Review Article

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Trigeminal Neuralgia (Tic Douloureux): A Systematic Review

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ABSTRACT

Trigeminal neuralgia (TN), also known as tic douloureux, is sometimes described as the most excruciating pain known to humanity. The pain typically involves the lower face and jaw, although sometimes it affects the area around the nose and above the eye. This intense, stabbing, electric shock-like pain is caused by irritation of the trigeminal nerve, which sends branches to the forehead, cheek and lower jaw. It usually is limited to one side of the face. The pain can be triggered by an action as routine and minor as brushing your teeth, eating or the wind. Attacks may begin mild and short, but if left untreated, trigeminal neuralgia can progressively worsen. Although trigeminal neuralgia cannot always be cured, there are treatments available to alleviate the debilitating pain. Normally, anticonvulsive medications are the first treatment choice. Surgery can be an effective option for those who become unresponsive to medications or for those who suffer serious side effects from the medications.

Keywords: Neurological disorder; Cranial nerves; Innervated, Cerebral disorder.

INTRODUCTION

It is a condition of the 5th cranial nerve that is characterized by paroxysm of pain in the area innervated (supply with nerves) by any of the 3 branches, but most commonly the 2nd and third branches of trigeminal nerve. The pain ends as abruptly as it starts and is described as a unilateral shooting and stabbing sensation. The unilateral nature of the pain is an important feature. Associated involuntary contraction of the facial muscles can cause sudden closing of the eye or twitching of the mouth, hence the former name tic douloureux (painful twitch). Although the cause is not certain, vascular compression and pressure are suggested causes. As the brain changes with age, a loop of a cerebral artery or vein may compress the nerve root entry point and this can be identified on MRI scan. It occurs most often before 35 years of age and is more common in women. Pain free intervals may be measured in terms of minutes, hours, days or longer. With advancing years, the painful episodes tend to become more frequent and agonizing. The patient lives in constant fear of attacks.

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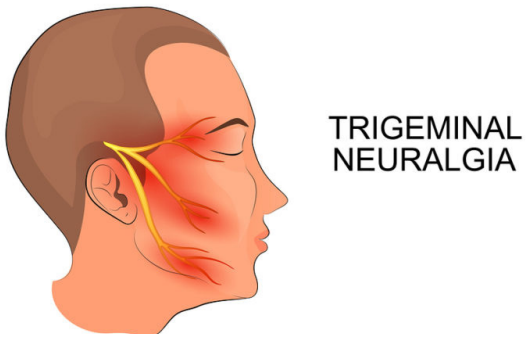

Fig. 1: Facial area affected due to trigeminal nerve (***source:*** https://bayareanuccacare.com/what-is-trigeminal-neuralgia-basics-about-the-condition/

Paroxysms can occur with any stimulation of the terminals of the affected nerve branches such as washing the face, shaving, brushing the teeth, eating and drinking. A draft of cold air or direct pressure against the nerve trunk may also cause pain. Certain areas called trigger points because the slightest touch immediately starts a paroxysm or episode. To avoid stimulating these areas, patients with trigeminal neuralgia try not to touch or wash their faces, shave, chew or do anything else that might cause an attack. These behaviors are a clue to the diagnosis.

Prevalence and Incidence

It is reported that 150,000 people are diagnosed with trigeminal neuralgia (TN) every year. While the disorder can occur at any age, it is most common in people over the age of 50. The National Institute of Neurological Disorders and Stroke (NINDS) notes that TN is twice more common in women than in men. A form of TN is associated with multiple sclerosis (MS).

Pharmacologic Therapy

Antiseizure agents such as Carbamazepine, relieve pain in most patients with trigeminal neuralgia by reducing the transmission of impulses at certain nerve terminals. Carbamazepine is taken with meals. Serum levels must be monitored to avoid toxicity in patients who require high doses to control the pain. Side effects include nausea, dizziness, drowsiness and aplastic anemia. The patient is monitored for bone marrow depression during long term therapy. Gabapentin and baclofen are also used for pain control. If pain control is still not achieved phenytoin may be used as adjunctive therapy.

Surgical Management

If pharmacological management fails to relive pain, a number of surgical options are available. Although these procedures may relieve facial pain for a few years, recurrence and complication rates are high. The choice of procedure depends upon the patients' preference and health status.

Microvascular Decompression of the trigeminal Nerve

An intracranial approach is used to relive the contact between the cerebral vessel and trigeminal nerve root entry. With the aid of an operating microscope the artery loop is lifted from the nerve to relieve the pressure and a small prosthetic device is inserted to prevent recurrence of impingement on the nerve. In this procedure, the surgeon moves the offending blood vessel away from the affected nerve and inserts a tiny Teflon pad between the two; this keeps them apart and buffers the nerve from the blood vessel's pulsations. The operation generally takes 2 to 3 hours. In the OR room, general anesthesia is administered while you lie on the operating table.

Percutaneous Balloon Microcompression

It disrupts large myelinated fibers in all three branches of the trigeminal nerve. After its placement, the balloon is filled with a contrast material for fluoroscopic identification. The balloon compresses the nerve root for 1 minute and provides microvascular decompression. It is a procedure to selectively affect the trigeminal ganglion (part of the nerve conveying pain signals to the brain) to disrupt pain signals from getting through to the brain, so you do not feel neuralgia pain attacks. A

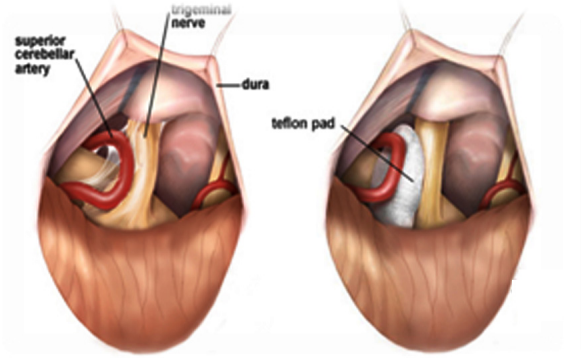

Fig. 2: Showing microvascular decompression of trigeminal nerve with the help of teflon pad (***Source:*** Provide by author)

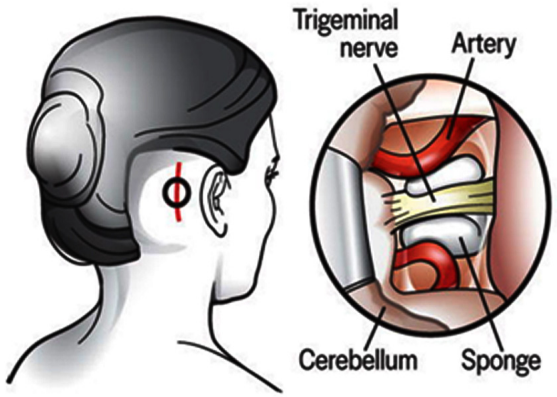

Fig. 3: Showing microvascular decompression of trigeminal nerve with the help of sponge (***Source:*** Provide by author)

balloon is inflated inside the skull to compress the ganglion and help with pain relief.

Radiofrequency Thermal Coagulation (RFT)

Percutaneous radiofrequency produces a thermal lesion on the trigeminal nerve. Although immediate pain relief is experienced, dysesthesia of the face and loss of the corneal reflex may occur. Use of Stereotactic MRI for identification of the trigeminal nerve followed by gamma knife radiosurgery is being used at some medical centers.

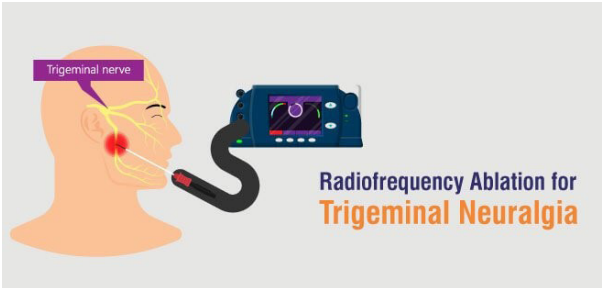

Fig. 4: Showing radiofrequency ablation for trigeminal nerve (***Source:*** https://www.yashodahospitals.com/blog/radiofrequency-ablation-for-trigeminal-neuralgia/

CONCLUSION

Trigeminal neuralgia (TN or TGN), also called Fothergill disease, tic douloureux, or trifacial neuralgia is a long-term pain disorder that affects the trigeminal nerve, the nerve responsible for sensation in the face and motor functions such as biting and chewing. It is a form of neuropathic pain. There are two main types: typical and atypical trigeminal neuralgia. The typical form results in episodes of severe, sudden, shock like pain in one side of the face that lasts for seconds to a few minutes. Groups of these episodes can occur over a few hours. The atypical form results in a constant burning pain that is less severe. Episodes may be triggered by any touch to the face. Both forms may occur in the same person. It is regarded as one of the most painful disorders known to medicine, and often results in depression.

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