Gradual aggravation of idiopathic glossopharyngeal neuralgia due to chronic tonsillitis
A case report
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Abstract
Rationale: Glossopharyngeal neuralgia (GPN) is a rare type of neuralgia. Depending on the cause, it is classified as idiopathic GPN and secondary GPN. Secondary GPN can also be caused by a mass effect or inflammation of the tonsils, the innervation area of glossopharyngeal nerve.

Patient concerns: The patient was diagnosed idiopathic GPN 8 years ago. The patient had intermittent pain, but the pain was well controlled. From 5 months ago, the pain gradually worsened, the patient complained severe pain which impaired chewing and swallowing function.

Diagnoses: Idiopathic GPN, secondary GPN, chronic tonsillitis

Interventions: Percutaneous glossopharyngeal nerve block, glossopharyngeal neurolysis, and pulsed radiofrequency neuromodulation of glossopharyngeal nerve were performed. After the diagnosis of tonsillitis, antibiotic therapy was performed

Outcomes: Two weeks after the antibiotic treatment, the pain decreased simultaneously with the patient’s tonsillitis recovery.

Lessons: In a Patient who had already been diagnosed with idiopathic GPN, both pain control and its cause should be considered when the pain is aggravated.

Abbreviation: GPN = glossopharyngeal neuralgia.

Keywords: chronic tonsillitis, glossopharyngeal neuralgia, idiopathic glossopharyngeal neuralgia, inspection, secondary glossopharyngeal neuralgia

1. Introduction
Glossopharyngeal neuralgia (GPN) is a rare type of neuralgia with a relative frequency of 0.75% to 1% compared to trigeminal neuralgia. GPN is defined as paroxysmal pain in the areas supplied by the 9th and 10th cranial nerves and is sometimes called vago-glossopharyngeal neuralgia (VPGN). The pain usually radiates toward the ear, angle of the jaw, or upper lateral aspect of the neck, and is perceived as excruciating “electrical shock-like” or “needle-like” pain in the back of the throat, the base of the tongue, the tonsillar fossa, the depth of the ear canal, or the area beneath the angle of the jaw, lasting from seconds to minutes and often induced or worsened by chewing, yawning, talking, and swallowing. Idiopathic GPN is most commonly induced by vascular compression of the 9th cranial nerve. Secondary GPN can be caused by neoplasms, peritonsillar abscess, carotid aneurysm, Chiari type I malformations, and Eagle syndrome. To date, there has been no report of deterioration of idiopathic GPN due to chronic tonsillitis.

2. Case report
We describe a case of gradual aggravation of idiopathic GPN due to chronic tonsillitis in a 74-year-old female patient. She has provided informed consent for publication of this case. The patient was diagnosed with idiopathic GPN 8 years ago. Her pain had been controlled well by taking 200 mg doses of ibuprofen irregularly. The usual visual analog scale (VAS) score had been 1–2/10, but the pain began to increase gradually starting 5 months ago and the VAS scores increased to 4–5/10. She began to take 600 mg/day of pregabalin and 1200 mg/day of ibuprofen, but the pain was not alleviated. She complained of pain-induced sleep disturbance and swallowing difficulties and was admitted for pain control as a neurology outpatient. There were no specific results for brain magnetic resonance imaging (MRI) (Fig. 1A), laboratory tests, and physical examination except increased erythrocyte sedimentation rate. Meanwhile, her medication was increased to 1500 mg/day of gabapentin, 30 mg/day of
duloxetine, and 20 mg/day of oxycodone. Nevertheless, her pain was not relieved, and she was referred to the pain clinic for nerve block. We sequentially performed a percutaneous glossopharyngeal nerve block, neurolysis and pulsed radiofrequency neuromodulation of the glossopharyngeal nerve by the peristyloid technique (Fig. 1B). The effect of the treatment lasted only 2 days. We next planned an intraoral approach,[5] but while inspecting the oral cavity we found a mass in her left tonsil. We referred her to the department of the otolaryngology, where she underwent neck computed tomography (CT) (Fig. 1C) and tonsillar biopsy. Fortunately, the biopsy showed only chronic inflammation and she was treated for chronic tonsillitis with 300 mg/day of cefditoren for 2 weeks. Her pain was alleviated, and in a follow-up neck CT 2 weeks later the chronic inflammation and enlarged lymph nodes were diminished (Fig. 1D).

3. Discussion
The diagnosis of GPN is usually based on history and clinical examination, not on imaging or other testing modalities.[6,7] Many pain physicians are aware of these diagnostic criteria, but changes in pain in patients diagnosed with GPN are likely to be dismissed as part of the course of the disease. Secondary GPN can occur by compression, direct injury, demyelination and infections of the glossopharyngeal nerve.[2] The treatment of secondary GPN varies greatly depending on the cause and can include medication, nerve block, cryoanalgesia, gamma knife surgery, or microvascular decompression.[4,7–10] For this reason, it should not be overlooked that various causes can lead to deterioration in idiopathic GPN. In this case, we should have paid more attention to several reports of tonsillar problems in GPN patients.[7,11] The pathogenesis is unclear how tonsillitis could result in the deterioration of idiopathic GPN. Such phenomenon is presumed to have been caused by central and peripheral sensitization like other forms of neuralgia.[12] Tonsillar problems may indicate causes of secondary GPN or may be factors in exacerbating idiopathic GPN.

Our first mistake was not to carry out a complete enough physical examination of the patient. If we had performed the appropriate examinations at an early stage, the patient could more quickly have been given appropriate treatment and avoided many interventional procedures, medications, and costs. Second, we performed only brain MRI, not head and neck MRI. For patients with GPN, it is important to recognize that a brain scan might not be sufficient to show the cause. If a patient already diagnosed with idiopathic GPN as well as other diseases complains of a sudden deterioration of the symptoms, every...
effort should be made to discover the cause. This process involves thorough physical examination and imaging.

In conclusion, brain MRI alone cannot determine the cause of GPN. Even if the patient has already been diagnosed with GPN, physical examination including tonsil examination should be thoroughly performed. Tonsillar problems may be caused by secondary GPN or exacerbating idiopathic GPN.

Author contributions

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