

Radiofrequency thermocoagulation of the sphenopalatine ganglion in the treatment of chronic paroxysmal hemicrania

Kronik paroksizmal hemikrani tedavisinde sfenopalatin ganglionun radyofrekans termokoagülasyonu

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Paroxysmal hemicrania (PH) is a primary headache disorder belonging to the trigeminal autonomic cephalalgias (TACs).^[1] It is characterized by unilateral, severe attacks lasting 2 to 30 min, typically involving the orbital, supraorbital, temporal, or a combination of these sites.^[2] The attacks are usually associated with ipsilateral conjunctival injection, lacrimation, nasal congestion, rhinorrhea, forehead and facial sweating, miosis, ptosis and/or eyelid edema. In this article, we report a case with chronic PH who underwent radiofrequency thermocoagulation of sphenopalatine ganglion (SPG) for the first time in the literature.

A 48-year-old female patient was referred to the outpatient pain management clinics with a complaint of severe unilateral headache which was continuing for nearly 25 years. The patient described her pain as stabbing, and throbbing. The painful attacks were lasting between 20 to 30 min, and they were always localized to the left side of the head. The patient was experiencing about 10 attacks of headache per day. The pain was intensifying in the orbital and supraorbital regions. Conjunctival injection, lacrimation, rhinorrhea, facial flushing, and ptosis were occurring along with headache. The patient reported pain-free periods ranging from one week to 10 days several times for nearly 20 years. She always lived with severe headache attacks except for these periods. No abnormal findings were detected on cranial magnetic

resonance imaging (MRI). Based on her medical history, the patient was diagnosed with chronic PH referring to the International Classification of Headache Disorders-3 (ICHD-3).^[2] A written informed consent was obtained from the patient for publication of this case report.

During the 25-year disease course, the patient received multiple pharmacological treatments, including pregabalin, gabapentin, topiramate, duloxetine, and verapamil. Despite these therapeutic interventions, the patient reported no meaningful symptom improvement. On the other hand, she benefited from oral indomethacin treatment of 150 mg per day in the initial period, particularly the first 10 days after the drug was initiated. However, she reported that her headache got worse again, and the pain severity returned to the pre-treatment level before the end of the month. Nevertheless, the patient reported that she occasionally received indomethacin, and it could sometimes relieve her headache, even being partially. Apart from oral medical treatments, the left greater occipital nerve (GON) block and radiofrequency thermocoagulation on the left Gasserian ganglion was applied several times three years ago. The patient conveyed a transient alleviation of pain lasting only a few days following the GON block and expressed no discernible relief from the Gasserian ganglion ablation procedure.

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Figure 1. A 22-gauge, 100-mm radiofrequency electrode with a 5-mm active tip was directed toward the superior portion of the left pterygopalatine fossa.

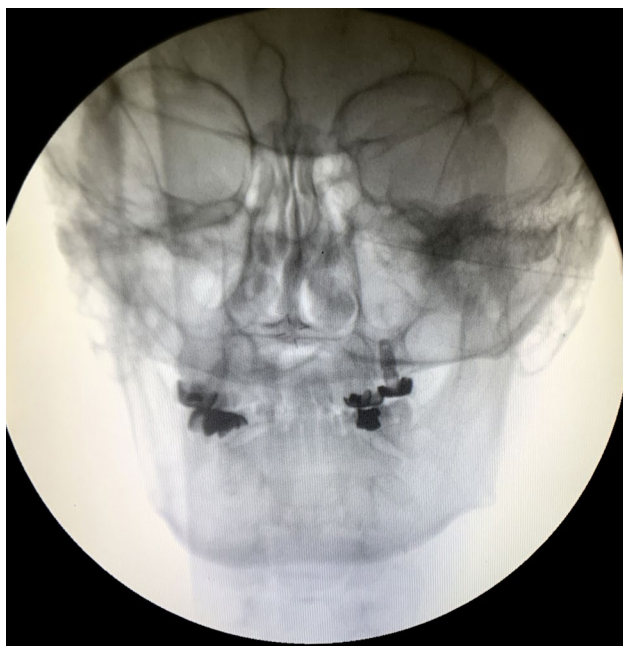


Figure 2. Under anteroposterior imaging, the needle was advanced until its tip was positioned adjacent to the lateral nasal wall.

Goadsby and Edvinsson^[3] detected increased levels of calcitonin gene-related peptide (CGRP), a trigeminal nociception marker, and vasoactive intestinal polypeptide (VIP), which indicates

parasympathetic activation, during acute attacks of chronic PH. Therefore, the left SPG block was applied with 2-mL of lidocaine 10% by intranasal approach. The patient's pain decreased to 0/10 from 10/10 according to NRS within 30 min. Consequently, radiofrequency thermocoagulation of the left SPG was applied at 80°C for 90 sec with an infrazygomatic approach (Figures 1 and 2) under fluoroscopic guidance. The patient was scheduled for a follow-up examination at the end of one, three, and six months, and the severity of the headache was noted as 0/10, 1/10, and 2/10, respectively. The patient reported that, for the first time in the past 25 years, her headache has abated for such an extended duration. Furthermore, she experienced an improvement in emotional well-being and an overall mood.

Currently, both pharmacological and interventional methods can be used for the treatment of PH. Among these treatments, indomethacin has been shown to be effective and is the most widely used drug. However, long-term use may have side effects, particularly on the gastrointestinal system.^[1] In the literature review, we identified two cases where the SPG was administered for the management of PH.^[4,5] In one case, the procedure was performed following the manifestation of side effects attributed to indomethacin, while in the other, it was applied due to the development of resistance to indomethacin therapy. Since our patient benefited similarly from the SPG, radiofrequency thermocoagulation of the SPG was performed. The present case appears to represent a novel contribution to the existing literature in this regard.

In conclusion, achieving success in radiofrequency thermocoagulation of the SPG in the patient for whom all treatment options were unresponsive, suggests that physicians should take this interventional treatment option into account for chronic PH. In addition, the loss of the effect of indomethacin, which is our most effective weapon in the treatment of PH, or the potential long-term side effects, makes radiofrequency thermocoagulation one of the treatment alternatives.

Author Contributions

S.K., O.E.P., S.S.: Concept; Design - SK, OEP, OHG; S.S., O.H.G.: Supervision, critical review; S.K., O.E.P., Y.O.: Data collection and/or processing, literature review, writing.

Conflict of Interest

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Data Sharing Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

AI Disclosure

The authors declare that artificial intelligence (AI) tools were not used, or were used solely for language editing, and had no role in data analysis, interpretation, or the formulation of conclusions. All scientific content, data interpretation, and conclusions are the sole responsibility of the authors. The authors further confirm that AI tools were not used to generate, fabricate, or 'hallucinate' references, and that all references have been carefully verified for accuracy.

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