CASE REPORT

GREATER OCCIPITAL NERVE BLOCK IN THE MANAGEMENT OF VESTIBULAR MIGRAINE: A CASE OF MISDIAGNOSIS AND RECOVERY

Vestibüler Migren Tedavisinde Büyük Oksipital Sinir Blokajı: Yanlış Tanıdan Etkili Tedaviye

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ABSTRACT

Vestibular migraine (VM) is a challenging condition, characterized by episodic vertigo and migraine symptoms, often misdiagnosed as peripheral vertigo. This case report describes a 25-year-old female with refractory VM who was successfully treated with greater occipital nerve (GON) block. The GON block provided rapid and significant relief of both headache and vestibular symptoms, highlighting its potential as a cost-effective and underused intervention. This case emphasizes the importance of accurate diagnosis and a multimodal treatment approach in the management of refractory VM.

Keywords: *Greater Occipital Nerve Block; Vertigo; Vestibular Migraine*

ÖZET

Vestibüler migren (VM), genellikle periferik vertigo olarak yanlış teşhis edilen, epizodik vertigo ve migren semptomları ile karakterize, engelliliğe neden olan bir hastalıktır. Bu olgu sunumunda, dirençli VM'si olan 25 yaşındaki bir kadın hastanın, büyük oksipital sinir (GON) blokajı ile başarılı bir şekilde tedavi edilmesi anlatılmaktadır. GON blokajı, hem baş ağrısı hem de vestibüler semptomlarda hızlı ve belirgin bir rahatlama sağlamış olup, maliyet etkin ve az kullanılan bir müdahale olarak potansiyelini vurgulamaktadır. Bu olgu, dirençli VM yönetiminde doğru tanının ve multimodal tedavi yaklaşımlarının önemini vurgulamaktadır.

Anahtar Kelimeler: *Büyük Oksipital Sinir Blokajı; Vertigo; Vestibüler Migren*

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Geliş tarihi/Received: 07.01.2025
Kabul tarihi/Accepted: 03.11.2025
DOI: 10.16919/bozoktip.1614769

Bozok Tıp Derg 2025;15(4):518-521
Bozok Med J 2025;15(4):518-521

INTRODUCTION

Vestibular migraine (VM) is a multifaceted neurological condition defined by the intersection of vestibular symptoms and migraine features. Despite its relatively high prevalence (estimated to affect up to 2.7% of the general population), it remains frequently misdiagnosed or overlooked in clinical practice, especially outside of specialized centers (1, 2). Patients typically present with episodic vertigo, lasting from minutes to days, often accompanied by migrainous symptoms such as throbbing headache, photophobia, phonophobia, or aura (1, 3). The variability in presentation, ranging from spontaneous to positional vertigo, contributes to diagnostic uncertainty, especially in the absence of concurrent headache (2, 4).

Differentiating VM from conditions such as Ménière's disease (MD) or benign paroxysmal positional vertigo (BPPV) poses a considerable challenge. Both VM and MD share overlapping cochlear and vestibular features (such as tinnitus, aural fullness, and fluctuating hearing loss) yet no single diagnostic test can reliably distinguish between them. As many as half of VM patients are initially misdiagnosed with MD, leading to inappropriate or delayed treatment (2).

Vestibular testing, including video head impulse test, caloric testing, vestibular-evoked myogenic potentials (VEMPs), and ictal video-oculography (VOG), can aid in identifying VM-specific patterns. For instance, ictal spontaneous nystagmus in VM often shows low velocity, may be horizontal, vertical, or torsional, and typically occurs with fixation denied (4). Still, interictal test results are frequently within normal limits, which further

complicates diagnosis.

Management of VM is similarly complex. While various prophylactic treatments (such as β-blockers, tricyclic antidepressants, calcium channel blockers, and anticonvulsants) have shown potential benefit, the absence of standardized treatment protocols has limited clinical consensus (1, 3). Triptans and NSAIDs, commonly used for migraine, appear less effective in managing vertigo-specific symptoms (1).

Among the interventional strategies under exploration, greater occipital nerve (GON) block has emerged as a potentially effective yet underutilized option. In a recent randomized controlled trial, patients receiving bilateral GON blocks every four weeks with lidocaine showed a significantly greater reduction in headache days compared to placebo, with 40.9% achieving a ≥50% reduction in frequency (5). Another prospective study focusing on menstrual migraine found that monthly GON blocks not only reduced headache intensity and frequency but also improved quality of life measures that persisted for up to three months post-treatment (6). The duration of benefit seems to range from days to several weeks depending on the protocol, and mild adverse effects such as transient local discomfort are the most commonly reported events (5). Interestingly, meta-analyses evaluating GON block in related headache syndromes such as postdural puncture headache support its analgesic efficacy within the first 24 hours, suggesting a potential for acute relief as well (7). The proposed mechanism involves modulation of nociceptive signaling within the trigeminocervical complex, where cervical and trigeminal afferents converge providing a plausible anatomical link between occipital nerve input and vestibular symptom modulation (8).

In this report, we present a case of a 25-year-old woman initially misdiagnosed with peripheral vertigo, who was subsequently identified as having VM. Her refractory symptoms improved markedly following a course of GON block, suggesting a possible role for this intervention in cases resistant to standard therapies.

CASE REPORT

A 25-year-old female presented with a three-year history of episodic vertigo. The vertigo episodes lasted 2–3 days, were exacerbated by head movements and were associated with nausea. She had been treated with betahistine, dimenhydrinate and piracetam under the assumption of peripheral vertigo, with little to no symptom relief.

On further evaluation, the patient reported accompanying headaches during vertigo episodes. These headaches were moderate to severe, throbbing in quality, and localized bilaterally in the temporal region. Associated symptoms included photophobia and phonophobia. The patient also admitted to excessive analgesic use to manage her symptoms, which likely contributed to rebound headache episodes. The recurrent symptoms significantly disrupted her daily activities and work.

A thorough neurological examination and vestibular function tests were within normal limits. Imaging studies, including brain MRI, ruled out structural abnormalities. With these findings, the diagnosis of peripheral vertigo was deemed incorrect, and the clinical features strongly suggested VM.

Given the refractory nature of her symptoms, the significant impact on her quality of life, and her history of excessive analgesic use, a GON block was proposed as part of the treatment strategy for VM. The decision was made to address not only the migraine-related vertigo but also to reduce the need for analgesics and mitigate potential rebound headache episodes.

The initial procedure was performed bilaterally with 2 mL of 1% lidocaine injected at the GON injection site near occipital protuberance. The patient tolerated the procedure well, with no immediate adverse effects. Over the following month, weekly GON blocks were administered for a total of four sessions, which further contributed to the significant reduction in her symptoms.

One month after the initiation of GON block therapy, duloxetine was added to her treatment plan at a low dose. This aimed to provide additional preventive benefits for both migraine and associated symptoms, including chronic pain and emotional distress related to her condition.

Although the primary outcome was the reduction in vertigo and headache severity assessed by Visual Analog Scale (VAS), the patient's self-reported improvements extended beyond pain. During follow-up visits, she spontaneously reported better sleep

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quality, reduced emotional distress, and increased daily functioning. Formal scales for mood, sleep, or quality of life were not administered in this case; however, the patient noted feeling "more balanced" and "less anxious," which coincided with the reduction in vertiginous episodes. These observations may suggest a broader effect of GON block beyond pain modulation, possibly through central mechanisms influencing affective and autonomic regulation. Over the next month she experienced only one mild vertigo episode with mild headache, compared to frequent and debilitating episodes prior to the intervention.

DISCUSSION

VM remains an underdiagnosed condition despite its prevalence and significant impact on quality of life. This case illustrates the clinical complexities of distinguishing VM from peripheral vestibular disorders, emphasizing the importance of a thorough evaluation, including detailed history-taking, neurological examination, and appropriate diagnostic imaging. The patient's initial misdiagnosis as peripheral vertigo, emphasizes the need for heightened awareness among clinicians regarding VM's diverse symptoms.

The delayed diagnosis of VM in this case reflects a common diagnostic pitfall. The patient was initially treated for peripheral vertigo over an extended period, largely because her episodic vertigo was not immediately accompanied by classic migrainous headache. This dissociation between vestibular and cephalic symptoms is a known barrier to timely diagnosis, as many patients with VM may present with isolated vertigo or non-specific dizziness, especially in early stages (2, 4).

Clinicians should maintain a high index of suspicion for VM in patients with recurrent vertigo episodes lasting from 5 minutes to 72 hours, particularly if there is a history of migraine or if attacks are accompanied by migrainous features such as photophobia, phonophobia, or visual aura. According to the Bárány Society and International Classification of Headache Disorders (ICHD-3) criteria, a diagnosis of VM requires at least five episodes of vestibular symptoms with moderate or severe intensity, a current or past history of migraine, and the presence of at least one migrainous symptom during at least 50% of vertigo episodes (9).

Of particular note, the administration of GON block in this case was not only therapeutic but also indirectly diagnostic. The rapid and marked improvement following the block supported a migrainous etiology of symptoms, further distancing the clinical picture from peripheral causes. While GON block is not a formal diagnostic tool, its response profile may be viewed as supportive evidence in ambiguous presentations.

The resolution of vestibular symptoms following GON block therapy in this case is particularly intriguing. While GON block is primarily utilized for managing headache disorders, its impact on vestibular symptoms is less well-documented, making this observation noteworthy. The improvement in vertigo raises important questions about the underlying mechanisms linking vestibular dysfunction and migraine pathophysiology.

One possible explanation involves the shared neural pathways between the trigeminal and vestibular systems. The trigeminocervical complex, a key relay station in migraine pathophysiology, has connections with the vestibular nuclei via brainstem circuits. By modulating nociceptive input at the occipital nerve level, the GON block may influence this interconnected network, leading to concurrent improvement in both migraine and vestibular symptoms (10, 11).

This dual benefit of GON block aligns with findings from a limited number of studies that reported reductions in vestibular symptoms in patients treated for migraine with GON block. For instance, a recent preliminary study found significant decreases in both the frequency and severity of vertigo attacks in VM patients after GON block treatment. This effect was attributed to the modulation of trigeminovascular and vestibular pathways through shared brainstem connections (12).

GON block therapy is an effective and cost-efficient option for managing conditions. However, despite its simplicity and efficacy, it remains under-researched in the literature and underutilized in clinical practice.

CONCLUSION

This case highlights the diagnostic challenge of VM and the therapeutic potential of GON block. Clinicians should maintain a high index of suspicion for VM in patients with vertigo that is refractory to conventional treatments for peripheral causes. Early and accurate diagnosis,

combined with appropriate interventions such as GON block, can dramatically improve patient outcomes.

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