ACTA SCIENTIFIC NEUROLOGY (ISSN: 2582-1121)

Volume 7 Issue 7 July 2024

Case Report

Glossopharyngeal Neuralgia without Vascular Compression: A Case Report

Tomoyuki Naito, Keisuke Onoda*, Junpei Kato, Tomihiro Wakamiya, Yuhei Michiwaki, Kimihiro Nakahara, Tatsuya Tanaka, Takashi Agari, Takashi Sugawara, Kazuaki Shimoji, Eiichi Suehiro, Hiroshi Itokawa and Akira Matsuno

Department of Neurosurgery, International University of Health and Welfare, School of Medicine, Narita Hospital, Chiba, Japan

***Corresponding Author:** Keisuke Onoda, Department of Neurosurgery, International University of Health and Welfare, School of Medicine, Narita Hospital, Chiba, Japan.

Received: May 07, 2024

Published: June 17, 2024

Abstract

Glossopharyngeal Neuralgia (GPN) is characterized by excruciating pharyngeal-glottal pain that often radiates to the ipsilateral ear. The main cause of this condition is thought to be the contact and compression of blood vessels in the root entry zone of the glossopharyngeal nerve (GN). In rare cases, arachnoid adhesions can occur without vascular compression. Here, we report a case of GPN caused by adhesions without vascular compression in which IN was added to the dissection.

The patient was a 49-year-old woman who presented with typical GPN; however, no compression vessels were found on preoperative radiological examination. After obtaining informed consent, surgery was performed using the right retrosigmoid approach. The surgery revealed an adhesive deformity of the GN. After dissection of the adhesions, internal neurolysis (IN), which physically places a longitudinal groove on the nerve was performed. The surgical results were excellent, without postoperative complications.

Previously, GPN has been reported to be caused by arachnoid adhesions without vascular compression, and surgical indications should be carefully considered when the patient presents with typical symptoms, even when there is no obvious responsible vessel on preoperative magnetic resonance imaging (MRI). Furthermore, IN, which is occasionally used to treat trigeminal neuralgia without vascular compression, is also feasible for the glossopharyngeal nerve.

Keywords: Glossopharyngeal Neuralgia; Arachnoid Adhesions; Retrosigmoid Approach; Vascular Compression; Trigeminal Neuralgia

Abbreviations

GPN: Glossopharyngeal Neuralgia; GN: Glossopharyngeal Nerve; IN: Internal Neurolysis; TN: Trigeminal Neuralgia

Introduction

Glossopharyngeal neuralgia (GPN) significantly reduces the quality of life, with paroxysmal electric shock pain on one side of the pharynx triggered by eating, swallowing saliva, sneezing, and coughing, which are activities of daily living [1,2]. This is attributed to the compression of the glossopharyngeal nerve (GN) by blood vessels [1,2], brain tumors [3,4], and arachnoid cysts [5]. There are few reports on perineural adhesions alone [6-8]. In these reports, it was shown that the dissection of adhesions yielded excellent results. Trigeminal neuralgia (TN), a vascular compression syndrome, has

been reported in patients without vascular compression [9,10]. TN without vascular compression has been shown to have a risk of recurrence, but good results can be achieved with the addition of internal neurolysis (IN) [9,10].

Currently, there are no reports on the use of IN for GPN. In this study, we report a case of GPN caused by adhesions without vascular compression in which IN was added to the dissection with very good results without any surgical complications and highlight the potential use of IN for GN without vascular compression.

Case Presentation

A 49-year-old woman developed paroxysmal electric shock pain in the right pharyngeal region while swallowing saliva a year prior to presentation. She had been treated with carbamazepine by her family doctor for suspected GPN. Recently, he was referred to our department for surgical intervention because of the declining effects of carbamazepine. No other neurological abnormalities were observed. No obvious abnormalities were found in the clinical biochemical data. There were no remarkable medical or family histories. Magnetic resonance imaging (MRI) revealed no obvious neoplastic lesions around the GN, and no evidence of severe vascular compression (Figure 1). We decided to perform microvascular decompression (MVD) after obtaining informed consent because compression by small blood vessels that could not be noted on MRI could not be ruled out. MVD was performed in the left lower lateral recumbent position with continuous ABR monitoring. A right retrosigmoid approach was used to reach the glossopharyngeal nerve, and observation of the surrounding area revealed no obvious vessels compressing the nerve. However, the GN was severely adherent to the vagus nerve and deformed (Figure 2A). The arachnoid membrane around the GN was sharply incised and dissected from the vagus nerve. The glossopharyngeal nerve deformity also improved (Figure 2B). In addition, we performed IN, which grooves the GN longitudinally (Figure 2C). The postoperative course was excellent, with no lower cranial nerve symptoms, and the right pharyngeal pain disappeared. One year has passed since the surgery, and the patient continues to be in excellent condition with no recurrence of symptoms, and is being followed up carefully in the outpatient clinic.

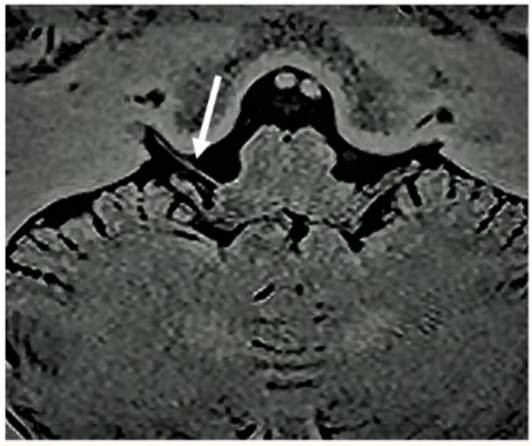

Figure 1: Preoperative MRI (constructive interference in steady state) There were no vessels compressing the glossopharyngeal nerve. Arrow; glossopharyngeal nerve

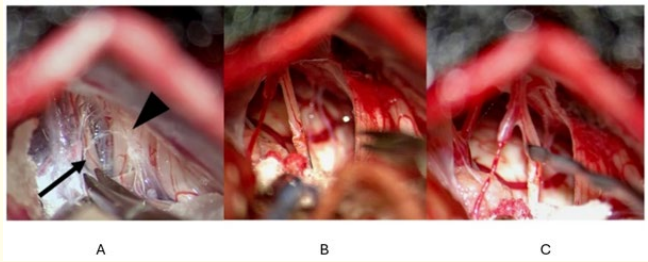

Figure 2: Surgical findings

A: Severe adhesion and deformity of the glossopharyngeal nerve was observed.

Arrow; glossopharyngeal nerve

Arrowhead; vagus nerve

B: Glossopharyngeal nerve deformity improved after dissection of the adhesions.

C: The internal neurolysis was added to the glossopharyngeal nerve.

Discussion

GPN significantly reduces the quality of life with paroxysmal electric shock pain on one side of the pharynx triggered by eating [1,2]. This is attributed to compression of the GN by blood vessels [1,2], brain tumors [3,4], and arachnoid cysts [5]. GPN is rare, and comprises about 1% of TN in nerve compression syndrome [1]. Among the vascular compression syndromes, GPN differs

from TN in that pain occurs even during sleep [1]. This is caused by stimulation of saliva during sleep [1]. Approximately 10% of GPN may present with autonomic symptoms due to vagus nerve compression, with some cases resulting in cardiac arrest [1,2].

Cases of TN without vascular compression have been reported [9,10]. The pathogenesis of trigeminal neuralgia without vascular compression has not been clarified; however, nerve deformity due to adhesions is speculated to be one of the possible pathogenic mechanisms [9,10]. There have been few case reports of GPN without vascular compression [6-8]. The surgical findings showed adhesions around the glossopharyngeal nerve. Since excellent results were obtained by the dissection of the adhesions [6-8], it can be speculated that it is similar to trigeminal neuralgia, but more cases are needed to clarify its pathogenesis.

Treatments include drug therapy, nerve blocks [11], radiation therapy [12], and surgery [1,2]. Surgical procedures included MVD [1,2] and rhizotomy [1,2,13]. Usually, when the effectiveness of drug therapy declines or side effects make it impossible to take the medication, the next treatment option is considered. MVD for GPN has been reported to be effective; however, in the absence of compression vessels, rhizotomy may be an option [1,13]. However, a postoperative complication of rhizotomy is that lower cranial nerve symptoms are observed in 10% of patients [1,13]. In contrast, IN, which physically produces a longitudinal groove in the nerve, has been performed in patients with TN without compression vessels and favorable results have been reported [9,10,14]. IN physically interrupts the nerve network by longitudinally dividing the trigeminal nerve longitudinally [14]. GPN can be caused by severe adhesions without compression vessels, and good results have been reported with dissection of the adhesions [6-8]. However, TN that develops from adhesions without vascular compression may only recur if dissection is performed; therefore, IN may be added [14]. In this case, we decided to add IN after dissection of the adhesions because GN was found to have severe adhesions with no responsible vessels. During IN, the GN is much thinner than the trigeminal nerve; therefore, care was taken to avoid damaging the GN. However, it is suspected that the symptoms in this case could have improved simply by the dissection of the adhesions, as in other reports. IN for GN may also be considered because it can be performed safely without postoperative complications. However, a larger number of cases are required to evaluate the effect of IN on GPN.

Conclusion

Glossopharyngeal neuralgia was demonstrated to be caused by adhesions without vascular compression. Internal neurolysis for glossopharyngeal neuralgia is possible and may be considered for refractory cases.

Acknowledgements

We would like to thank Editage for English language editing.

Conflict of Interest

The authors declare that they have no conflict of interest.

Bibliography

1. Park Jae Sung and Young Hwan Ahn. "Glossopharyngeal Neuralgia". *Journal of Korean Neurosurgical Society* 66.1 (2023): 12-23.

2. Shi Xiaohua., *et al*. "Neurovascular compression syndrome:Trigeminal neuralgia, hemifacial spasm, vestibular paroxysmia, glossopharyngeal neuralgia, four case reports and review of literature". *Clinical Neurology and Neurosurgery* 221 (2022): 107401.

3. Greene KA., *et al*. "Glossopharyngeal neuralgia associated with vascular compression and choroid plexus papilloma". *British Journal of Neurosurgery* 9.6 (1995): 809-814.

4. Phuong Huynh-Le., *et al*. "Glossopharyngeal neuralgia due to an epidermoid tumour in the cerebellopontine angle". *Journal of Clinical Neuroscience: Official Journal of the Neurosurgical Society of Australasia* 11.7 (2004): 758-760.

5. Cho Tack Geun., *et al*. "Glossopharyngeal neuralgia caused by arachnoid cyst in the cerebellopontine angle". *Journal of Korean Neurosurgical Society* 49.5 (2011): 284-286.

6. Bernard Florian Jr., *et al*. "The tethered effect of the arachnoid in vago-glossopharyngeal neuralgia: a real associated alternative mechanism?". *Acta Neurochirurgica* 160.1 (2018): 151-155.

7. Fukuda H., *et al*. "Glossopharyngeal neuralgia caused by adhesive arachnoid". *Acta Neurochirurgica* 144.10 (2002): 1057-1058.

8. Maki Yoshinori., *et al*. "Rare Case of Concurrent Glossopharyngeal and Trigeminal Neuralgia, in Which Glossopharyngeal Neuralgia was Possibly Induced by Postoperative Changes Following Microvascular Decompression for Trigeminal Neuralgia". *World Neurosurgery* 130 (2019): 150-153.

9. Sabourin Victor., *et al*. "Internal Neurolysis with and without Microvascular Decompression for Trigeminal Neuralgia: Case Series". *World Neurosurgery* 143 (2020): e70-e77.

10. Zhao Hua., *et al*. "Nerve Combing for Trigeminal Neuralgia Without Vascular Compression". *The Journal of Craniofacial Surgery* 28.1 (2017): e15-e16.

11. Liu Qian., *et al*. "Ultrasound-guided glossopharyngeal nerve block via the styloid process for glossopharyngeal neuralgia: a retrospective study". *Journal of Pain Research* 12 (2019): 2503-2510.

12. Lara-Almunia Monica., *et al*. "Gamma Knife radiosurgery and refractory glossopharyngeal neuralgia: a single-center series with long-term follow-up". *Neurosurgical Review* 45.1 (2022): 525-531.

13. Zhang Wenhao., *et al*. "Use of electrophysiological monitoring in selective rhizotomy treating glossopharyngeal neuralgia". *Journal of Cranio-Maxillo-Facial Surgery: Official Publication of the European Association for Cranio-Maxillo-Facial Surgery* 42.5 (2014): e182-185.

14. Keisuke Onoda., *et al*. "Efficacy of Internal Neurolysis for Atypical Facial Pain". *Acta Scientific Neurology* 7.2 (2024): 35-40.