

Cryoneurolysis for Chronic Scalp Itchiness: A Case Report

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BACKGROUND

Cryoneurolysis refers to a type of cryotherapy that involves applying low temperatures to nerve tissue to prevent transmission of signals and produce pain relief. This technology has been used successfully in several applications for acute post-surgical pain such as after knee and shoulder arthroplasty, mastectomy, and limb amputation. Cryoneurolysis has spread into the chronic pain world too, following the advancement of cryoablation technology and spread of ultrasound use which allow providers to perform procedures in the office. It has been shown to be effective for a variety of conditions such as osteoarthritic knee pain, phantom limb pain, cancer pain, and neuropathic pain. It's use in refractory neuropathic pain has been significant in demonstrating long-lasting relief in patients who have failed many other forms of treatment.

Neuropathic itch is a neuropathic pain condition that can be very difficult to treat, with limited effective options. It has been estimated that neuropathic itch makes up about 8% of chronic itch cases¹, and 1/3 of patients with neuropathic pain report itch as one of the features². Chronic neuropathic itch can lead to central sensitization, with development of allodynia, similar to allodynia, where light touch causes an itchy sensation. Scalp pruritus is a type of neuropathic itch or scalp dysesthesia condition with unknown etiology, but with highest prevalence in female patients and those with a history of psychiatric disease, cervical spinal pathology, and diabetes^{3,4,5}. In this report, we describe a case of refractory chronic occipital scalp neuropathic pruritus treated with cryoneurolysis.

CASE

The patient is 52-year-old female with a past medical history of T2DM and bilateral knee osteoarthritis who presented to the clinic with a chief complaint of chronic pruritus on the posterior scalp in the occipital nerve distribution for 14 years. Prior to presentation, the patient had tried multiple therapies including shampoos, gabapentin, duloxetine, amitriptyline, capsaicin cream, and allergy medications without significant relief. Interventions that provided minimal relief included botulinum toxin injections, lidocaine cream, and anatomy-guided occipital nerve blocks. In our clinic, the patient received ultrasound-guided bilateral occipital nerve blocks, which provided one day of substantial relief. Given the effectiveness of the procedure, the patient underwent ultrasound-guided bilateral occipital nerve cryoneurolysis with Iovera which led to full relief of symptoms on her left side only. Patient subsequently underwent right sided occipital nerve radiofrequency ablation and experienced moderate relief that was not as effective as the cryoneurolysis on the left side. The effects lasted at least 2 months on the left side before symptoms returned.

Treatment Timeline

Prior medications	Ketoconazole and clobetasol shampoo, gabapentin, oxcarbazepine, duloxetine, amitriptyline, capsaicin cream, lidocaine cream, allergy medications
Prior interventions	Botulinum toxin injections, anatomy-guided occipital nerve blocks
Initial presentation	Bilateral Occipital Nerve Blocks Substantial bilateral relief for one day
1 month later	Bilateral Cryoneurolysis with Iovera Complete relief on left side, minimal relief on right side
2 months later	Right Occipital Nerve RFA Moderate relief on the right side
~2 months after Iovera procedure	Symptoms returned Return of itchiness in occipital distribution bilaterally

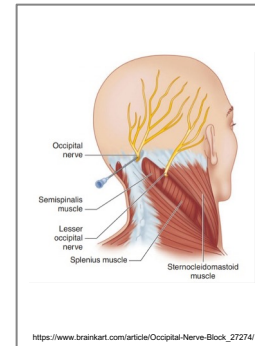


Figure 1. Anatomical representation of the site of exit for the greater and lesser occipital nerves and common injection site for greater occipital nerve block

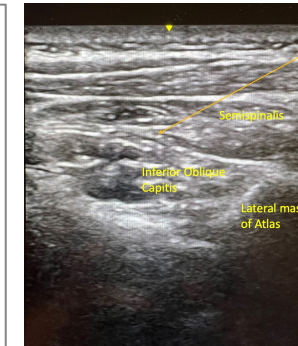


Figure 2. Ultrasound image of injection target and anatomical landmarks used in the case

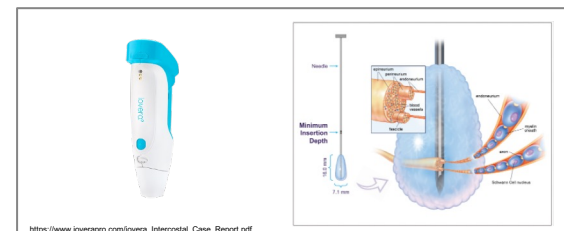


Figure 3. Iovera device used for cryoneurolysis with representation of the microenvironment created by the ice ball using the Smart Tip 190 needle

DISCUSSION/CONCLUSIONS

There have been very few case reports describing interventional strategies for chronic scalp pruritus. Some cases have shown beneficial effects of targeting the greater occipital nerve (GON) either with CT-guided GON ablations, or bedside GON block with bupivacaine^{6,7}. Other scalp dysesthesias, such as occipital neuralgia, have more robust scientific literature, with evidence for cryoablation as an effective treatment option for patients that have pain relief with local nerve blocks⁸. To our knowledge, there have been no case reports discussing the use of cryoneurolysis specifically for chronic neuropathic itch.

This case illustrates the potential of ultrasound-guided cryoneurolysis to help mitigate symptoms of atypical occipital neuralgia for patients who have failed conservative management. This is a unique approach that pain medicine providers can utilize, particularly for patients who have demonstrated analgesia with occipital nerve blocks.

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