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Trigeminal Neuralgia of the Lingual Nerve (Lingual Neuralgia) With Complete Pain Relief After Gasserian Ganglion Radiofrequency Ablation: Case Report

Sameeh Al-Maharbi, MD[1], Muath Al-Naabi, MD[2], Salama Al-Harthi, MD[1], and Maiya Al Mahrami, MD[3]

Background: Lingual neuralgia may benefit from radiofrequency modulation. Only one paper we came across reported successful treatment of lingual neuralgia with pulsed radiofrequency modulation. The use of gasserian ganglion radiofrequency ablation for lingual neuralgia has not yet been reported, as far as we could find, and this is what we are reporting in this paper. The patient provided HIPAA compliant consent for the inclusion of their clinical information in this report.

Case Report: A 64-year-old woman suffered from lingual neuralgia for more than 3 years with an initial presentation of electrical and shooting pain in the left side of the tongue. Left gasserian ganglion radiofrequency ablation was done and resulted in complete pain relief.

Conclusion: Gasserian ganglion radiofrequency ablation was used for the treatment of lingual neuralgia in this case. Further investigation and research are required in this modality of treatment for patients with lingual neuralgia.

Key words: Lingual neuralgia, radiofrequency ablation, pulsed radiofrequency ablation, radiofrequency neurotomy, lingual nerve, trigeminal neuralgia, case report

BACKGROUND

The lingual nerve is a branch of the mandibular division (V3) of the trigeminal nerve. Reported triggers of lingual neuralgia include direct injury to the nerve during a dental procedure and mainly those that need a dental block or lower third molar extraction (1-3). Compression of the lingual nerve after the use of suspension in a laryngoscopic procedure which caused lingual neuralgia was reported as well (4).

To our knowledge, there is no previous mention in the literature of lingual neuralgia triggered by fishbone injury. One case report came into our hands regarding the use of pulsed radiofrequency ablation of lingual neuralgia (5). Our 64-year-old patient presented with clinical features of left lingual neuralgia, and she got maximum benefit from left gasserian ganglion radiofrequency ablation.

CASE REPORT

The patient provided HIPAA compliant informed consent for the inclusion of their clinical information in this report.

A 64-year-old woman presented to the chronic pain clinic at Royal Hospital as she was referred from a sec-

From: [1]Pain Medicine Consultant, Department of Pain Medicine, Royal Hospital, Muscat, Sultanate of Oman; [2]Anesthesia and Intensive Care Resident, Department of Anesthesia and Intensive Care, Rustaq Hospital, South Batinah, Sultanate of Oman; [3]Pain Medicine Specialist, Department of Pain Medicine, Royal Hospital, Muscat, Sultanate of Oman

Corresponding Author: Sameeh Al-Maharbi, MD, E-mail: sameehkhamis@hotmail.com
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ondary local hospital with the diagnosis of trigeminal neuralgia. She had a history of hypertension, bilateral total knee replacement, and chronic sinusitis. She presented 3 years prior to her presentation to the chronic pain clinic at Royal Hospital in a secondary local hospital with a history of fishbone brick in the left side of the tongue that occurred 4 days earlier. She complained of pain in the left side of the tongue radiating to the face. She was managed conservatively with NSAIDs and local gel with follow-up in the dental clinic. On an ENT visit, doctors described a small laceration wound with granulations on the left posterior side of the tongue. Palpation of the area revealed indurations with no foreign body felt. On subsequent visits to the ENT clinic, the same complaints and clinical findings were present. There were no other complaints such as odynophagia, difficulty swallowing, or articulation. She had no trismus, limited mouth opening, or difficulty in tongue movement. She was advised to avoid spicy food and continue conservative treatment. Eventually, a neck CT scan was done a month after her initial presentation, which was insignificant with no foreign body seen.

As the pain persisted, she traveled abroad, and abundant investigations were done with no remarkable findings. One year later, a neurologist saw her for the first time. At that time, the diagnosis of trigeminal neuralgia was made, and antineuropathic medications (gabapentin, carbamazepine, and amitriptyline) were started and tried with persistent pain.

Two years later, the patient was first seen in the chronic pain clinic at Royal Hospital. The pain was described as a severe, shooting electrical-like pain in the left side of her tongue that affected her daily activity and sleep. It was persistent for the past 3 years and was gradually increasing, affecting her eating, drinking, and talking. The pain was recurrent and episodic in nature every 2-3 months. During those painful months, she could not lie down on a pillow on the left side as she felt the pain extending to her ipsilateral cheeks. The pain was triggered by eating and talking, while partially relieved by an application of local anesthetic jell. There was no specific food that aggravated or relieved her pain.

Among the treatments she sought was cauterization when she went abroad for a second opinion with no reports. Traditional treatments like bee stings at the site of the pain were also tried but with no satisfying results.

Based on the above clinical details, the patient was diagnosed with left lingual neuralgia, and left gasserian ganglion radiofrequency ablation (RFA) was offered since the first visit, but she was not willing and preferred to try other medications.

She was started on pregabalin 75 mg BID after tapering down gabapentin and continued amitriptyline 12.5 mg HS. Two months later, she reported almost 50% pain relief, but she stopped amitriptyline. At that point, pregabalin increased to 150 mg BID. Three months later, she reported 90% pain relief that continued for almost 2 years.

Two years later, she had very severe pain that forced her to visit the local emergency department. Then, she walked into the clinic seeking help and was willing to do left gasserian RFA.

After 2 months, radiofrequency of the left gasserian ganglion was done (Figs. 1 and 2). Under aseptic technique and fluoroscopy guidance, RFA was done at 65 degrees, 70 degrees, and 80 degrees with a duration of one minute each. The lesions were done after sensory and motor stimulation was detected. Sensory stimulation was done at 0.3 V where she felt pain in the tongue, and motor stimulation at 0.4 V where masseter contraction was observed.

She reported complete relief of pain up to a 6 months post-procedural follow-up. She was happy and satisfied with the results despite the tolerable tingling and numbness over the left lower mandible. Pregabalin 150 mg BID was continued and planned to taper down in subsequent follow-up visits.

DISCUSSION

Neuralgia is characterized by a periodic electrical shooting type of pain that might be associated or proceed with some triggers. Damage to the lingual nerve may result in a variety of symptoms, including pain on the affected side, numbness, hypoesthesia of the tongue, and loss of sensation of the anterior 2/3 of the tongue (6). Eliciting those symptoms from the historical point of view is of paramount importance, as it will differentiate between neuropathic and neuralgic types of pain. Our patient did not have a loss of sensation in the tongue, although she could not articulate, eat, or even drink due to the severe electrical shooting pain she experienced.

Treatment options for such neuralgic pain are determined by the nature and severity of the pain, as well as other factors such as age, comorbidities, the possibility of relapse, expected response, and complications (5). Pharmacological and non-pharmacological options are available. A wide range of medications could be used to decrease the

severity of pain, ranging from opioids, anti-depressants, and NSAIDs. On the other hand, non-pharmacological options consist mainly of surgical interventions like release of pressure on the nerve or excision of the nerve (5). Back in 1888, Samuel Busey et al reported diminished suffering of a patient with lingual neuralgia after the application of cocaine along the course of the lingual nerve (7).

Excision of the lingual nerve on account of lingual neuralgia was initially mentioned by M. Vanzetti in 1868, although he reported that such a procedure was previously attempted in 1857 (8).

Radiofrequency modulation has only recently been attempted for many types of neuropathic and neuralgic pain. As the name suggests, this technique is thought to act by modulating the pain perception on the nerve, which avoids the dysaesthetic effect associated with neural destruction happening in nerve resection (9).

RFA, also known as radiofrequency neurotomy, is a minimally invasive procedure that involves creating a heat lesion in a part of a pain-transmitting nerve using an insulated needle with an active tip. The placement of the tip of the needle needs to be adjacent to the targeted nerve, which is usually done by stimulation of the sensory and motor aspects of the nerve (10).

Essentially, 3 radiofrequency modes could be used (10):

- Conventional continuous radiofrequency (CRF) ablation, in which a continuous high-voltage current is passed through the insulated needle to produce a heat lesion.
- Pulsed radiofrequency (PRF) ablation consists of short bursts of high-voltage current passing with silent phases in between.
- Water-cooled radiofrequency (WCRF) ablation requires a specialized needle that is heated and cooled simultaneously using a continuous flow of water.

Out of these modes, continuous RFA was used in our patient, while the previously reported use of radiofrequency modulation in lingual neuralgia was a pulsed type (5). During the procedure, the patient was frequently asked if there was any exacerbation or relief of pain or if any overheating was felt in the area. She was monitored for 30 minutes for further complications before being discharged with no immediate complications.

Fig. 1. Submental view of the skull showed the needle targeting the foremen ovale.

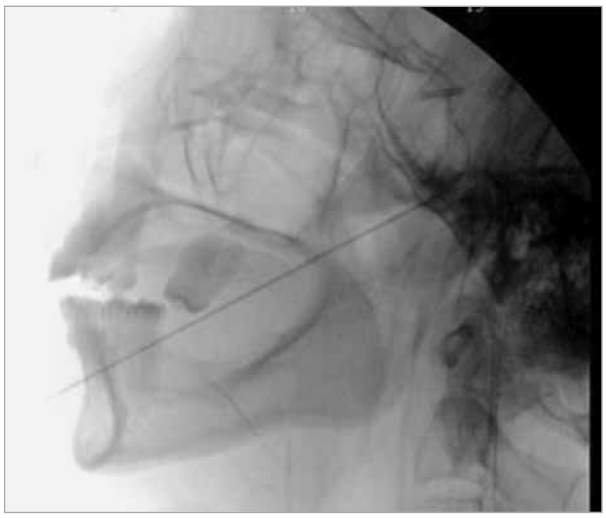

Fig. 2. Lateral view of the skull showed the RF needle targeting the clivus.

CONCLUSION

This patient's lingual neuralgia was triggered by a minor trauma which was a fishbone brick. RFA of the gasserian ganglion was ultimately applied to her and resulted in complete pain relief. Therefore, the procedure might be considered as a safe alternative for the management of lingual neuralgia, especially in those with unsatisfied outcomes from pharmacological management. From this perspective, this should spur further investigations and research in this area.

REFERENCES

1. Robinson PP, Smith KG. Lingual nerve damage during lower third molar removal: a comparison of two surgical methods. *Br Dent J* 1996; 180:456-461.
2. Bataineh AB. Sensory nerve impairment following mandibular third molar surgery. *J Oral Maxillofac Surg* 2001; 59:1012-1017.
3. Alvira-González J, Gay-Escoda C. Sensory disturbances of buccal and lingual nerve by muscle compression: A case report and review of the literature. *J Clin Exp Dent* 2016; 8:e93-e96.
4. Ab Rani A, Nadarajah S. Iatrogenic lingual neuralgia following laryngoscopy. *Journal of Clinical and Health Sciences* 2018; 3:48-50.
5. Rehman SU, Khan MZ, Hussain R, Jamshed A. Pulsed radiofrequency modulation for lingual neuralgia. *Br J Oral Maxillofac Surg* 2012; 50:e4-e5.
6. Piagkou M, Demesticha T, Piagkos G, Georgios A, Panagiotis S. Lingual nerve entrapment in muscular and osseous structures. *Int J Oral Sci* 2010; 2:181-189.
7. Busey SC. Neuralgia of the lingual branch of the right tri-facial nerve. Read before the Medical Society of the District of Columbia. *JAMA* 1888; XI:697-699.
8. Vanzetti M, Webber SG. Severe neuralgia of the tongue; excision of the lingual nerve. *Boston Med Surg J* 1868; 78:181-183.
9. Gallagher RM. Pulsed radiofrequency treatment: what is the evidence of its effectiveness and should it be used in clinical practice? *Pain Med* 2006; 7:408-410.
10. Funiciello M. Radiofrequency ablation (RFA). *Spine*. Accessed July 12, 2022. www.spine-health.com/treatment/injections/radiofrequency-ablation-rfa