

An Unusual Case of Temporomandibular Joint Disorder Resembling Migraine

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ABSTRACT

This article presents the case of a 32-year-old woman with two distinct temporomandibular joint pathologies: right temporomandibular joint arthralgia, headache, disc displacement with reduction and intermittent locking, and limited opening, whereas the left temporomandibular joint was showing arthralgia and subluxation. A neurologist was regularly consulted and treated the patient for migraine. A detailed clinical assessment was used in the therapeutic approach. Cone beam computed tomography (CBCT) was used in the paraclinical assessment to evaluate the temporomandibular joint (TMJ); CBCT imaging revealed condylar bone changes that were not correlated with the clinical symptoms. To alleviate TMJ symptoms, the treatment plan included anti-inflammatory drugs, physiotherapy and an occlusal splint with lateral guiding ramps. After three months of anti-inflammatory medication, physiotherapy and splint wear, an improvement in the migraine symptoms and enhanced life quality was reported. The variation in pathology between the right and left joints and the extended history of temporomandibular disorder onset with no definitive diagnosis or therapy make this case unique.

Keywords: temporomandibular joint disorder, cone beam computed tomography, occlusal splint, migraine.

INTRODUCTION

Temporomandibular joint diseases have a complex and multifactorial pathology (1). Stress is one of the most common causes of temporomandibular disorder (TMD) onset (2). It has been shown that

there was an association between temporomandibular disorders and cervical posture (3). Several diagnostic techniques for TMJ pathology have been described, including magnetic resonance imaging, cone beam computed tomography (CBCT), positron emission tomography (4), and axiography, which is less invasive and does not

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Article received on the 12th of October 2022 and accepted for publication on the 16th of December 2022

irradiate the patient (5). Usually, primary headache is a frequent and debilitating condition (6). The etiology of migraine and cluster headache is still being researched (7). Migraine diagnosis is primarily clinical and self-reported (8). Similar symptoms can be seen in cranial neuralgias, myofascial pain syndromes, temporomandibular dysfunction, neurovascular pain, and psychiatric conditions (9). Migraine and other primary headache conditions can cause facial or oral pain, indicating the involvement of the trigeminovascular system (10). Primary headache disorders, particularly migraine, are closely connected to temporomandibular disorders and overlap similar orofacial pain patterns (11). Therapy for patients suffering from neuralgia or cervicogenic headache is complex (12). Understanding the relationship between painful TMD and primary headaches might help physicians manage and prevent pain or refer patients to a specialist (13). Occlusal splints may be used to treat painful temporomandibular disorders (14). The headache intensity can be decreased by using occlusal splint treatment (15-17).

In this regard, this study aimed to report an unusual case of temporomandibular joint disorder resembling migraine. □

CASE REPORT

The present article reports a rare case of a 32-year-old woman with a long headache history, frequently consulted and treated for migraine by a neurologist for about seven years. The patient described having consultations with a neurologist for frequent headaches and migraines, with a pain-relieving medication prescription (pain relievers like aspirin and ibuprofen and calcitonin gene receptor peptide antagonists), but with low effectiveness in pain control efficacy. She was referred to us with pain in both TMJs as the presenting complaint, which was augmented by mandible movements and mouth opening. We recorded the reported pain using a ten-point visual analog scale (VAS) (18). The patient history included pain in the left ear (7/10 on a pain VAS scale), pain along with painful jaw movement (5/10 at the right TMJ and 7/10 at the left TMJ), pain in the jaw opening, and recurrent headache located in the right ear, temple and masseter and temporalis muscle area, fatigue, masticatory muscles weakness, dif-

iculty in concentrating and hearing disturbances, which lasted over seven years. She also reported right and left joint clicking in mouth opening and in lateral movement of the jaw. Her medical history also involved hypermobility of the left joint.

At the provocation of a loading test of the TMJs, pain occurred in both TMJs, especially on palpation of the lateral pole of the right and left TMJ, with limited mouth opening and reduced lateral movements of the mandible. Maximum lateral right shift measured three millimeters, and maximum lateral left movement was four millimeters, accompanied by pain. The clicking of the right and left TMJ occurred in the opening and closing movements of the mandible, the right condyle having an asymmetric and limited movement translation along the articular slope in comparison to the left one. No significant changes in lateral or posteroanterior cephalometric parameters were noted, and no facial asymmetry was depicted (19). Cone beam computed tomography (CBCT) was used in the paraclinical assessment for the evaluation of the temporomandibular joint (TMJ). A closed and open mouth CBCT examination of each joint was performed with a Soredex Cranex 3D machine (Soredex, Finland), with exposure parameters of 8 milliamperage (mA) and 89 kilovoltages (kV), 8.14 seconds of exposure, and a field of view (FOV) of 80 x165 millimeters (mm). The CBCT images were examined using OnDemand 3D Project Viewer (Version 1.0.10.4304) software.

According to the research diagnostic criteria for temporomandibular disorders (RDC/TMD), the diagnosis of arthralgia, headache attributed to pain, and right disc displacement with reduction and intermittent locking and a limited opening was established and a suspicion of a subluxation of the left TMJ (20). After examining the CBCT images of the TMJs, the diagnosis of subluxation of the left TMJ was confirmed, having a lateral and anterior to the articular eminence movement of the condyle at the mouth opening along with osseous modifications in both condyles (Figures 1- 4).

The differential diagnosis implied degenerative joint disease, TMJ arthritis, osteonecrosis of the joint, arthritides, masticatory muscle disorders, or other hypomobility disorders.

The treatment plan included counseling, anti-inflammatory medication (nonsteroidal an-

ti-inflammatory drugs), physiotherapy (compressive mobilization of the anterior, middle, and posterior fascicles of the temporalis, superficial masseter, sternocleidomastoid, and trapezius muscles, cervical spine mobilization, and exercises to improve head and neck posture), and an occlusal splint (Michigan splint, with lateral guiding ramps) to improve TMJ symptoms. □

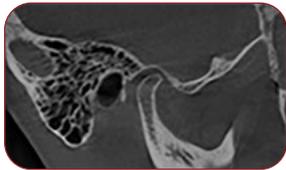


FIGURE 1. a. CBCT oblique sagittal section of the right TMJ with closed mouth: flat condyle and osteophytes production

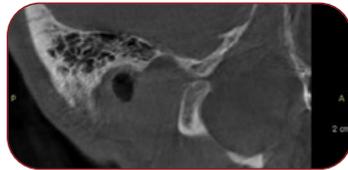


FIGURE 1. b. CBCT oblique sagittal section of the right TMJ with open mouth (A-anterior, P-posterior). The condyle slides until the anterior tubercle of the temporal bone.



FIGURE 2. a. CBCT oblique coronal section of the right TMJ with closed mouth: cortical condylar erosion with uncentered, lateral positioned condyle in the glenoid fossa



FIGURE 2. b. CBCT oblique coronal section of the right TMJ with open mouth (M-medial)

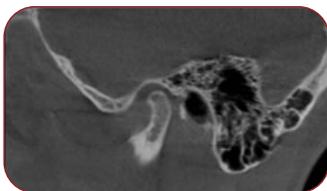


FIGURE 3. a. CBCT oblique sagittal section of the left TMJ with closed mouth: condyle cortical osteophytes and no other notable changes

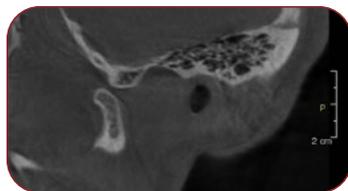


FIGURE 3. b. CBCT oblique sagittal section of the left TMJ with open mouth (P-posterior). The condyle slides in front of the articular tubercle of the temporal bone (subluxation).



FIGURE 4. a. CBCT oblique coronal section of the left TMJ with closed mouth: flat condyle, osteophytes production, and an uncentered, lateral positioned condyle in the glenoid fossa



FIGURE 4. b. CBCT oblique coronal section of the left TMJ with open mouth (L-lateral). The condyle slides lateral out of the glenoid fossa

DISCUSSION

The case described here highlights the importance of early diagnosis of temporomandibular joint disorders in young patients. The variation in pathology between the right and left joints and the extended history of temporomandibular disorder onset with no definitive diagnosis or therapy make this case unique. The condylar bone changes encountered were not correlated with the clinical symptoms. This case was notable due to an unanticipated relationship between clinical symptoms and CBCT findings. The clinical signs vary between individuals, and the disease's rarity and non-specific features make diagnosis challenging. Cone beam computed tomography was a highly beneficial method for examining the joint, providing a considerable clinical value in diagnosis and clinical examination according to the RDC/TMD. The treatment involved a comprehensive clinical general analysis and a detailed medical history, which every health provider should consider. After three months of anti-inflammatory medication, physiotherapy and splint wear, the patient reported improved mandibular movements and decreased pain sores in both TMJs (2/10 in the right TMJ and 1/10 in the left TMJ), an improvement of migraine symptoms, and an enhanced quality of life.

Long-standing dysfunction of the condyle, with an excessive progressive anterior position, generates elongation, weakening, and fibrosis of

the joint ligaments. The tension on the joint capsule determined by the spasm of imbalanced muscles, lateral pterygoid, and masseter on one side and temporalis on the other can result in a spectrum of pain and discomfort that is easily misnomer as migraine. Different systemic diseases of the connective tissues may produce weakness of the joint synovial soft parts and modification in time of the anatomical relation between condyle and cavity, which is usually bilateral. Unilateral subluxation is usually consecutive to trauma modifications. None of these situations were depicted in this case.

In a TMJ functionality overview, Badel *et al* stated that pathological features of the joint might not cause the condyle subluxation. In these patients, excessive mobility is allowed by an imbalance in the steepness of the cavity surfaces, presenting a longer and less steep articular temporal tubercle and a shorter steep of the posterior slope (21).

In our patient, the right condyle displayed at open mouth a normal mobility position at the lowest part of the eminence. At the same time, the contralateral one overcame that point but did not reach the expressed hypermobility anterior state, possibly due to the lateral combination of the dislocation.

Magnetic resonance imaging (MRI) is the gold standard technique for TMJ soft tissue assessment, both for position and functionality. Still, alternative imaging techniques (CBCT) can provide valuable information in claustrophobic cases or where there is a contraindication (cardiac devices, vascular clips, cochlear implants, piercing). Thus, CBCT emerges as an effective technique to assess the joint bone surface morphology and characteristics better than MRI. If a

small field of view and low exposure regime is chosen, it may provide the valuable information needed with minimal radiation. □

CONCLUSION

Temporomandibular disorders may result in significant functional deficits and a decrease in the quality of life. Subtle progressive modification of symptoms may occur; an accompanying headache may lead to a migraine diagnosis and neurological investigation. Collaboration among specialists is essential for establishing the cause and providing the best possible therapy to these individuals. Additional treatment options and occlusal appliances may be beneficial when combined with a specialized TMD diagnostic procedure. The conservative therapeutic strategy employed resulted in favorable treatment outcomes. The importance of a multidisciplinary approach to treating patients with temporomandibular joint disorders was highlighted. Occlusal splint treatment, physiotherapy, counseling, and anti-inflammatory medicine have all been shown to be useful in alleviating symptoms of temporomandibular joint dysfunction that resembled migraine. □

Conflicts of interest: none declared

Financial support: none declared

Ethics statement: The patient provided informed consent to participate in this study as well as for the publication of any potentially identifiable images or data included in this article.

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