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Dry Needling for Deep Orbital Trochlear Headaches: A New Application of an Old Practice

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Case Report

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Abstract

Trochlear headaches are a distinct, yet underrecognized, type of headache arising from multiple anatomical sources, typically within the superior periorbital region, and stemming from different pathophysiologies. We present a 37-year-old female with right-sided chronic worsening trochlear headache, whom we successfully treated through the novel process of dry needling to her superior orbit, after she had not responded favorably to established practice patterns.

Keywords: trochlear, headache, dry needling.

Introduction:

Trochlear headache is a distinct form of headache that remains under-recognized among headache syndromes. As outlined by 'The International Classification of Headache Disorders'- the third edition, it is defined as periorbital or frontal headache, with or without unilateral ocular pain, with tenderness upon palpation of the superomedial orbit that is exacerbated by ocular movement [1]. Anatomic sources for this pain remain unclear, but possible structures include the cartilaginous trochlea, supraorbital nerve, supratrochlear nerve and/or the superior oblique muscle, tendon, and sheath. Pathophysiologic sources for trochlear pain include neuropathic, neuromuscular, and inflammatory, the latter of which is specifically known as trochleitis (an inflammation of the trochlea or superior oblique sheath). The intraorbital course of the supratrochlear nerve, especially in relation to the supratrochlear artery, the trochlea and the ligamentous sling, might result in nerve compression in some patients. [2] Regardless, a great deal of etiologic overlap is seen and therefore similar approaches to treating the pain are often required. The majority of patients can achieve relief with oral non-steroidal anti-inflammatory drugs (NSAIDs), oral steroids, or direct injections of steroids [2,3,4,5], but a significant portion of patients still achieve little to no pain relief. Here, we present a novel way of managing trochlear headache in patients complaining of pain genesis in the superior aspect of the orbit.

Case:

A 37-year-old female with a history of chronic pain syndrome, Lyme disease previously treated with a six month regiment of antibiotics including oral doxycycline, rifabutin, and cefdinir, Sjogren's syndrome, obstructive sleep apnea and depression presents to the neuro-ophthalmology clinic with a chronic intermittent headache below her right brow and deep within her superonasal orbit for nearly 10 years. The headache is described as alternating between aching, stabbing, and shooting throughout her deep orbit, and had become constant in nature during the preceding year.

Her neurologist attempted to abate the pain using a multimodal approach including acetaminophen, amitriptyline, and gabapentin, all of which were either ineffective or with significant side effects (particularly drowsiness). She was referred to a local specialty pain clinic where she began receiving supratrochlear nerve blocks with mepivacaine and methylprednisolone. This provided temporary relief but eventually became tachyphylactic for this patient's pain.

Due to intermittent pain with extraocular movements and deep orbital pain, the patient was referred to neuro-ophthalmology for evaluation. On examination, the trochlear pain was redemonstrated with palpation to the superomedial orbit inferior and deep behind the trochlear area. She demonstrated full extraocular movements. Magnetic resonance imaging (MRI) of the head done two years prior did not show signs of inflammation. Due to her lack of treatment response with oral pain medications and classic supratrochlear nerve blocks, we attempted a nerve block with triamcinolone (1ml, 40mg/ml) and lidocaine 1% (0.1 ml) injections deep in her superonasal orbit (behind the trochlea) with immediate relief of her pain. Due to the effectiveness of these deep orbital blocks, she was referred to our Orofacial Pain Clinic to discuss potential radiofrequency ablation of her right supratrochlear nerve. In the meantime, the patient mentioned that she had recently received dry needling of her right shoulder

with significant relief of her pain and was wondering if a similar procedure could be done for her superonasal orbital pain. We discussed with the patient that dry needling of the deep orbital supratrochlear nerve had never been attempted in the literature but would be relatively safe to attempt as a similar location with steroid injections is often accessed.

Given the deep location of her pain, a 22-gauge 1.50-inch needle was then passed multiple times into the right superonasal orbit, behind the trochlear area, and the patient felt an immediate relief of her pain. On follow-up, she reported that the pain did not return for about 4-6 weeks, and she only developed a small bruise in the corner of her eye. We performed trochlear needling again (of note, the following dry needling sessions were performed with a 27-gauge 1.25-inch needle instead in order to avoid further bruising) with immediate relief of her pain. Pain relief typically lasted 4-6 weeks after each session. The patient continued to receive trochlear needling until she was seen by our Orofacial Pain Clinic.

Discussion:

Dry needling is the practice of placing needles, in the absence of injected solution, into muscles, tendons, and subcutaneous tissues. Dry needling is a relatively new management strategy that has been used in a variety of musculoskeletal conditions. Specifically, dry needling has shown efficacy in conditions such as fibromyalgia (dry needling of trigger points), myofascial pain, and back pain [6,7,8,9].While acupuncture is based on a system of meridians, which is unlike trigger point injections, there is a similar low risk profile [10].

Previous studies have attempted to learn the mechanism behind the efficacy of dry needling. A leading hypothesis is the ability to interrupt the myofascial trigger point circuit: a circuit consisting of localized muscle tension due to excess acetylcholine release, resultant tissue irritability and release of sensitizing substances, and central sensitization due to nociceptors feeding back to dorsal horn cells of the spinal cord. Dry needling, through hyperstimulation analgesia, most likely inhibits the circuit via the descending pain inhibitory system. This system, or gate control theory of pain, championed by Melzack, allows for central inhibition of the circuit. The pressure provided by the hollow needle at the myofascial trigger point loci, especially in a fast and repetitive action, provide activation of the inhibiting neural feedback system. This results in an immediate abatement of the pain [11,12].

In summary, this case report exemplifies the utility of dry needling in managing trochlear headache in patients complaining of pain genesis in the superior aspect of the orbit. While its application to trochlear headache specifically has not been reported before, the practice of dry needling itself is commonly used for other types of pain. We recommend dry needling in patients with trochlear headaches who do not respond well to oral or injection medications, or for those who respond appropriately to such interventions but are unable to tolerate their side effects. While dry needling for trochlear headaches has not been explored in a study of several patients before, its relative safety and inexpensiveness qualify it as an adjunctive treatment option.

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