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Occipital Nerve Blockage in Cervicogenic Headache: A case Report and Brief Review of Literature

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Abstract

Head and neck pains are frequently encountered complaints in physical therapy outpatient clinics. In most clinics worldwide, nerve blockage technique is successfully used together with pharmacological treatments. Trigger point blockage, occipital nerve blockage, trigeminal nerve blockage, and C_{2-3} spinal nerve blockage are all effective in the treatment of all types of headaches. Peripheral nerve blockages have long been used in the treatment of headaches. Peripheral nerve blockages may include the major and minor occipital, supraorbital, supratrochlear, trigeminal, auriculotemporal and glossopharyngeal nerves. Additionally there is no significant consensus on peripheral nerve blockage techniques applied to primary or secondary headaches. Occipital nerve blockage is an easy, reliable, practical method such other peripheral nerve blockages. Here, we present a 64-year old male with head and neck pain diagnosed as cervical spondylosis and treated with occipital nerve and trigger point blockage.

Key words: Occipital, nerve blockage, cervicogenic, headache

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Introduction

Head and neck pains are frequently encountered complaints in physical therapy outpatient clinics. Headaches may be primary (migraine, tension type and cluster type) or develop as secondary (infection in the head, tumor, trauma, severe hypertension or diseases of the eye, nose, throat, teeth, ear or cervical spine). Peripheral nerve blockages have long been used in the treatment of headaches. There is no significant consensus on peripheral nerve blockage techniques applied to cranial neuralgia, primary or secondary headaches. Peripheral nerve blockages may include the major and minor occipital, supraorbital, supratrochlear, trigeminal, auriculotemporal and glossopharyngeal nerves [1].

Cervicogenic headache is a syndrome, not a disease. The clinical table has been completed and diagnostic criteria have been established. Cervicogenic headache is basically a unilateral headache. It starts as episodic and may progress as in waves or with a chronic course. Symptoms and findings showing localization in the neck are mandatory. It is typical for an attack to start with neck movements or mechanical pressure [2-4].

Here, we present a 64-year old male with head and neck pain diagnosed as cervical spondylosis and treated with occipital nerve block, trigger point injections and exercises. In this paper, the efficacy of occipital nerve blockage is discussed with literature insight.

Case

A 64-year old male presented with complaints of localized headache in the posterior region of the head and neck and numbness in the arms, which had been ongoing for a long time. The pain occurred intermittently and lasted for several hours. It increased with physical activity in particular. The headache spread across the anterior region of the head and was accompanied by photophobia, phonophobia, nausea, vomiting, dizziness and eye pain. The pain increased with neck movements. No loss of strength in the arms was reported. There was no history of trauma. As the patient had hypertension, he was taking medication regularly.

In the physical examination, there was a reduction in cervical lordosis and evident paravertebral muscle spasms. There were trigger points in the trapezius, supraspinatus and

levator scapulae muscles. Extension and rotation of the neck were painful and restricted. There was no sensitivity or motor deficit or pathological reflex giving a level in the upper extremity. On the cervical lateral radiograph, there was severe narrowing and osteodegenerative findings in the intervertebral foramen, especially at the levels of C_{5-6} and C_{6-7}.

The findings in the patient which had developed as a result of cervical spondylosis suggested cervicogenic headache. Occipital nerve block was planned for the patient, who was informed of potential complications. Informed consent was obtained. An injection of 1 cc 1% lidocaine was applied to the major occipital nerve localization. Injections were made to the trigger points in the muscles around the neck then stretching exercises were applied. No complications developed in the patient, who reported that the pain had receded immediately after the injections. Isometric and stretching exercises were recommended to the patient but no additional medication.

The injections were repeated at the 1 and 3 month follow-up examinations. At the 1-month follow-up, the VAS pain score had reduced from 9 cm to 5 cm and at the 3-month follow-up, it was found to be 3 cm. In the physical examination, neck movements were pain-free and close to full in extension and rotation. As the patient's complaints had decreased, he was given a home exercise program and monitored.

Discussion

Nerve blockage is one of the treatments for headaches apart from medication. In most clinics worldwide, nerve blockage technique is used together with pharmacological treatments. Trigger point blockage, occipital nerve blockage, trigeminal nerve blockage, and C_{2-3} spinal nerve blockage are all effective in the treatment of headaches. Stellate ganglion blockage (SGB) is often used in addition for headaches. Although it has not been fully clarified why SGB is effective in headaches, it is thought to be related to the stabilization of abnormal sympathetic nerve function and the inhibition of inflammation in the vascular wall. The nerve blockage technique is an effective and important treatment choice for patients with headaches [2].

The entire trigeminocervical system has an important place in cervicogenic headaches. Dizziness, ringing in the ears, nausea, and loss of balance, loss of hearing, nose and eye pain may accompany cervicogenic headaches. The trigeminocervical and vestibular circuit systems are explained by the relationship with cervical afferent neuromodulation [1-3].

For diagnosis, it is necessary to remove the pain with major occipital nerve or C_2 cervical spinal nerve blockage using 0.5-1 cc of 1-2% lidocaine. The source of the pain episodes may be structures such as bone, periosteum, muscle, ligament, ganglion, nerve root, uncovertebral joint, disc or vein in the neck or behind the skull. The major occipital nerve, after separating from the C_2 spinal nerve dorsal ramus, passes below the suboccipital triangle and by passing within the oblique's capitis inferior and trapezius muscle, goes upwards towards the scalp. It innervates the head, ears and parotid region. Pressure on this part of the nerve in particular, causes cervicogenic headache. In clinical practice, by dividing the line passing between the mastoid and protuberantia externa into 3 equal parts, the major and minor occipital nerve can be localized. Roughly, this can be applied by considering a distance of 2.5 cm from the medial of this line. In injections, attention must be paid to the occipital artery and the injector must be checked for blood entering before the injection [1-3].

The close relationship of the trigeminal nucleus with the nerves coming from C_{1-2} in the brain stem has been known for many years (Kerr principle). The neuro-anatomic basis of cervicogenic headache is formed with the entrances of the first 3 cervical spinal nerves to the same nucleus of the trigeminal nerve, the nucleus propria. The clinical evidence of this theory is the removal of the pain from the area of the trigeminal nerve with occipital nerve blockage [2,3].

The causes of cervicogenic headache can be differentiated from those of other headaches with various clinical characteristics. A significant differentiating characteristic of cervicogenic headache is that the pain is always on the same side and that it spreads upwards from the neck from the posterior part of the head. Tension-type headaches are bilateral and migraines generally tend to change sides. In the differential diagnosis, hemicrania continua can be considered, which does not change sides and could be accompanied by long-term autonomic symptoms. In this, the pain starts from the oculofrontotemporal region [4].

Occipital neuralgia is a rare cause of headache, which demonstrates that the occipital nerve is inflamed and damaged. The dorsal root distribution of the C_2 spinal nerve causes unilateral, short-term and generally deep, sharp, tingling pain in the suboccipital area spreading from the occiput towards the vertex. Trauma and degenerative changes in the upper cervical vertebrae may be included in the etiology. This may be accompanied by pain behind the eyes, scalp sensitivity and painful neck movements. It can be differentiated from cervicogenic headaches by the duration and character of the pain [3].

Several studies have shown major occipital nerve blockage applied at 3-month intervals to be effective in cluster-type headaches. Major occipital nerve blockage, minor occipital nerve blockage, C_{2-3} nerve blockage and cervical facet joint blockage can be used in the diagnosis and treatment of cervicogenic headaches. A study which compared C_{2-3} nerve blockage with major occipital nerve blockage in the diagnosis and treatment of cervicogenic headaches found the two methods to be equally effective [5,6].

In a study which compared pulse radiofrequency therapy with major occipital nerve blockage in resistant cervicogenic headaches, a mixture of steroids and local anesthetic was administered to 15 patients and radiofrequency was applied to 15 patients. At the 3 and 9-month follow-up examinations, a significant reduction in pain scores was determined in both groups [7].

To investigate the efficacy of major occipital nerve blockage and trigger point injections in patients with a wide spectrum of cervical complaints, another study conducted in a pain clinic determined that patients had benefitted from these techniques [8].

Side-effects may be seen in nerve blockages associated with the agents used besides the method itself. Systemic complications and nerve damage may be seen associated with the use of local anesthetic. Systemic complications may include mild systemic effects, agitation, a metallic taste in the mouth, sensory deficits, cardiovascular events (tachycardia, ventricular arrhythmia and arrest) and central nervous system impairments and careless intravascular applications may result in death [2-5].

In a study investigating side-effects associated with blockage with lidocaine in the treatment of occipital neuralgia, 1-2% and 5% lidocaine and 20 mg Depo Medrol were administered.

The vast majority of the patients with side-effects were determined to be female and had been treated with 5% lidocaine with a bilateral block. It was concluded that the application of 1% lidocaine is safe but in the application of 5%, it is necessary to take care especially in older patients and bilateral applications [9]. Various side-effects may be seen associated with corticosteroids used in nerve blocks. Cutaneous atrophy and alopecia have been seen following occipital nerve block made with triamcinolone. Although this procedure is generally well tolerated, the side-effects of corticosteroids restrict its use [10].

In the treatment of the acute phase of cluster-type headaches, sumatriptan subcutaneous injection and nasal spray with additional high density oxygen therapy can be used. Calcium channel blockers (verapamil) and steroids are recommended as preventative treatment against acute attacks. In addition to these medications, occipital nerve block, deep brain stimulation, vagal nerve and occipital nerve stimulation are new treatment methods for resistant cluster-type headaches [11].

Although nerve blockages and trigger point injections are often used in the treatment of headaches, the methods of use show differences. In addition, there is insufficient Level 3 and 4 scientific evidence in literature related to occipital nerve blockage [12]. Therefore, this is an area of research open to physicians in all branches of pain management. It is aimed to bring about a consensus on the methods and more widespread use of this method.

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