Case Report

Effectiveness of sphenopalatine ganglion block for V1 trigeminal neuralgia secondary to herpes zoster. case report

Abstract

Introduction: Postherpetic V1 branch trigeminal neuralgia (TN) is a different neuralgia of the maxillary and mandibular divisions. This is usually refractory to conventional management since the involvement of the ophthalmic division can produce obvious autonomic symptoms. Few cases have been described, and conventional therapy is usually ineffective. Multimodal analgesic approaches are required in which regional anesthesia is considered an option, in order to optimize the response and improve the patient's quality of life.

Methodology: A clinical case of a previously healthy 43-year-old female with a history of facial Herpes Zoster is reported. She presents TN of the left unilateral ophthalmic division for six months of evolution. The characteristic pain is accompanied by autonomic manifestations, refractory to pharmacological treatment. A sphenopalatine ganglion (SPG) block was performed in the pterygopalatine fossa with an infracygomatic approach. The evolution of pain was recorded on the Numerical Visual Analog Scale (VAS) and the quality of life was reported by the Headache Impact Test (HIT-6) scale on days 1, 15, 30, and 90 after the procedure. It was correlated with what was reported in the literature, finding only three cases related to autonomic trigeminal neuralgia (TN), which were treated with radiofrequency. The strongest evidence lies in the use of sphenopalatine ganglion block, radiofrequency ablation, and neurostimulation for cluster headaches.

Results: A decrease in pain was reported on the VAS scale from 10/10 to 0/10 after the procedure, which was maintained during the first month without presenting autonomic symptoms. In the third month, VAS 2/10 is recorded, which is accompanied by tears. According to the HIT-6 scale, there was an improvement in quality of life from 69 points (very severe impact) to 36 points (little or no impact).

Discussion: In recent studies, the connection of the ophthalmic nerve with the SPG has been found, in such a way that it is a possible explanation of why the SPG block is effective for pain relief in the ophthalmic nerve area in patients with TN.

Conclusion: The present case of TN V1, with SPG blockade, showed analgesic efficacy and improvement in the quality of life reported by the patient. Further research with larger cohorts is required to standardize the procedure for such a diagnosis.

Keywords: Trigeminal neuralgia, trigeminal autonomic cephalalgia, sphenopalatine ganglion block, case report, multimodal analgesia.

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Del Rio-Parra Mariel Andrea,[1,2] Velázquez-Ramos José Gerardo,[1,2] Del Rio-Parra Gerardo Francisco,[3,4] Aréchiga-Ornelas Guillermo[1,2]

[1]Palliative Medicine and Pain, Hospital General de Occidente, México
[2]Universidad de Guadalajara, Escuela de Medicina, Centro Universitario de Ciencias de la Salud, México
[3]Anesthesiology, Hospital Christus Muguerza Alta Especialidad, México
[4]Universidad de Monterrey, Escuela de Medicina, Ciencias de la Salud, México

Correspondence: Dra. Mariel Del Rio-Parra, Palliative Medicine and Pain, Hospital General de Occidente, Guadalajara (Jalisco), Av. Zoquipan 1050, Zoquipan, 45170 Zapopan, Mexico, Tel 6691580447, Email mariel.dr@gmail.com

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Introduction

Trigeminal neuralgia (TN) in its two presentations (TN1/TN2), is an important cause of craniofacial pain, as well as postherpetic neuralgia.[1] Both are classically described as sharp electrical discharges.[1] TN of the postherpetic V1 branch is a different neuralgia of the maxillary and mandibular divisions. This is usually refractory to conventional treatment since the involvement of the ophthalmic division can produce obvious autonomic symptoms such as lacrimation, conjunctival congestion, rhinorrhea, and sweating on the forehead in about 30% of patients.[2] Few cases have been described and the usual treatment is usually ineffective.[2] According to reports by Wen Bo, the V1 division is affected in 2.5% of patients, while the V2 division is affected in 21.9% of patients and the V3 division is affected in 15.5% of patients.[3] Treatments for TN1/TN2 are more standardized and include pharmacological and interventional strategies such as microvascular decompression (MVD), radiosurgery, and rhizotomy procedures.[1] It is necessary to consider multimodal approaches in which regional anesthesia is considered.

A feasible option is a sphenopalatine ganglion (SPG) block, also known as the pterygopalatine ganglion, nasal ganglion, or Meckel's ganglion.[4] This ganglion is the largest and superior of the sensory, sympathetic, and parasympathetic nervous systems.[1] It gives rise to the greater and lesser palatine nerves, the nasopalatine nerve, the superior, inferior, and posterior lateral nasal branches, as well as the pharyngeal branch of the maxillary nerve. There are also orbital branches that reach the lacrimal gland.[4] Due to its proximity to multiple neuroanatomical structures important in pain perception, the SPG has been postulated to be involved in facial pain and is thought to play a central role in the generation of trigeminal branch V1 autonomic headache, and thus, its blocking can offer benefits.

A literature review was performed in Medline/PubMed and Web of Science using the keywords: "trigeminal neuralgia" and/or "pterygopalatine ganglion block" and/or "sphenopalatine ganglion block" and/or "trigeminal autonomic headache", finding only three reported cases related to autonomic trigeminal neuralgia (TN) which were addressed with radiofrequency.

Case report

This case report applies the guidelines published in the latest preferred reporting items for case reporting (The CARE Guidelines:

Consensus-Based Development of Clinical Case Reporting Guidelines). A 43-year-old female with no comorbidities reported presenting episodes of intense, stabbing pain, perceived as an electric shock in the innervation territory of the trigeminal ophthalmic branch, left unilateral, for the previous six months. It is accompanied by autonomic symptoms such as tearing, conjunctival congestion, and sweating on the forehead. VAS 10/10, refractory to carbamazepine and gabapentinoids at adequate doses.

SPG blockade was proposed as a therapeutic option, with prior informed consent. In the operating room and placed in the supine position, the face was prepared and covered in a sterile manner. Superficial sedation was used under standard ASA monitoring. With the head in a neutral position to expose the infracygomatic region on the affected side, fluoroscopy was used to navigate the pterygopalatine ganglion with a 20G (90mm) needle. First, the needle is directed medially in coaxial view until it passes the zygomatic arch (very superficial). Then, is slightly redirected cephalad into the pterygopalatine fossa under intermittent fluoroscopy (Figure 1). In a posteroanterior (PA) view, the needle should be on the lateral wall of the nostril at the level of the middle turbinate (Figure 2).

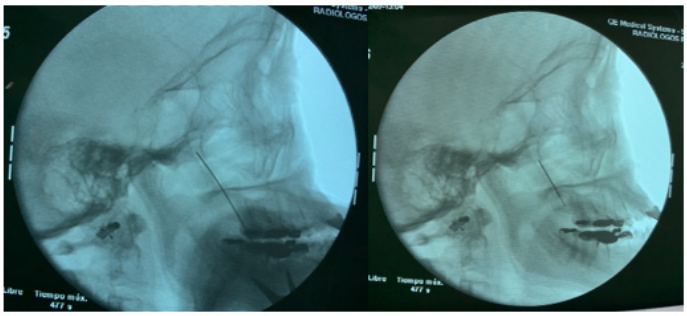

Figure 1 Lateral image with focus on the pterygopalatine fossae. The needle is placed in coaxial view toward the fossa, beyond the zygomatic arch, then redirected slightly cranially.

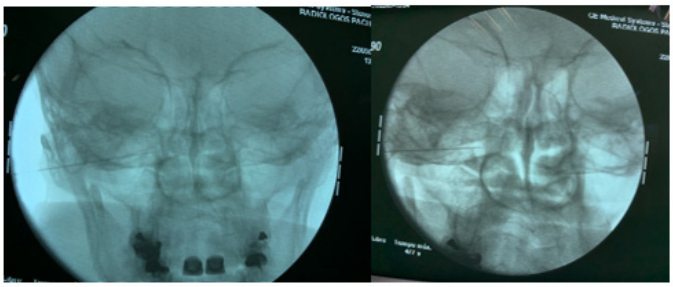

Figure 2 Posteroanterior view. Needle in the pterygopalatine fossa, just lateral to the nasal wall at the level of the middle turbinate.

0.5 mL of non-ionic water-soluble contrast was injected to exclude vascular uptake. Once confirmed that there is no vascular uptake, 2ml of local anesthetic with steroid is administered. The evolution of pain was recorded on the Numerical Visual Analog Scale (VAS) and the quality of life was reported by the Headache Impact Test (HIT-6) scale on days 1, 15, 30, and 90 after the procedure. A telephone follow-up was carried out by a third intermediary distinct from the interventionist, seeking the objectivity of the survey results.

Results

A decrease in pain was reported on the VAS scale from 10/10 to 0/10 after the procedure, which was maintained during the first month without presenting autonomic symptoms. In the third month, VAS 2/10 is recorded, which is accompanied by tears. According to the HIT-6 scale, there was an improvement in quality of life from 69 points (very severe impact) to 36 points (little or no impact).

	Initial	Day 1	Day 15	1° month	3° month
VAS	10/10	0/10	0/10	0/10	2/10
autonomic symptoms	tearing, conjunctival congestion, and sweating on the forehead	-	-	tearing	tearing
HIT-6	69 pts	-	36 pts	-	36 pts

Discussion

The decrease in pain in the V1 branch of the trigeminal nerve with sphenopalatine ganglion (SPG) blocks is probably due to its anatomical relationship with an ophthalmic branch.[4] However, the actual mechanism of pain relief resulting from this blockade, particularly in this area is unknown.[1,4] Anatomically, the SPG is located on each side of the midface within the pterygopalatine fossa (PPF), which is a small inverted pyramid space measuring about 2 cm high and 1 cm wide.[3,4]

It is connected through fissures, foramina, and channels.[5] Superiorly connects with the orbit through the inferior orbital fissure (IOF) and inferiorly with the oral cavity through the greater palatine canal (GPC) and nasopharyngeal canal. Medially with the nasal cavity through the sphenopalatine foramen. Laterally, with the infratemporal fossa through the pterygomaxillary fissure. Posteriorly, with the middle cranial fossa through the round foramen and the pterygoid canal (PC) also known as the vidian canal.[5] The SPG is a large extracranial parasympathetic ganglion with multiple neural roots, including autonomic and sensory fibers.[3] Hence, it plays an important role in craniofacial pain and is most commonly seen in trigeminal autonomic cephalalgias.[1]

Karin P. Oomen, et al. describe an orbital branch that runs between the ophthalmic nerve and the SPG[4] which could explain the relief of pain in the V1 branch of the trigeminal nerve. This branch has parasympathetic fibers that innervate the ciliary muscle, the sphincter pupillae muscle, and the lacrimal gland,[4] explaining the autonomic symptoms like tearing, conjunctival congestion, and sweating on the forehead.

Conclusion

The present case of V1 branch TN, with SPG block, showed analgesic efficacy and improvement in the quality of life reported by the patient. Due to the benefits of SPG blockade in patients with V1 branch autonomic TN, it can be considered a promising modality for the treatment of pain with lower risks. Further research with larger cohorts is required to standardize the procedure for such a diagnosis.

Acknowledgments

None

Conflicts of interest

None

References

1. Maarbjerg S, Gozalov A, Olesen J. Trigeminal neuralgia – a prospective systematic study of clinical characteristics in 158 patients. *Headache.* 2014;54:1574–1582.
2. Arsani William, Tej Deepak Azad. Trigeminal and sphenopalatine ganglion stimulation for intractable craniofacial pain—case series and literature review. Springer, *Neurochirurgical Act*. 2016;158(3):513–520.
3. Wen–Bo Zhang, Ling–Zhao Min, Bang–Bao Tao, et al. Prognosis Comparison of Different Branches of Trigeminal Neuralgia. *World Neurosurgery*. 2020;133:e1–e5.
4. Karin P Oomen, Michelle Ebbeling. A previously undescribed branch of the pterygopalatine ganglion. *American Journal of Rhinology & Allergy*. 2011;25:50–53.
5. Bahşi İ, Orhan M, Kervancıoğlu P. et al. Morphometric evaluation and clinical implications of the greater palatine foramen, greater palatine canal and pterygopalatine fossa on CBCT images and review of literature. Springer. *Surgical and Radiologic Anatomy.* 2019;41:551–567.

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