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(CASE REPORT)

Management of Uncommon Secondary Arnold Neuralgia: Case Report and Review of the Literature

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Abstract

Occipital neuralgia, also called Arnold neuralgia, is a sharp, stabbing pain in the back of the scalp that affects the occipital nerve. The epidemiology and pathophysiology are uncertain, but it is considered to be different from other headache types. Postoperative Arnold neuralgia is rare and its treatment options also remain elusive. We report the case of a 42-year-old man with a history of C1-C2 arthrodesis with wires, plates, and screws after a C1-C2 avulsion fracture, who was followed up as an outpatient for unilateral, left stabbing, and sharp pain in the neck, that radiates over the cranium. The patient reported relief from stabbing and paroxysmal pain, which completely subsided with drug treatment within four months of treatment. This case suggests that thoroughly administered four months of medical treatment may be a beneficial treatment for patients with occipital neuralgia and should be sought before surgery is suggested to a patient who has undergone surgery for a cervical condition.

Keywords: Great occipital nerve; Occipital neuralgia; Arnold neuralgia; Medical management; Case report

1. Introduction

The greater occipital nerve or Arnold nerve is the posterior ramus (sensory) of the second cervical nerve. It arises between the posterior arch of the atlas (C1) and the lamina of the axis (C2). The vertebral artery lies 6 to 12 mm laterally and behind it. The greater occipital nerve reaches the posterior part of the scalp, communicates with the third cervical nerve (sometimes with the first cervical nerve), and divides into terminal cutaneous branches that supply half of the scalp above the vertex and top of the head [(1,2)]. For most cases of Arnold neuralgia (AN), there is no obvious etiology [(3)]. However, we have described some causes that can damage the proximal part of the nerve: trauma to the neck (most common), osteoarthritis of the spine, inflammatory rheumatism, nerve and bone tumors, and Arnold-Chiari malformation type 1 [(4)]. Several cases of elongation and kinking of the vertebral artery on the side of the neuropathy have been described. However, Arnold neuralgia (AN) as a complication of C1-C2 arthrodesis has not been reported. This case report presents our experience in the treatment and outcome of Arnold neuralgia as a complication of C1-C2 arthrodesis with wires, plates, and screws following a C1-C2 avulsion fracture.

2. Case presentation

Patient information: A 42-year-old man with a history of C1-C2 arthrodesis with wires, plates, and screws following a C1-C2 avulsion fracture was seen as an outpatient for unilateral left shooting and stabbing pain in the neck radiating

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across the skull. The pain is characterized as persistent and paroxysmal worse in the last 10 days. He denied vision problems, tinnitus, dizziness, and nausea. He denied any trauma or other triggering events.

Clinical findings: On the day of presentation, his headaches remained severe. He was conscious and had a Glasgow Coma Scale of 15/15. Blood pressure was 146/79 mm Hg and his heart rate was regularly 75 beats per minute. He had normal muscle tone in both upper limbs with a Medical Research Council (MRC) muscle strength scale of 5/5 in the four limbs. Reflexes in the 04 limbs (biceps, triceps, supinator, knee, and ankle) were normal with bilateral plantar flexion. The sensory modality of pinprick, temperature, vibration, touch, and proprioception were intact. Examination of the cranial nerves was unremarkable. The first laboratory examination revealed a normal complete blood count with differential blood count. Tests of inflammatory markers (C-reactive protein and procalcitonin), electrolytes, and liver, kidney, and thyroid function were normal. The ECG was unremarkable.

Diagnostic assessment: X-ray of the cervical spine demonstrated the arthrodesis material and excluded any other bone abnormalities of the cervical spine (Figure 1). Intracranial and cervical magnetic resonance imaging (MRI) was performed, which revealed no hemorrhages, masses, or cervical disc abnormalities. The cervical foramina were patent and there were no compressive lesions in the cervical soft tissue or cervical cord. The clinical description of the typical pain of the greater occipital nerve was the only remaining criterion for considering Arnold's neuralgia.

Therapeutic intervention: The patient's treatment began with medications that included nonsteroidal anti-inflammatory drugs (NSAIDs), antiemetics, opioids, antiepileptic drugs, and steroids. There were no occipital nerve blocks and no radiofrequency ablation of the greater and lesser occipital nerves.

Follow-up and outcome: After one month of follow-up, there were no significant changes in pain intensity. However, the patient reported relief from stabbing and paroxysmal pain, which completely subsided under medication within four months of treatment.

3. Discussion

Our case describes the clinical course of a patient who presented with symptoms suggestive of occipital neuralgia, whose symptoms resolved during four months of rigorous medical treatment. The patient did not initiate or incorporate any new pain interventions during the course of his medical treatment.

Patients are increasingly seeking non-surgical and non-invasive approaches to treating their symptoms. Surgical decompression for Arnold neuralgia is a safe procedure when performed by qualified professionals, and reported postoperative complications are rare [(5)]. The pain-relieving effect after surgery can last for a longer period and cannot only be interpreted as a placebo effect. Nonetheless, medical treatment to relieve major occipital nerve pain has shown positive results in a variety of similar conditions, including neuropathic pain, trigeminal neuralgia, and the ability to manage symptoms [(6)]. A growing number of patients with Arnold neuralgia are expressing interest in appropriate medical treatment for pain relief in combination with antiepileptic drugs to mitigate the side effects of conventional occipital nerve blocks and radiofrequency ablation of the large and small occipital nerves [(7–9)]. Nerve blocks can easily cost much more, especially if repeated treatments are required. Although chronic prescriptions of medications like gabapentin and carbamazepine can easily cost as much or more as a full course of occipital nerve blocks and radiofrequency ablation, and in many patients come with additional side effects, the primary goal here was to satisfy this group of patients who believe that they can provide long-term relief from their unbearable pain in ways other than surgery.

Future research in the form of a clinical trial comparing antiepileptic/opioids to usual care for occipital neuralgia might also examine the optimal dosing and duration of this medication.

Abbreviations

- C1 Atlas
- C2 Axis
- AN Arnold neuralgia
- MRC Medical Research Council
- MRI magnetic resonance imaging
- NSAID Nonsteroidal anti-inflammatory drugs (NSAIDs

4. Conclusion

This case suggests that thoroughly administered four months of medical treatment may be a beneficial treatment for patients with occipital neuralgia and should be sought before surgery is suggested to a patient who has undergone surgery for a cervical condition.

Compliance with ethical standards

Disclosure of conflict of interest

The authors report no conflicts of interest.

Statement of ethical approval

Informed consent was obtained from the patient prior to the submission of this article. Also, this article respects both the Consensus-based Clinical Case Reporting Guideline and the Recommendations for the Conducting, Reporting , Editing, and Publication of Scholarly Work in Medical Journals.

Statement of informed consent

Informed consent was obtained from the patient to publish his case

Authors' contributions

AH contributed to conceptualization, writing, draft, reviewing and editing.SM was involved in writing and review. YCHD was involved in writing and iconography. AA was involved in wrtining.CM contributed to supervision. ACEA contributed to supervision. And GM contributed to supervision, validation, and review

Availability of data and material

All data are within the article

Submission statement

This manuscript is original and has not been submitted.

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