

Occipital Neuralgia Secondary to Respiratory Tract Infection

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Occipital neuralgia is an extracranial pain that may be confused with other headaches. It can be attributed to multiple causes. The authors report the case of a 55-year-old woman suffering from right occipital neuralgia secondary to respiratory tract infection that began 6 days before the pain started. The patient suffered from a sharp and burning pain with paroxysms in the right occipital region and at the top of the right ear. Sensation was decreased in the affected area, and hypersensitivity to touch and cold water was also noted. Tinel's sign was present, and local anesthetic block produced pain relief. The combination of gabapentin and amitriptyline did not provide significant pain relief but led to marked adverse effects. Carbamazepine (300 mg/d) was required for pain control. A month later the patient appeared totally pain-free. The treatment was continued for 3 months, and the patient remained pain-free over a subsequent follow-up period of more than 6 months. Thus, in the case of occipital pain, a careful assessment of symptoms and a thorough history are necessary to obtain the correct diagnosis and to choose the appropriate treatment plan. J OROFAC PAIN 2005;19:261-264

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Occipital neuralgia is a rare neuralgic disorder that is sometimes difficult to diagnose and differentiate from other headaches. It can be caused by trauma, infection, irritation, or compression of the occipital nerve (greater and lesser) somewhere along its course from the C2 nerve root to the periphery.¹⁻³ The greater occipital nerve innervates the skin of the occipital area and corresponds to the dorsal ramus of the C2 root. It can receive additional fibers from the first and the third cervical roots. The lesser occipital nerve emerges from C2 ventral ramus and supplies the scalp over the mastoid and the posterior area of the ear.⁴

The authors report an uncommon case of occipital neuralgia following infection of the respiratory tract.

Case Report

History

A 55-year-old woman was referred to the department of pharmacology because of pain in the right occipital region and at the top of the right ear (Fig 1). The pain, which had been present for at least 3 days, was sharp and burning, with paroxysms, although aching was persisting between paroxysms, and was rated as a 10 on a 10-point pain scale. At presentation the patient described the



Fig 1 Patient's painful areas.



Fig 2 Radiograph showing diffuse pulmonary infiltration of the right base with hyperemia of the ipsilateral hilum.



Fig 3 Magnetic resonance image between vertebrae C2 and C3 revealed a normal cervical spinal marrow.

painful area as hypersensitive to cold water and touch. According to the patient, cold water and touch (eg, putting her glasses on, touching the right side of her head to a pillow) caused paroxysmal attacks. The pain awakened the patient from sleep.

The patient had no history of head or neck trauma. However, 10 days earlier, she had begun suffering from an infection of the upper and lower respiratory tract, with fever (38°C), rhinitis, rhinorrhea with watery nasal discharge, cough, and sore throat. Two days after the onset of these symptoms, she visited the outpatient department of an internal medicine clinic due to episodes of dyspnea. A physical examination, laboratory findings (white blood cell count of 5,000/ μ L, Gram stain of a specimen of sputum was negative), and chest radiograph (Fig 2) led to the diagnosis of a viral infection of the upper respiratory tract, probably complicated by viral pneumonia. As a consequence the patient was admitted to the internal medicine unit for supportive treatment. Four days later, when the clinical situation had already improved, the pain in the occipital region appeared. It was treated with nonsteroidal anti-inflammatory drugs (NSAIDs) but without relief. Three days later she was referred to the department of pharmacology.

Clinical Examination

The clinical examination showed trigger points in the occipital region and the top of the right ear. Palpation of trigger points reproduced the patient's symptoms. The pain had no relation with the movement of the neck. The Tinel's sign over the occipital nerve was positive, and sensation was decreased to pinprick in the painful areas. A local anesthetic block of the greater and/or lesser right

occipital nerves (2 mL of 2% lidocaine) led to significant but short-lasting pain relief. Cranial and cervical spine magnetic resonance imaging (MRI), which was carried out to exclude lesions of the brain and cervical spinal marrow, demonstrated a normal anatomy of the examined areas (Fig 3).

Based on the history and the clinical examination, the diagnosis of an occipital neuralgia probably caused by the infection of the respiratory tract was made.

Therapy

Amitriptyline (25 mg/d) and gabapentin (a single dose of 300 mg at bedtime for 2 days) were prescribed. As the initial doses of gabapentin were well tolerated, the dosage was increased by increments of 300 mg so that at the fourth day the patient reached a dose of 900 mg. This dose did not provide any significant pain relief. It led to marked adverse effects, including dizziness and ataxia. Consequently, both drugs were discontinued and a new therapeutic regimen with carbamazepine was started.

Carbamazepine was administered at a dose of 100 mg per day and increased to 200 mg per day after 2 days. At this dose, an adequate response was achieved. At this point, the patient took the initiative to stop the therapy and immediately experienced a relapse. Thereafter, the administration of carbamazepine (200 mg daily) was restarted, but unlike during the first trial, a dose of 300 mg/d was required for pain control. A month later the patient appeared totally pain-free. The treatment was continued for 3 months, and then carbamazepine administration was gradually decreased until, 10 days later, it was discontinued. The patient has remained free of symptoms during a follow-up period of more than 6 months after discontinuation of the medication.

Discussion

The Headache Classification Committee of the International Headache Society has described occipital neuralgia as “a paroxysmal jabbing pain in the distribution of the greater or lesser occipital nerves, accompanied by diminished sensation or dysesthesia in the affected area.”⁵ The pain can be paroxysmal or continuous burning and can radiate into the frontal or retro-orbital area.⁶ Tinel’s sign over the occipital nerve is a criterion for the diagnosis. Scalp paresthesia, nausea, tinnitus, dizziness, vertigo, stiff neck, photophobia, and visual blurring may also be experienced.^{7,8} Resolution of pain through anesthetic block of the occipital nerves can be used to confirm the diagnosis of occipital neuralgia.⁹

In the current case the pain was sharp and burning in character, with paroxysms in the distribution of the occipital nerves. Sensation was decreased in the affected area, and there was also hypersensitivity to touch and cold water. Tinel’s sign was present, and local anesthetic block produced pain relief. The pain at the top of the ear, which could be a confusing symptom, can be explained by the involvement of the great auricular and/or the lesser occipital nerves in the sensory innervation of the superior half of the ear.^{10,11} Additionally, both the greater and lesser occipital nerves have several peripheral connections with the great auricular nerve and the trigeminal nerve, and there are also central connections between the cervical roots and the trigeminal nervous system, which may explain some of the confusing symptoms seen in occipital neuralgia.^{3,12,13}

Occipital neuralgia can be precipitated by different causes. Some of these are peripheral and some are intradural. Common causes are callus formation of the upper cervical spine and hypertrophic fibrosis of subcutaneous tissue following trauma.^{2,14} Other causes are a hypermobile posterior arch of the atlas, an upper cervical cavernous angioma, a neurosyphilis, a giant cell arteritis, multiple sclerosis, and neoplasms (schwannoma, osteochondroma).^{15–21} An occipital neuralgia secondary to respiratory tract infection has not been previously reported. Nevertheless the occipital neuralgia of this patient might have been caused by the upper respiratory tract infection. During infection, the virus might have infected the dorsal root ganglion and/or the peripheral nerves C2 and C3,²² thus precipitating a viral infection-induced sensory neuropathy. In support of this possibility is the observation that other viruses, such as herpes zoster, can produce a mixed inflammatory/nociceptive pain syndrome that is present not only

in the peripheral nerves but also in the dorsal root ganglia and spinal cord.²²

It is possible that the allodynia experienced by this patient was caused by an abnormal nociceptor sensitization. In acute infections, the inflammatory response may lead to sensitization of peripheral nociceptors and damage of peripheral neurons. This may result in an altered input from the peripheral sensory neurons into the central nervous system. It is well established that dorsal horn neurons deprived of peripheral input may become electrically hyperexcitable and fire spontaneously and at maximal rates in response to submaximal stimuli.^{22–24}

There is a lack of randomized control studies on the treatment of occipital neuralgia. A variety of treatment modalities has been suggested in the literature. Occipital neuralgia has been treated surgically by peripheral avulsion of the greater occipital nerve, selective C2 dorsal rhizotomy, and decompression of the roots of nerves C2 and C3.^{2,25} Nonsurgical therapy includes NSAIDs, antidepressants, anticonvulsants, antibiotics, and injections of local anesthetics in combination with a corticosteroid.^{16,19,26,27} Some patients may respond to electrical nerve stimulation.^{27,28} Carbamazepine, the drug of choice for other forms of neuralgia, has also been used.²⁸ In fact, in the present case, low doses of this drug (300 mg) were sufficient to alleviate the pain.

In conclusion, the occipital neuralgia seen in this patient may have been caused by an infection of the upper respiratory tract, and this is the first report in the literature of such a possible etiology for this form of neuralgia. Assessment of the sensory symptoms in the occipital region and the top of the ear as well as careful history-taking led to correct diagnosis and successful treatment.

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