Print ISSN: 0976-2876 Online ISSN: 2250-0138

Available online at: http://www.ijsr.in

INDIAN JOURNAL OF SCIENTIFIC RESEARCH

DOI:10.32606/IJSR.V12.I2.00019

Received: 22-09-2021 Accepted: 25-11-2021 Publication: 31-01-2022

Indian J.Sci.Res. 12 (2): 119-121, 2022 Case Report

MANAGEMENT OF REFRACTORY TRIGEMINAL NEURALGIA BY APPLYING LOWER TEMPERATURE CONVENTIONAL RADIOFREQUENCY LESIONING: A CASE REPORT

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ABSTRACT

Trigeminal neuralgia also known as tic douloureux is known to have most excruciating pain. It's pain is often described as sharp, shooting and electrical shock like. Radiofrequency lesioning of gasserian ganglion is one of the interventional treatment option. Conventional Radiofrequency lesioning of ophthalmic division can led to side effects like diminished corneal reflex, keratitis etc. We present a case report of application of low temperature Radio frequency ablation of ophthalmic nerve in a refractory case of trigeminal neuralgia patient.

KEYWORDS: Trigeminal Neuralgia, Radiofrequency Lesioning, Ophthalmic Nerve

Trigeminal Neuralgia is known to have worst pain. Its annual incidence is 4-5 per lakh population with female predominance. Pain in Trigeminal Neuralgia is incapacitating and it reduce quality of life. Its diagnosis is made mainly by obtaining clinical history and examination as suggested by the International Headache Society. In classical TN, no etiology can be identified other than vascular compression. On the other hand, symptomatic TN is related to an underlying cause such as tumor compression or multiple sclerosis. Magnetic resonance imaging scan should be done to rule out specific pathologies like tumor or multiple sclerosis. (Katusic *et al.*, 1990) (Sharma and Dey, 2018)

Thermal radiofrequency (TRF) ablation of the gasserian ganglion (GG) is associated with the highest rates of complete pain relief but the beneficial effects are also attended by diminished corneal reflex, masseter weakness or paralysis, dysesthesia, anesthesia dolorosa, keratitis, transient paralysis of cranial nerves III and VI and, in a few patients, permanent cranial nerve VI palsy, carotid cavernous fistula, and aseptic meningitis. (Obermann, 2010) (Kanpolat *et al.*, 2001) (Lopez *et al.*, 2004)

We report the successful management of a patient with TN involving V1 division which is refractory to medical management and surgical decompression by application of lower temperature Radiofrequency lesioning. (Thapa *et al.*, 20015)

CASE REPORT

A 68-year-old woman presented with a 3 years history of severe intermittent lancinating pain on the right side of the face in the distribution of all three division of trigeminal nerve. The patient was on oral carbamazepine 200 mg thrice daily and gabapentin 300 mg once daily but continued to experience pain with a Numerical Rating score (NRS) of 9/10. Her MRI shows vascular loop indenting and displacing entry zone of Right Trigeminal nerve. Two years back the patient had microvascular decompression for the same. Post MVD pain was relieved for 1 year. After that Pain recur, affecting the area supplied by V1 division. Repeat MRI shows clumping of right trigeminal nerve in cisterna segment with fibrosis of soft tissue in right Meckel's cave. On examination the patient had burning and electric shock like pain in area supplied by V1 division of trigeminal nerve. It was associated with allodynia but there was no sensory or motor deficit. Blood investigations were normal. The patient was posted for Radiofrequency ablation of V1 division of trigeminal nerve.

The procedure was explained to the patient and a written informed consent was obtained. Patient was kept empty stomach for 8 hours prior to procedure. Patient was taken inside OT and a 20G cannula was secured. Patient was positioned supine with slight neck extension. All instructions regarding stimulations was explained to maintain proper communication during intervention. All ASA recommended vital parameters were monitored throughout procedure. Oxygen was supplemented with

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nasal cannula. After taking all aseptic and antiseptic precautions, under fluoroscopic guidance the foramen ovale was visualized with a submental view (Figure 1). A 22 G, 10 cm RF needle with 5 mm active tip was directed towards medial border of foramen ovale using a "tunnel view." After confirming needle position in lateral view (Figure 2) and negative aspiration for blood and CSF sensory stimulation was done at 50 Hz at 0.1 to 1.5 V setting. Patient felt paresthesia at desired dermatomes at less than 0.5 V setting. Motor testing was done 2 Hz, 0.1 to 1.5 V setting.

Figures 1: Foramen Ovale in submental view

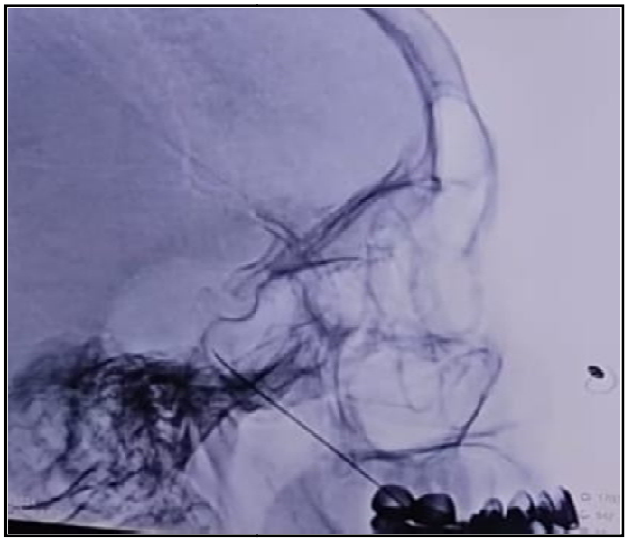

Figure 2: Needle position in lateral view

The RF needle was advanced further until only sensory stimulation was perceived (0.4 V, 50 Hz). Before lesioning, we injected 0.5 mL of 1% lignocaine and then 3 cycles of RF (60°C, each lasting 60 seconds) of the ophthalmic root of the trigeminal nerve were applied. After each cycle corneal reflex was evaluvated which was normal throughout. At the end of the procedure dexamethasone, 4 mg, was administered through the RF needle. NRS reduced from a pre-block score of 8 to 2.

Post-procedure, the patient received antibiotics, analgesics, and steroids for 5 days and carbamazepine for 15 days. During follow-up of one year the patient reported no episode of pain.

DISCUSSION

Trigeminal ganglion is also known as Gasserian ganglion. It is located in Meckel's cave and contains the cell bodies of incoming sensory nerve fibers. Trigeminal nerve is the largest cranial nerve. Its single large sensory root enters the brain stem at the level of pons. A smaller motor root emerges from the pons at the same level just adjacent to sensory root. Trigeminal nerve has two main portions namely trigeminal nucleus and trigeminal ganglion. Trigeminal nucleus extends throughout the entire brain stem. Trigeminal ganglion lies within the cranium in Meckel's cave close to the anterior surface of petrous part of temporal bone. Three branches emerge from the ganglion intracranially; ophthalmic (V1), maxillary (V2), and mandibular (V3). The two medial branches (ophthalmic and maxillary) are sensory, whereas the lateral most mandibular branch is partly motor. These nerves are somatotropically located in the ganglion. The ophthalmic is located most medioposteriorly, the maxillary intermediately, and the mandibular in ventrolateral position.

Sharma and Dey (2018) had described radio frequency lesioning at a temperature 60°C or below to preserve corneal reflex. We also utilized the same technique for our case.

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