The occasional greater occipital nerve block

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Greater occipital nerve block is a simple technique used to both diagnose and treat the greater occipital nerve subtype of occipital neuralgia (itself a basket term for "neuralgic pain in the distribution of the greater or lesser occipital nerve or of the third occipital nerve").[1] The technique is simple and relatively complication-free. Both the greater and lesser occipital nerves may be blocked, but this article will concern itself with block of the greater nerve (Fig. 1).

ANATOMY AND PATHOPHYSIOLOGY

The greater occipital nerve (or nerve of Arnold) is a spinal nerve providing for sensation of the scalp. It arises from the medial branch of the dorsal ramus of the C2 nerve (along with the lesser occipital nerve) emerging from between the first and second cervical vertebrae.

It then runs posteriorly behind the spinal articular processes and extends up the neck, over the dorsal surface of the rectus capitis posterior muscle, then passes through the trapezius muscle. Ultimately, it exits the trapezius and runs subcutaneously to innervate the skin of the posterior portion of the scalp, from the occiput to the vertex of the skull[2,3] (Fig. 1).

The term neuralgia has traditionally been used to mean nerve pain for which there is no demonstrable pathologic change in the nerve and the exact pathophysiology is unclear. The currently accepted view is that greater occipital nerve neuralgia results from the chronic entrapment of the greater occipital nerve by the posterior neck and scalp muscles.[4,5] However, other mechanisms, including neck instability, trauma, inflammation and compression by the occipital artery, may be operative in individual patients.[5]

INCIDENCE

No data are available on the incidence of occipital nerve neuralgia in the primary care population.[5]

SYMPTOMS

Patients often describe an occipital headache of relatively recent onset, with hard-to-describe, but fairly severe, pain that originates in the upper neck and spreads to the vertex. The disorder may be bilateral and seems to develop in most patients without an obvious provoking cause. The pain tends to be of a neuropathic quality, described as stabbing or electric-shock–like, with a dull and chronic discomfort often present between the paroxysms. Pain may appear to be spontaneous, or may be provoked by such factors as neck movement, hair brushing or cold.[2,5]

SIGNS

The key signs are described below.[5]

- Pressure, palpation or percussion over the greater occipital nerve in the area of its emergence, about 1.5 cm below the superior nuchal line and 1.5 cm medial to the lateral border of the trapezius (Fig. 2), will provoke pain (a Tinel sign) or elicit paresthesia over the distribution of the nerve. There may be some pain provoked on cervical movement, although generally not markedly.

- There may be a decrease in range of motion of the cervical spine along with some local spasms of the posterior cervical muscle.
- There may be an area of diminished sensation or dysesthesia over the distribution area of the greater occipital nerve, but this is hard to elicit. The important fact is that the neurologic examination is otherwise normal, and any abnormality thereof should raise suspicion of a more serious cause of the pain.

DIAGNOSTIC CRITERIA

The diagnostic criteria are as follows:[5]

- Paroxysmal stabbing pain, with or without persistent aching between the paroxysms of pain, in the upper neck and posterior occiput, radiating to the vertex.
- Pain reproduced by pressure over the greater occipital nerve.
- Pain that is eased, at least temporarily, by local anesthetic block of the greater occipital nerve.

Imaging is generally not required to make the diagnosis.

DIFFERENTIAL DIAGNOSIS

The differential diagnosis of pain in the occipital area includes the following:

- Cervical spine disease (i.e., osteoarthritis, neoplasm or injury). There will likely be more prominent symptoms of cervical spine disease. Magnetic resonance imaging (MRI) may be ultimately needed, especially if there is no response to injection (see below).
- Posterior fossa disease. The neurologic examination may be abnormal. Computed tomography or MRI is indicated.
- Myofascial pain syndromes of the trapezius and sternomastoid muscles. This diagnosis is not mutually exclusive of greater occipital neuralgia, because compression of the greater occipital nerve within a tense trapezius muscle may be one of several mechanisms in the pathogenesis of greater occipital neuralgia. In myofascial pain syndrome there will be a single large tender pressure point, or multiple smaller tender pressure points, as opposed to the relatively small area of tenderness over the greater occipital nerve that is seen in occipital neuralgia.
- Trigeminal neuralgia. In this case the neuropathic pain tends to involve the face.

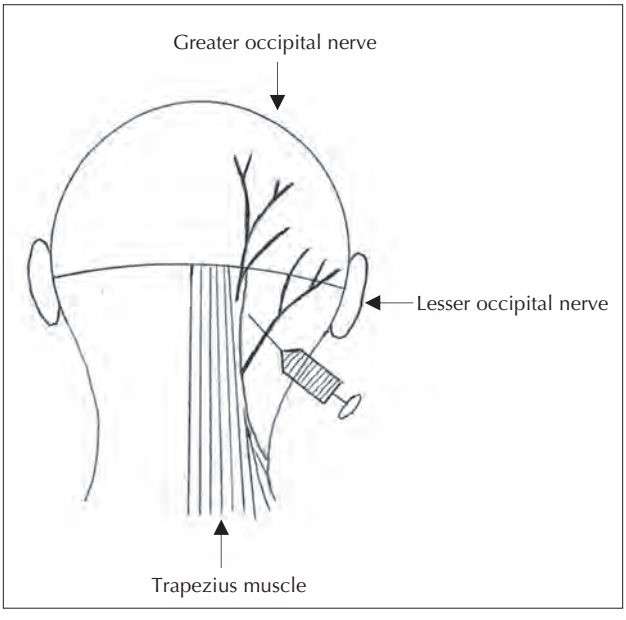

Fig. 1. Greater and lesser occipital nerves and needle position for the block.

NERVE BLOCK PROCEDURE

Nerve block of the greater occipital nerve is both diagnostic and therapeutic.[2,6]

As with all injections, contraindications include infection or cellulitis over the injection site, or allergy to any of the components of the local anesthetic.

1. Prepare the equipment you will need (Fig. 3):
   - a 3–5 mL syringe with a 25-gauge 5/8" or 1-1/2" needle, depending on the patient's size
   - 1–3 mL of 1% or 2% lidocaine and 1 mL (40 mg) of methylprednisolone solution
   - your usual skin-preparation materials for sterile technique
2. As always, the best anxiolytic is a careful explanation by the physician.

Fig. 2. Point of tenderness of the greater occipital nerve.

3. I use a height-adjustable surgical tray. My technique is usually to position the patient sitting, with neck and thorax flexed, resting the forehead on the forearms, which are on the surgical tray (Fig. 4).
4. Prepare the skin with your usual method.
5. Identify the point of tenderness of the nerve, about 1.5 cm below the superior nuchal line, 1.5 cm medial to the lateral border of the trapezius (Fig. 2).
6. Introduce the needle there at a 90° angle to the skin; insert until the bone (skull) is hit and then withdrawal slightly. Aspirate to ensure there is no return of blood (the occipital artery lies just laterally) or cerebrospinal fluid (Figs. 1 and 5).
7. Inject 1 mL of solution over the nerve, then about 1 mL to the left of the nerve and a further 1 mL to the right, in a semilunar configuration.
8. After the needle is withdrawn, maintain pressure over the injection site, to "bathe" the nerve in the solution and maintain hemostasis, because of the rich vascularity of the scalp.
9. Evaluate the patient after 15 minutes. Relief of the pain previously produced by pressure over the nerve is indicative of a successful injection.
10. Explain to the patient that there will be relief of the pain for several hours, but pain will return in a few hours because of the effect of the lidocaine wearing off. The patient can use ice and acetaminophen for the local pain. The patient can be told to expect relief lasting for several months or longer, beginning in 1–2 days.

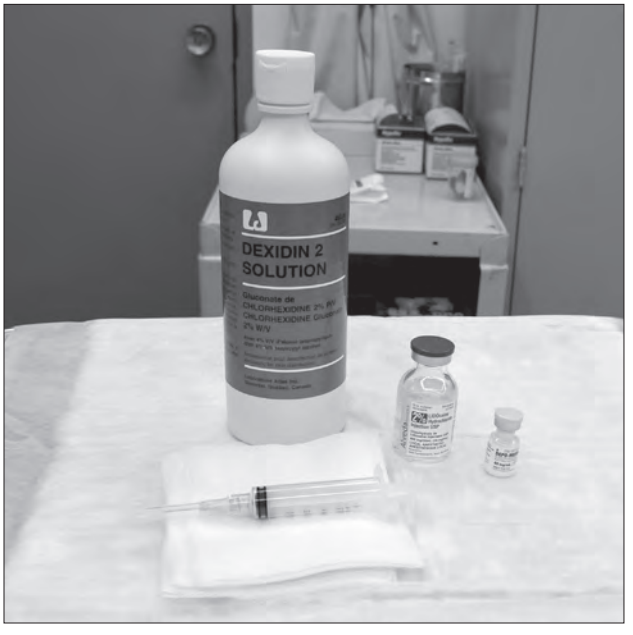

Fig. 3. Equipment needed for the nerve block procedure.

CAVEAT

As mentioned earlier, anesthetic block of the nerve is both diagnostic and therapeutic. However, it should be appreciated that relief of the pain by greater occipital nerve block (the "final common pathway") is not 100% specific for pain that is of a presumed idiopathic neuralgic origin. Any of the mechanisms for occipital nerve pain — as mentioned in the "Differential diagnosis" section — such as trapezius muscle spasm, could still be underlying and require treatment in its own right.

COMPLICATIONS

Because of the superficial location of the nerve and the ease of injection, complications, besides inadvertent intravascular injection, are few. There may be some transient paresthesia due to irritation of the nerve by the needle or bleeding. Most patients are able to drive and return to work immediately afterwards.[5]

Fig. 4. Position the patient.

Fig. 5. Introduce the needle.

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Life, death and whatever else ... snippets from a medical life

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AN EMBROIDERED LIFE

She stitched herself an ordered
and meticulous life.
Threads of her embroidery lay
down tidily side-by-side.
Colours rich and varied storied
her life fulfilling.

Yet she began to stitch herself
a random and other life.
Threads of her embroidery now
lay hesitant side-by-side.
Colours jarring and unvaried
storied a life vacant, without
meaning.

Now rare those stitched glimpses.
Born of brief fleeting memories.
She had once stitched herself
an ordered and meticulous life.

A HUNTER'S JOURNEY

He sits on his bed
In his room
Table, chair, and dresser, a tableau
Of his meager surroundings
To my greeting
His native eyes look away
As is his custom
He waits
Your results are back
He knows
It is cancer I tell him
I wait
For his help
OK he says
His gaze directs me
To the wall by his bed
A photograph grainy

Black and white
Human subjects indistinct
That is my uncle
He says
That is my cousin
My nephew
Myself
From where I come from

He lies on his bed
In his hospital room
Table, chair, and dresser, a tableau
Of his meager surroundings
A glass of water at bedside
His temporary possession
He is focused
Determined in the work
of his dying

I wait
For his help
He gestures for water
I help him drink
A nod of thanks
As I see
His uncle grainy and distinct
The hunter
He waits