

# A Rare Cause of Vertigo: Cervicogenic Dizziness

## Nadir Bir Vertigo Sebebi: Servikojenik Baş Dönmesi

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This case report was presented as a poster at Interventional PMR and Regional Pain Congress, May 19-21, 2023, Bodrum, Türkiye.

**ABSTRACT** Cervicogenic dizziness is a rare condition in which vertigo and imbalance are accompanied by neck pain and other neurological, vestibular and psychosomatic diseases are excluded by anamnesis, physical examination, vestibular function tests and imaging methods. Trigger points in the muscles in the neck region, especially the trapezius and sternocleidomastoid (SCM), can interrupt the proprioceptive mechanisms coming from the upper extremity and neck muscles and affect balance, posture and the position information in space. There are different treatment options for the treatment of dizziness due to myofascial pain syndrome, such as patient education, vestibular rehabilitation, stretching and trigger point injections. The case is here, presented a case of a 67 year old female with symptoms of dizziness associated with myofascial pain syndrome in the SCM muscle.

**Keywords:** Dizziness; exercise; neck pain; myofascial pain syndrome

**ÖZET** Servikojenik baş dönmesi; baş dönmesi ve dengesizliğin boyun ağrısı ile birlikte seyrettiği ve diğer nörolojik, vestibüler ve psikosomatik hastalıkların anamnez, fizik muayene, vestibüler fonksiyon testleri ve görüntüleme yöntemleriyle ekarte edildiği nadir görülen bir durumdur. Özellikle trapezius ve sternokleidomastoid (SKM) olmak üzere boyun bölgesinde bulunan kaslardaki tetik noktalar, üst ekstremit ve boyun kaslarından gelen propriyoseptif mekanizmaları kesintiye uğratarak uzaydaki konum bilgisini, postür ve dengeyi etkileyebilmektedir. Miyofasiyal ağrı sendromuna bağlı baş dönmesinin tedavisinde hasta eğitimi, vestibüler rehabilitasyon, germe ve tetik nokta enjeksiyonları gibi farklı tedavi seçenekleri bulunmaktadır. Burada SKM kasında miyofasiyal ağrı sendromuna bağlı baş dönmesi semptomları olan 67 yaşında kadın hasta sunulmaktadır.

**Anahtar Kelimeler:** Baş dönmesi; egzersiz; boyun ağrısı; miyofasiyal ağrı sendromu

Cervicogenic dizziness (CGD) was first described by Ryan and Cope in 1955 and was considered a controversial diagnosis.<sup>1</sup> The condition has also been named proprioceptive vertigo, cervicogenic vertigo, and cervical dizziness; still, since true vertigo is infrequently a symptom seen in people with CGD, it's now generally nominated CGD.<sup>2</sup> CGD is generally characterized by imbalance, shaking, disorientation, neck pain, and limited cervical range of motion (ROM).<sup>2,3</sup> Although the etiology is not fully

known, some cases of CGD have been diagnosed following whiplash trauma or have been associated with inflammatory, degenerative or mechanical changes in the cervical spine.<sup>4,5</sup>

The diagnosis of CGD should be considered when symptoms of imbalance and dizziness are present along with neck pain. Exclusion of other vestibular disorders based on history, physical examination, and vestibular function tests supports the diagnosis of CGD. CGD can be successfully treated with a be-

**TO CITE THIS ARTICLE:**

Bayraklı BB, Kuzu Ö, Çelik C. A Rare Cause of Vertigo: Cervicogenic Dizziness. Türkiye Klinikleri Journal of Physical Medicine and Rehabilitation Sciences. 2025;28(1):90-2.

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Peer review under responsibility of Journal of Physical Medicine and Rehabilitation Science.

**Received:** 09 Feb 2024

**Received in revised form:** 23 Sep 2024

**Accepted:** 23 Oct 2024

**Available online:** 31 Oct 2024

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havioral approach and vestibular rehabilitation when the diagnosis is correct.<sup>3</sup>

This case report presents how myofascial pain syndrome, particularly in the sternocleidomastoid (SCM) muscle, may impair proprioceptive mechanisms and that the diagnosis of CGD should be considered in patients with long-standing dizziness symptoms.

## CASE REPORT

A 67-year-old female patient was admitted to the outpatient clinic with complaints of intermittent dizziness accompanied by neck pain for two years. She had no known chronic disease and no head-neck trauma history. She was evaluated many times for dizziness in the neurology and otolaryngology departments. However, no central and vestibular system pathology was detected, and dizziness was triggered, especially by neck movements. The patient reported a dizziness intensity of 8 on the 10-cm visual analog scale (VAS). The Dizziness Handicap Inventory (DHI) questionnaire was scored at 72/100 (mild, 0-30; moderate, 31-60; and severe, 61-100).<sup>6</sup>

On physical examination, neck movements were found to be minimally limited at the end of the ROM, and the clavicular head of the left SCM muscle was painful and tender on palpation. Other systemic examinations of the patient were regular. Other orthopedic, neurological, and neurodynamic tests were unremarkable. There was no pathology detected in the laboratory tests and vestibular function tests. Sensorimotor and vestibular examination consisted of standing balance tests (romberg eyes open and eyes closed), oculomotor examination [observation for nystagmus and saccades, vestibuloocular reflex examination (the head impulse test, dynamic visual acuity testing, headshaking nystagmus test), Benign Paroxysmal Positional Vertigo (BPPV)] tests. Brain and cervical magnetic resonance (MR) imaging and cervical cerebral MR angiography excluded intracranial pathology and other possible pathologies.

The patient's treatment was planned as a four-week home program, including patient education and exercises. Exercise therapy was applied as home exercises five days a week, each session lasting 30 min-

utes. These exercises include posture, SCM stretching, upper trapezius fiber stretching, vestibulo-ocular reflex and balance exercises. One month after starting treatment, the patient reported significantly reduced dizziness from 8/10 to 4/10 on the 10-cm VAS. DHI score declined from 72/100 to 24/100. Meanwhile, after 1 month, the patient reported that her dizziness attacks decreased from an average of four times a week to once a week.

A written informed consent was obtained from the patient for the publication of her data in the form of an article.

## DISCUSSION

CGD is a diagnosis of exclusion. A diagnosis of exclusion exists when vestibular test results, imaging, laboratory values, or unique symptoms cannot confirm the diagnosis.<sup>3,7</sup> Diagnosis depends on associating symptoms of unsteadiness and dizziness with neck pain and excluding other vestibular disorders and other causes of dizziness based on history, examination, and vestibular function tests.<sup>3,7</sup> In the present case, other possible vestibular disorders were excluded by general systemic examination, vestibular tests, laboratory tests and imaging.

Neck proprioceptors can provide information about the movement and position of the head relative to the trunk to maintain postural stability. However, they cannot provide information about the movement of the head in space. This sensory information can influence vestibular reflexes, which allow the maintenance of visual stability through head movement and postural control through muscle contractions and function to establish the sense of spatial orientation.<sup>8,9</sup> While the visual system provides information about the position of the head relative to the external environment, the vestibular system provides information about the position of the head relative to space.<sup>8,9</sup> Signals from the vestibular system can be combined with neck proprioception information and converted into movement signals in coordination with the body center.<sup>10</sup>

The interaction of the visual system and proprioceptive system with the vestibular system is profoundly essential for postural control and gaze.<sup>10</sup>

Spasms of the neck muscles (trapezius, SCM, etc.) can affect the proprioceptive system and postural control, and long-term contraction of unilateral cervical muscles, especially the SCM can significantly increase the sensitivity of neck proprioceptors.<sup>11</sup> In this case, there was a complaint of intermittent dizziness, which continued for two years, increased over time, was accompanied by neck pain, and the ROM of the cervical joint was minimally limited at the end of the range. The fact that the patient's neurological and vestibular system examinations are normal, dizziness is triggered by neck movements, and the clavicular head of the left SCM muscle is painful and tender upon palpation suggests the diagnosis of CGD.

In the case series by Jung et al., a total of 59 patients presenting with dizziness were evaluated during the study period.<sup>12</sup> Thirty-six patients were diagnosed with BPPV, and 13 patients were diagnosed with vestibular hypofunction without any musculoskeletal disorders. Ten patients complained of dizziness accompanying musculoskeletal system dysfunction but without clinical symptoms of vestibular dysfunction. After further evaluations, vestibular function tests and other specific tests excluded serious neurological disorders, and seven patients were found to be compatible with the diagnosis of CGD. In this case series, a diagnosis-of-exclusion process was used on seven patients to represent clinical decision-making, resulting in significant improvements in outcomes.<sup>12</sup> In a study conducted in Türkiye, it was

reported that myofascial pain syndrome is one of the important causes of neck pain and that dizziness frequently accompanies these patients and that this situation should be taken into consideration.<sup>13</sup>

CGD should be treated with appropriate exercises to reduce impairment in the cervical proprioceptive system resulting from muscle spasms and trigger points, and gradual exposure to sensory input exercises should improve balance impairment.<sup>3,14</sup> Cervical spine exercises and stretching exercises performed through a behavioral approach, including clinically meaningful reduction of neck pain, may effectively reduce CGD and cervical spine symptoms.<sup>14</sup>

In conclusion, CGD is a disease that should be considered in the differential diagnosis of dizziness in patients with dizziness and neck pain.

#### Source of Finance

*During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.*

#### Conflict of Interest

*No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.*

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