The Use of Cryoneurolysis in the Management of Chronic Pain Attributed to Treatment Resistant Occipital Neuralgia

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Introduction

Occipital neuralgia is a rare medical condition characterized by severe paroxysmal attacks of potentially debilitating pain at back of the scalp that can radiate into the lower neck, anatomically corresponding to the greater and lesser occipital nerves. Pain can occur either spontaneously or represent a provoked response to innocuous stimuli such as the brushing of nearby hair follicles. Pain is often associated with local allodynia, dysesthesia, or tenderness to touch. While the pathophysiology of occipital neuralgia is poorly understood, current hypotheses relate to direct damage to the occipital nerves and/or to the C2/C3 nerve roots via nerve entrapment by the muscles of the scalp, posterior neck, or occipital artery or by trauma (concussion), inflammation, or joint instability. Occipital neuralgia is distinct from cervicogenic headache, which arises from the cervical joints and/or its surrounding soft tissues.

Cryoneurolysis is a treatment modality that has ben around since the 1970's that is aimed at achieving controlled reversible long-lasting analgesia via second degree nerve injury by timed introduction of a cryosurgical probe cooled to between -20 and -100° C. Although many case reports of cryoneurolysis exist for trigeminal neuralgia, few case reports of cryoneurolysis exist assessing the treatment occipital neuralgia.

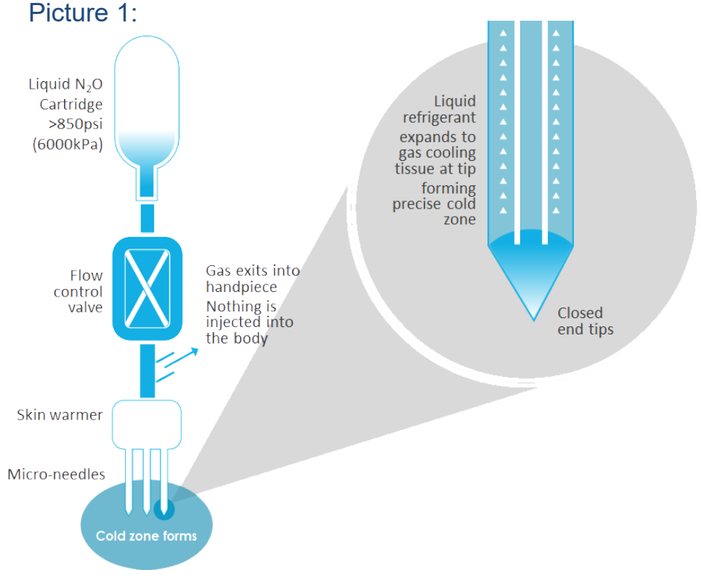
Methods

We present the case of a 44 year old female with a 4 year history of right sided occipital neuralgia resistant to guideline directed medical therapy that included right greater and lesser occipital nerve steroid injections. The patient continues to be seen in our clinic and treatment is continuing.

Results

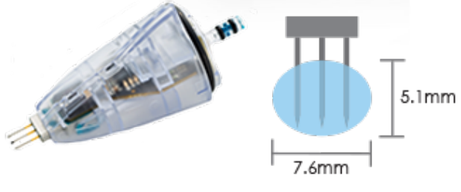
A 44-year-old woman with right-sided occipital neuralgia with onset 4 years prior after a right ear infection and ruptured tympanic membrane who failed medical therapy and right greater and lesser occipital nerve steroid injection. Decision was made to attempt cryoneurolysis of the right greater and lesser occipital nerve (hereafter GON and LON) under ultrasound guidance with the Iovera Cryoanalgesia Device in an attempt to relieve chronic pain. Injection was done with local anesthetic administration to each nerve and two rounds of cryoneurolysis were used in effort to achieve second degree nerve injury. After this treatment, the patient described 10 months of full relief from right greater and lesser occipital nerve pain but with residual constant dull pain at the right occiput radiating down the neck. At 10 months post cryoneurolysis, the patient represented to clinic with mild right-sided greater and lesser occipital pain and at 11 months she had a full return of occipital neuralgia, again with 20-30 bouts of electric shock pain at the base of the right posterior skull with a dull pain worst at the right occiput otherwise. At this time, she underwent a C2/C3 and third occipital nerve radiofrequency ablation due to her accompanied chronic right trigeminal and right neck pain radiating downward from her right occiput and into her right shoulder. The patient felt this only worsened her accompanying pain despite successful preliminary C2/C3/Third Occipital nerve medical branch blocks. She subsequently underwent a second round of greater and lesser occipital nerve cryoneurolysis at 12 months. At 2 months following the second round of GON/LON cryoneurolysis the patient was still experiencing increased pain from the RFA and did not endorse improvement in her right occipital neuralgia. However, at 4 months the patient did again endorse decreased electric shock pain from baseline 2-3 occipital neuralgia headaches/hour to 2-3/day.

Picture 1:



Picture 2:

Picture 3:



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Conclusions

Our experience treating a refractory case of occipital neuralgia with cryoneurolysis shows that cryoneurolysis is a viable treatment option for our patients who have failed traditional treatment procedures and provides important advantages such as in-clinic treatment and low rates of complication. By achieving occipital nerve axonotmesis, we were able to relieve our patient's prolonged (>4 year) chronic pain for approximately 10 months. A second cycle of cryoneurolysis appears to be moderately successful but results were obscured by radiofrequency ablation proximal to the treatment site. We continue to follow our patient described above and to track her response to continued treatment cycles in efforts to better control chronic pain.

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