventional approaches. PENS has the advantage of being a minimally invasive therapy for both nociceptive and neuropathic pain and can be easily applied for scar and nerve entrapment syndrome.

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