

Case Report

Rare case of trigeminal neuralgia due to vascular compression presenting with severe headache – A case report

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ABSTRACT

Trigeminal neuralgia (TN) is a nerve disorder of the face. Tic douloureux is another name for it. It is regarded to be among the most severe human illnesses. A 55-year-old elderly female with a migraine background appeared with a severe headache and terrible intermittent ache on the left part of her face for the previous 3 weeks. Migraine medicines and over-the-counter analgesics did not ease the agony. A magnetic resonance imaging scan with contrast demonstrated direct contact between the superior cerebellar artery and the trigeminal nerve on the left face. Oral medicine is the primary way of management for TN due to its non-invasiveness, minimal price, and effectiveness rate. Surgical therapy for TN tries to release the strain of the problematic artery or vein pressing the trigeminal nerve, halting the uncontrolled pain impulses. A crucial requirement for TN diagnosis is pain that cannot be ascribed to any other scenario and the absence of any apparent CNS pathology. Patients will be relieved from discomfort and unneeded dental and medical therapy if they receive an early, accurate diagnosis, and formulate an ideal therapy plan based on their age and general health. This article aims to present a case of classical TN caused by vascular compression that presented with severe headache and was successfully treated with microvascular decompression surgery.

Keywords: Trigeminal neuralgia, Superior cerebella artery, Trigeminal nerve, Microvascular decompression surgery

INTRODUCTION

Trigeminal neuralgia (TN), formerly called tic douloureux, is among the most severe physical and psychological illnesses a person can experience. People with TN considerably negatively influence their excellence in life, resulting in various issues such as weight reduction and despair. Neurovascular conflict is the etiology of TN. TN causes a sudden, excruciating facial pain that primarily affects the lower cheek and jaw, and the region surrounding the nostril and above the eyes is affected.^[1] Stimulating the 5th cranial nerve, which innervates the forehead, cheek, and lower jaw and generally affects one-half of the face, causes this acute shooting pain. The pain appears as a sudden, sharp, short, stabbing, and repetitive short-lived yet intense pain. TN is generally identified based on the patient's description of their symptoms in the past. TN can be triggered by a slight wind, eating, speaking, or cleaning one's teeth. Tingling or numbness of the face may develop before the pain in some individuals. TN generally affects a particular division of the trigeminal nerve and then progresses to additional divisions. Pain intensity and recurrence

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increase with time. The pain bouts may go into latency and individuals may remain for months or years without experiencing any symptoms.

TN is twice as frequent in women as in males and frequency rises beyond 40 in both genders. There are two types of TN: Classical and symptomatic TN. Multiple sclerosis, herpes zoster, and other diseases induce nerve damage to produce symptomatic TN. Classical TN is classified as type 1 or type 2 and is triggered by neurovascular conflict. In TN, headache is infrequent. This case report describes a case of classical TN caused by vascular compression that presented with severe headache and was successfully managed with microvascular decompression (MVD). A correct diagnosis is required to create the best action plan for this severe ailment.

CASE REPORT

A 55-year-old elderly female with a previous history of migraine came to the emergency department with a problem of intense and throbbing ache on the left side of her head for 3 weeks. For the past 3 days, she has had an acute, severe, piercing, and frequent electrical-like sharp pain on her left face. The headaches were episodic, lasting 14–20 h and ending with a brief period of respite. There was no aura and the patient remained complaint-free in between headaches. She had been suffering from a headache for the past 3 weeks. The patient's VAS score was 4 and the pain was provoked by chatting, cleaning her face, chewing, and brushing her teeth. She has suffered from migraine headaches since she was an adult. She had previously taken sumatriptan and naproxen sodium to manage migraines, but she had not required them in years. In the many previous years, she had not had any headaches. Her doctor prescribed migraine medications after a few days of her current headache, which she took for 3 days but did not help.

On general examination, her temperature was 98.4° Fahrenheit, her blood pressure was 124/68 mmHg, her PR was 88 beats/min, her RR was 18 cycles/min, and her SpO₂ was 98% on room air. The patient looked in pain on physical examination and the head region in discomfort was susceptible to light contact. During the intra- and extra-oral inspection, no abnormalities were identified except for compression of the temporomandibular joint due to opening and shutting the jaw. Her skin, extremities, and pulses in the periphery were all normal. Her neurological test revealed that her motor, sensory, and cranial nerve examinations were standard, with no indication of facial deformity or muscle weakness. Her abdominal, respiratory, and cardiovascular examinations were all negative. The presence of direct contact between the superior cerebellar artery and the trigeminal nerve on the left side was verified by a contrast MRI, which yielded a tentative diagnosis of TN. Her blood counts are all within the normal range.

Tegral (carbamazepine) was prescribed to her at a dosage of 200 mg BD. Her symptoms did not improve and she suffered from extreme tiredness and nausea due to the carbamazepine side effects. She continued to have acute neuralgic pain, which had become more intense and frequent, with bouts lasting several minutes and increasing intensity. Given the degree of the pain and the medication's ineffectiveness, the estimated likelihood of a favorable outcome of the surgical procedures was balanced against the probable operational consequences of the intervention. The patient was advised to undergo neurosurgical therapy. The treating neurosurgeon, verbally and in writing, carefully presented information regarding the efficacy and possible problems of each type of surgical treatment to a close family. MVD was used to treat her effectively. The optimal surgical technique in this instance was MVD, because a neurovascular issue was apparent during the Imaging, and the patient was deemed healthy enough to perform open neurosurgery. The nerve-pons junction is the prime area in MVD. To get entrance to the posterior fossa, a suboccipital craniotomy was done. The superolateral edge of the cerebellum was gradually retracted after removing excess cerebrospinal fluid to uncover the nerve gently. A helix of the superior cerebellar artery was discovered to be compressing the nerve at the root entrance zone [Figure 1]. The vessel was free of arachnoid adhesions after dissecting the arachnoid, encompassing the complete root. A Teflon gauze was put between them to distinguish the vascular from the nerve [Figure 2]. The patient's symptoms disappeared without problems after surgery, and there were no neuralgic episodes at the 6-month and 1-year follow-up visits.

DISCUSSION

TN is a type of neuropathic pain caused by irritation of the trigeminal nerve. It is marked by throbbing, intermittent

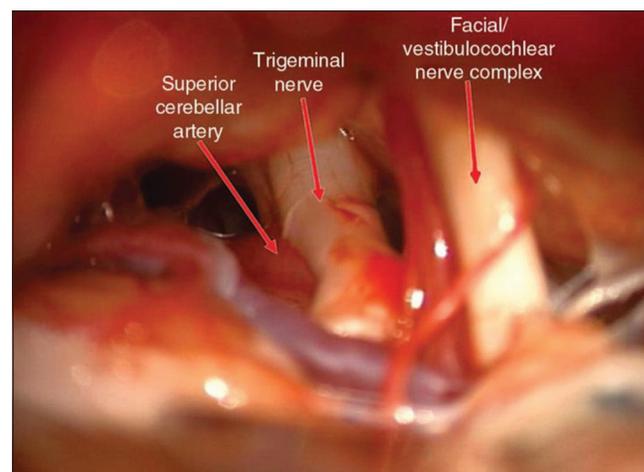


Figure 1: Intraoperative image demonstrating compression of the trigeminal nerve by the superior cerebellar artery on the superior (left on the image) side of the nerve.

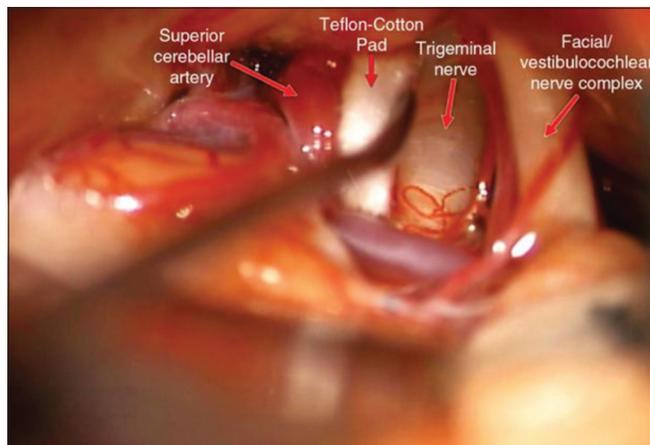


Figure 2: Intraoperative image showing Teflon-coated cotton pad placed between the artery and the nerve to maintain separation and cushion the nerve.

facial discomfort that involves one-half of the face. It is also known as tic douloureux (painful tic) since sufferers frequently deform their faces due to intense pain.

A link between migraine and a raised TN incidence has been recently discovered.^[2] There is a higher risk of developing TN in people with migraine and the aura of various migraine varieties.^[2] If no anatomical cause can be found, a trigeminal ganglion nerve block or botulinum toxin shots may be attempted.

A vessel pressing the trigeminal nerve is the most common cause of TN, accounting for up to 95% of patients. The location of pain will be determined by which branch of the trigeminal nerve has been injured. About 14% according to worldwide recommendations,^[3] based on clinical research, carbamazepine and oxcarbazepine are advised as front-line treatments for TN; if they are unsuccessful, surgery might be a viable next option.^[3] NSAIDs are unsuccessful in the treatment of TN.^[4,5] Invasive therapies can be evaluated and conducted depending on the patient's eligibility for the operation.^[3]

PGR is done with local anesthesia and light sedation. PGR provides rapid and considerable pain control for most individuals; however, pain may return.

PBC of the trigeminal nerve is a process that involves inserting a hollow needle into the nerve and inflating a balloon adjacent to it. There is just a slight sensory loss in the virtual majority of the patients with instant pain alleviation.

PSRTR uses electrical currents to kill individual nerve fibers connected to pain using an electrode. Afterward, facial numbness is a typical adverse effect of PSRTR.

GKR is a procedure, in which a high dosage of radiation is directed toward the base of the trigeminal nerve, eventually causing nerve damage. Although some individuals may have a recurrence, GKR^[6] treats them effectively.

PSR involves creating a hole in the skull and severing or rubbing the nerve.

In MVD, Teflon gauze is placed between the nerve and any troublesome vessels, disconnecting them from the nerve. MVD is a harmless and successful surgery thanks to advancements in operational methods, an operating microscope, and breakthroughs in neuroanesthetic. MVD is not linked to any sensory impairments,^[7] although there have been reports of eighth nerve damage in 0.8% of cases and cerebellar injury in 0.45% of patients.^[7,8]

If medical therapy does not work and the patient is a fit for surgery, invasive surgical methods may be considered. When patients are young (under 60 years old at the beginning) or become non-responsive to therapy, regardless of a negative brain scan, early neurosurgical intervention should be explored. A brain MRI in the evaluation and presurgical assessment of TN is crucial, and it also aids in determining the etiology of TN.

This case illustrates an instance with chronic TN symptoms that necessitated a thorough evaluation, patient improvement, and follow-up plan. After a perfect MVD, many wake up symptom-free and stay that way for the rest of their lives, while in others, the pain fades over a week or two.

CONCLUSION

Finally, among people with migraine headaches, it is critical to examine alternative reasons for discomfort in addition to migraine headaches. The remarkable good outcome achieved, amid the sternness of features and non-reaction to medicines, demonstrated the need to tailor the treatment plan to the patient's requirements and the necessity for a multidisciplinary model of care. Typical TN patients who are not responding to medicinal therapy and are fit for surgery may consider MVD a safe and effective therapeutic option.

Author's contributions

All persons who have made substantial contributions to the work reported in the manuscript but are not contributors are named in the acknowledgment and have given me/us their written permission to be named. If I/we do not include an acknowledgment that means, I/we have not received substantial contributions from non-contributors, and no contributor has been omitted.

Declaration of patient consent

Patient's consent not required as patients identity is not disclosed or compromised.

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Conflicts of interest

There are no conflicts of interest.

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