▪ Headache Medicine 2026, Supplement ▪ p-ISSN 2178-7468, e-ISSN 2763-6178

Headache Medicine

ID: 66

Peripheral neuromodulation for refractory chronic migraine: a case report with long-term follow-up

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Introductio
Chronic migraine (CM) is a debilitating condition defined by headache occurring on 15 or more days per month. In cases of therapeutic refractoriness to conventional prophylactic lines, interventional strategies gain relevance. The trigeminocervical convergence justifies the efficacy of procedures on peripheral nerves, such as the greater occipital nerve (GON), supraorbital nerve (SON) and auriculotemporal nerve (ATN). Pulsed radiofrequency (PRF) emerges as a non-ablative technique that utilizes electromagnetic fields to modulate nociceptive signaling without causing structural thermal damage, offering a long-term alternative for the control of central and peripheral hypersensitization.

Case presentation
A 47-year-old female physician presented with a history of CM since age 15 and multiple therapeutic failures (gabapentinoids, topiramate, and amitriptyline). Comorbidities included asthma and bipolar disorder (treated with lithium, CBD/THC and venlafaxine). She experienced daily attacks exacerbated by bright light, stress and sleep deprivation. Physical examination identified a cervicogenic headache component associated with a peripheral component. After a positive response to diagnostic anesthetic blocks (GON, SON and ATN), she underwent bilateral PRF (non-ablative neuromodulation) of the aforementioned nerves. A reduction in the Visual Analog Scale from 10 to 3 was observed, along with a decrease in attack frequency from daily to 3 days/month. This clinical benefit allowed the tapering of sedative medications, with the patient remaining stable for 24 months. Recently, she presented with a recrudescence of pain, and a new PRF intervention is planned.

Discussion
This case illustrates the challenge of managing CM in patients with comorbidities, in wich polypharmacy limits dose escalation due to side effects. Recent literature corroborates that multi-target peripheral neuromodulation is effective in prominent sensitization. In this scenario, the anesthetic test block plays a fundamental role: beyond confirming the peripheral and cervicogenic components of pain, it acts as a clinical success predictor for PRF. A positive anesthetic response indicates the involvement of these specific pathways in pain genesis, validating the therapeutic target. The 2-year durability of the observed effect surpasses the average described for simple blocks, suggesting that PRF induces prolonged synaptic plasticity. The subsequent return of symptoms – possibly due to the progressive nature of the disease or reactivation of environmental triggers – justifies repeating the procedure as a maintenance strategy.

Conclusion
PRF of cranial and occipital nerves, supported by a predictive test block, demonstrated to be a safe and effective tool in refractory CM. The procedure provided a reduction in pain and attack frequency, improving quality of life by reducing pharmacological burden. This report reinforces the role of interventional pain medicine as an integral part of the treatment algorithm for refractory headaches.

Keywords:
Migraine
Neuromodulation
Test block
Non-ablative radiofrequency

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