



Case Report

## Integrative Korean Medicine Treatment for Idiopathic Glossopharyngeal Neuralgia: A Case Report



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### ABSTRACT

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Glossopharyngeal neuralgia is a skin-sensitive condition/disease that causes severe pain in the facial area predominantly innervated by the glossopharyngeal nerve. A 51-year-old man diagnosed with glossopharyngeal neuralgia who was hospitalized with severe pain that limited his daily life activities. From November 18, 2021, to March 4, 2022, he received inpatient (10 days) and outpatient treatment (35 times) using acupuncture, pharmacopuncture, and herbal medicine. His symptoms were assessed using the Numerical Rating Scale, Neuropathic Pain Scale, and the Self-report Leeds Assessment of Neuropathic Symptom and Signs. The pain reduced after 4 days of initiating Korean medicine treatment and was completely resolved within 4 months of treatment (Numerical Rating Scale score 4 to 0; Neuropathic Pain Scale score 49 to 8; Self-report Leeds Assessment of Neuropathic Symptoms and Signs score 18 to 0). Korean medicine treatment could be an option for treating patients with neuropathy who rely on analgesics.

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### Introduction

Glossopharyngeal neuralgia (GPN) is characterized by sudden pain which lasts for seconds to minutes in the tonsils, tongue (back 1/3), ears, lower jaw, and throat. It is initiated by chewing, coughing, speaking, yawning, swallowing, and sneezing [1]. The annual incidence rate is approximately 0.7 per 100,000 people in Rochester, Minnesota, from 1945 to 1984, and it occurs 1/1,000 times more rarely than trigeminal neuralgia (TN), which has similar pathophysiology and medical management methods as those of GPN [2]. The trigger points of GPN are often similar to TN, wherein physical stimulation causes pain. Hence, whether body

organ movement causes pain it should be assessed [2,3]. Analgesics and anticonvulsants are recommended for idiopathic GPN [4]. For secondary GPN, there are 2 surgical ways to separate the nerves from the blood vessels, and to partially remove the nerve [5]. Traditional Korean medicine categorizes spasmodic facial pain as Dupung and migraine, and throat pain as heat related disease [6].

Since the disease characteristics of GPN are similar to TN, and there is a low incidence of GPN which may be misdiagnosed as TN, there are not many studies on the treatment of idiopathic GPN, and case reports of integrative Korean medicine treatment (KMT) are rare. Additionally, 2 cases reported in Korea combined KMT and analgesics [7,8]. We describe a case of GPN involving

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severe pain in a male patient who was then treated by acupuncture, pharmacopuncture, and herbal medicine. This study was exempt from IRB deliberation (IRB no.: DJDSKH-22-E-07).

## Case Report

### Patient

Kim OO (Male, 51 years old).

### Principal complaints

Post-neck pain, facial pain.

### Onset and cause

Occurred for no reason during 2016 and worsened for no reason during 2018.

### Past history

The patient had taken medication after a diagnosis with *Helicobacter pylori* infection during November 2021.

### Family history

Father: gastric carcinoma.

### Present status

The patient was taking analgesics for diagnosed idiopathic GPN. There was no abnormality on magnetic resonance imaging of his brain in 2018. In 2021 he received inpatient treatment at Department of Acupuncture and Moxibustion Medicine at a Korean Medicine Hospital in Korea for 10 days (November 18, 2021, to November 27, 2021). After discharge, he received 35 outpatient treatments three times per week for nearly 14 weeks.

### Physical examination

Sharp, burning, and sensitive pain in the right inner ear, with sternocleidomastoid muscle and mandible showing movements of extension, left bending, and left rotation. Additionally, pain occurred during swallowing, chewing, and inhalation. Physical examination of the cervical spine showed normal findings.

### Laboratory findings

#### Blood tests

On November 19, 2021, erythrocyte sedimentation rate was above the normal range (21 mm/hour). The levels of cholesterol (219 mg/dL), triglycerides (316 mg/dL), and monocytes (10.1%) were also elevated above the normal range, and mean cell hemoglobin concentration was lower than the normal range (32.9%). The liver function test, complete blood count, and urinalysis were within normal limits.

### Radiography

Radiography of the cervical spine (anteroposterior/lateral/oblique views) taken at admission on November 18, 2021, showed a straightening of cervical curvature, with no other unusual findings.

### Treatment methods

#### Acupuncture

Acupuncture treatment (AT) was performed in the mornings and afternoons. Acupuncture needles (DONG BANG Medical Co. Ltd., Boryeong, Korea, 0.20 × 30 mm, disposable sterilized stainless-steel) were used and left in position for 15 minutes. The acupoints were LU7, KI6, LI1, ST44, LI4 and LR3 at the distal regions on both sides, and GB2, GB12, GB20, GB21, LI17, LI18, ST5, ST6, ST7, SI16, SI17, SI19, TE16, TE17 and TE18 at the proximal regions on the right. Acupuncture was selectively performed daily based on tenderness points assessed using palpation. The average number of needles used in each treatment was 20, and the needle depth was 5–10 mm [6,9]. During AT, infra-red (ITC Co. Ltd., Daejeon, Chungcheongnam-do, Korea, IR-880, 220 V, 60 Hz) treatment was performed (the facial area was shielded with gauze). After discharge, the same method of AT was performed three times per week.

#### Pharmacopuncture

Pharmacopuncture treatment was performed every morning, and So-yeom pharmacopuncture (Korean-Pharmacopuncture-Research-Institute) and Cho-o (*Aconiti Kusnezoffii Radix*) pharmacopuncture (Korean-Pharmacopuncture-Research-Institute) were used concurrently [10]. So-yeom 1 cc was applied to ST6 and TE17 sites and Cho-o 1 cc was applied to LI18 and SI16 of the right sternocleidomastoid muscle using 13 × 30 mm-gauge needles. After discharge, So-yeom 2 cc was used three times per week using the same method.

#### Herbal medicine

The patient took Hwangryeonhaedoktang (HHT) tablets (KYUNGBANG Pharm Inc., Incheon, Korea, 2T/pack) from November 25, 2021, to March 4, 2022 (107 days), three times per day 30 minutes after meals (Table 1).

Table 1. Herbal Compositions of HHT Tablet Used for Daily Dosage.

Crude drug name	Amount (g)
Radix scutellariae (1.5-1.9 to 1)	5.5224
Phellodendri cortex (1.9-2.3 to 1)	4.5864
Gardeniae fructus (2.1-2.6 to 1)	4.0248
Coptidis rhizoma (4.1-5.6 to 1)	1.9656

HHT, Hwangryeonhaedoktang.

**Evaluation**

The Numerical Rating Scale (NRS) [11] was used at 7 AM every morning in a face to face survey between patient and practitioner during hospitalization. The NRS was adopted so that subjective symptoms could be expressed numerically without the need for special tools. The Neuropathic Pain Scale (NPS; Appendix A) [11,12] and Self-report Leeds Assessment of Neuropathic Symptoms and Signs (S-LANSS) pain scale (Appendix B) [13] were used four times [admission, discharge, last day of treatment (March 4, 2022), and 15 weeks after treatment completion (June 15, 2022)]. The NPS reduces the burden (understanding various aspects of neuralgia) on the patient [11,12]. The S-LANSS pain scale has high sensitivity and specificity for diagnosing neuropathy (it can determine the neuropathic origin of pain based on 12 out of 24 points in the scale), and it is used in many countries [11,13]. Patient

evaluations on March 4, 2022 and June 15, 2022 were conducted over landline and mobile telephone questionnaires.

**Progress**

He had notable improvement in NRS, NPS, and S-LANSS scores after treatment. The NRS score decreased from 4 at admission to 1.5 at discharge, and 0 at treatment completion in outpatient care (Fig. 1). Stabbing pain was reported in the inner ear and sternocleidomastoid muscle during respiration on Day 3 following treatment, and the area of pain expanded from the surface of the skin to throat and esophageal depth (NRS 4.5), but from Day 5 following treatment, pain during breathing and the expanded area of pain disappeared (NRS 2.5) (Fig. 1). The NPS decreased from 49 at admission to 15 at discharge (Fig. 2). Figure 2 shows the change in NPS score (from admission to the last treatment in outpatient care) regarding sensations the patient experienced. The score from the NPS question which changed the most was for, “How much do you feel burning sensations in the pain area?” which decreased from 9 points to 1 point. S-LANSS decreased from 18 points at admission to 7 points at discharge (Fig. 3 and 4). On Day 10 when the patient was discharged, the patient had improvement in the extent to which he could perform daily life activities, and the pain he had experienced in all ranges of motion had disappeared. However, he still complained of discomfort during swallowing solid food. Consequently, he attended an outpatient clinic where he visited three times per week, and within 4 months of starting his treatment he was in a pain free state. An additional follow-up appointment 15 weeks later (June 15, 2022), confirmed that the patient’s pain free state had been maintained. No adverse effects were observed during the treatment period.

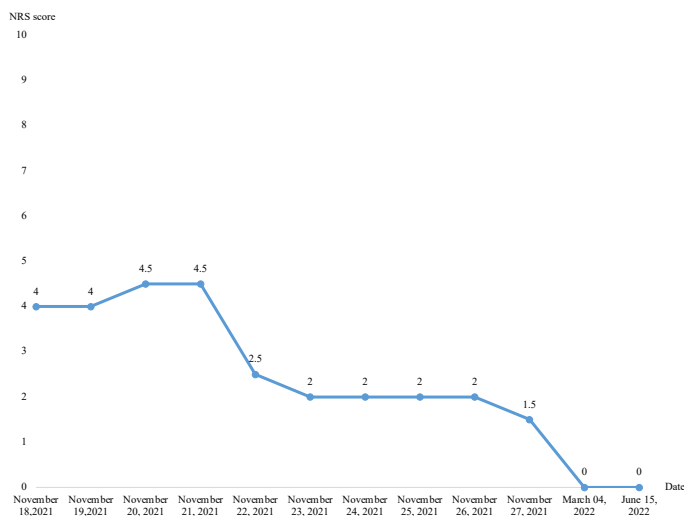


Fig. 1. Changes in the NRS score over time. NRS, numerical rating scale.

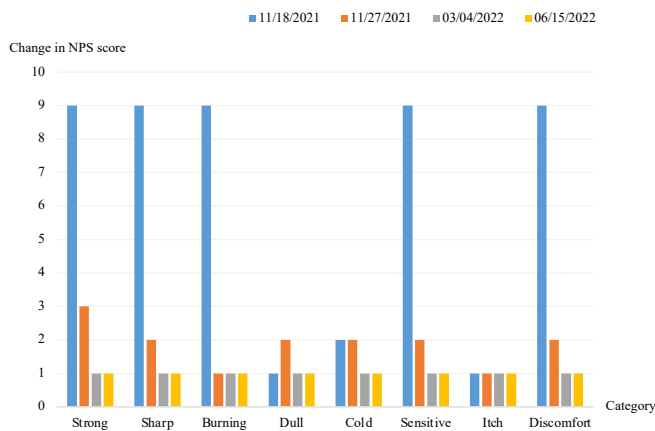


Fig. 2. Changes in the NPS score (before and after the last treatment). NPS, neuropathic pain scale.

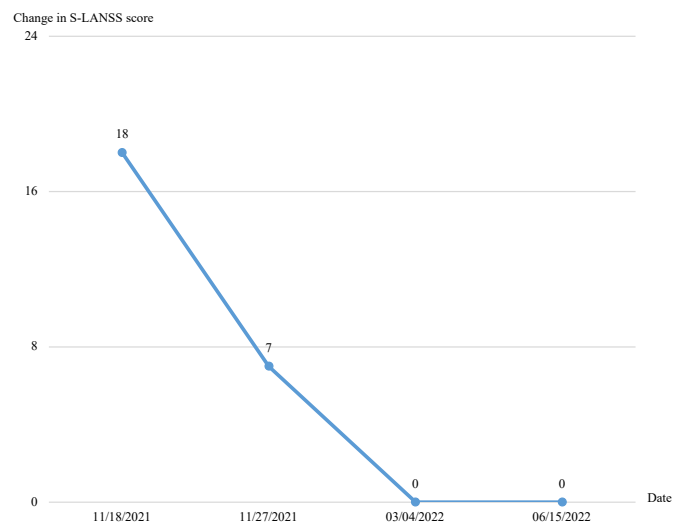


Fig. 3. Changes in S-LANSS pain scale score (before and after the last treatment). S-LANSS, self-report leeds assessment of neuropathic symptoms and signs.

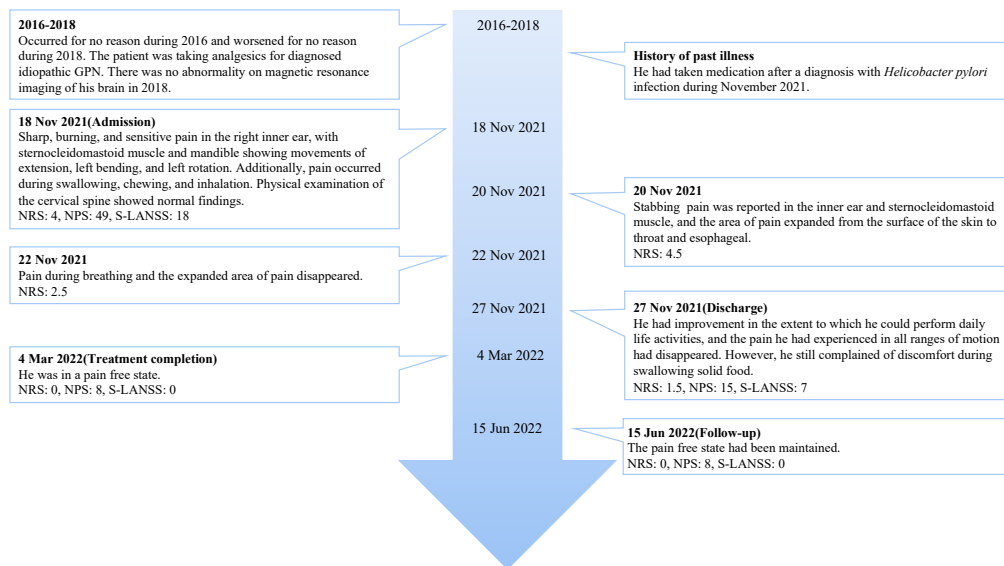


Fig.4. Timeline of patient history and clinical symptoms.

## Discussion

Secondary GPN occurs due to neurovascular compression and is rarely due to a brain tumor, multiple sclerosis, vascular deformity, or ossification of the cervical hyoid ligament [14,15]. However, most cases of GPN are idiopathic [2]. Patients with GPN, over time, require a greater dose of drug due to resistance [14]. Carbamazepine is a representative drug for GPN but has side effects, such as leukopenia, aplastic anemia, and ataxia. Furthermore, a single dose of carbamazepine is limited to 400 mg due to risk of liver damage. If there is no improvement after 8 weeks, the dose of carbamazepine should be reduced gradually and then discontinued [15,16].

In this case report, the patient was diagnosed with idiopathic GPN based on his symptoms and a normal finding on magnetic resonance imaging of his brain. The patient had noticeable improvement after completing his inpatient and outpatient course of treatments. However, recurrence of GPN remains a possibility owing to the idiopathic nature of the condition/disease. It was confirmed, 15 weeks post treatment completion, that the patient was still pain-free, and the effect of KMT was not transient.

Acupuncture is widely used for the treatment of neuralgia and is based on the mechanism of opioids, serotonin, norepinephrine, amino acids, and glia cell/cytokines [17]. Based on traditional Korean medicine, among the acupoints at distal regions, LU7 and KI6 represents sore throat conditions/diseases, LI1 and ST44 represents heat release from the face, and LI4 and LR3 represents blood circulation [6,7]. Cho-o pharmacopuncture consists of *Aconiti Kusnezoffii Radix*, and its representative ingredient is aconitine, which is effective against the symptoms of neuralgia [18]. So-yeom pharmacopuncture contains the same active constituent as HHT, and was expected to exert a similar effect to HHT tablets [19]. The HHT tablets were expected to reduce the heat sensation

and pain of unknown origin by increasing nitric oxide and immune-related cytokines to increase immunity [20]. However, because HHT tablets were started on Day 8, it is recognized that the treatment tools should have been implemented uniformly for similar cases in the future.

In a previous KMT case, diclofenac and lidocaine were used as required with an ongoing intake of carbamazepine [7], and in another case, diclofenac was used as required with other analgesics [8]. This current report was the first study on GPN where KMT was used without analgesics, and in comparison with the previous studies, there was less than half the hospitalization period and no adverse events were observed [7,8]. However, this report has the limitation of describing a single case, therefore no controls or statistics can be applied. A large number of cases are required to obtain statistically significant findings, which can lead to randomized controlled trials. Further, follow-up studies are needed.

## Author Contributions

Conceptualization: SJK and YIK. Methodology: SJK. Formal investigation: SJK. Data analysis: SJK. Writing original draft: SJK. Writing - review and editing: SJK, HKC, MJK, HJC, YRL, HJJ, JKJ, JHJ and YIK.

## Conflicts of Interest

The authors have no conflicts of interest to declare.

## Funding

None.

## Ethical Statement

This study was exempt from IRB deliberation (IRB no.: DJDSKH-22-E-07).

## Data Availability

All relevant data are included in this manuscript.

## Supplementary Materials

Appendix A and B are available at <https://doi.org/10.13045/jar.2022.00108>.

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