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(CASE REPORT)

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A diagnostic dilemma: Acute mastoiditis presenting as facial pain and trismus: A case study

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Abstract

This case highlights the diagnostic challenge of patient presented with acute mastoiditis, pain in the distribution of trigeminal nerve and restricted mouth opening.A 23 year old female initially diagnosed as myofascial pain dysfunction syndrome and given medications, no symptom free period achieved after medications, later suspection of trigeminal neuralgia showed no improvement in conventional treatments.MRI revealed an finding of acute mastoiditis despite the absent of symptoms like ear pain, patient's condition improved after prompt antibiotic therapy and surgical intervention.This case highlights the need for dentist to consider the systemic infection in differential diagnosis when conventional treatment failed to provide timely and accurate patient care.

Keywords: Trigeminal Nerve; Mouth Opening; Trigger Zones; Pain; Mastoiditis

1. Introduction

Acute mastoiditis is a severe bacterial infection of the mastoid process, typically arising as a complication of acute otitis media. It is characterized by inflammation and the accumulation of pus in the mastoid air cells, often leading to symptoms such as fever, pain, and swelling behind the ear. One of the intriguing aspects of acute mastoiditis is its potential to mimic the symptoms of trigeminal neuralgia (TN), a condition characterized by sudden, severe facial pain due to irritation of the trigeminal nerve.[1]

In some cases, patients with acute mastoiditis may present with unilateral facial pain that radiates to areas innervated by the trigeminal nerve, such as the jaw, teeth, and cheeks. This pain can be sharp and paroxysmal, resembling the episodic attacks seen in trigeminal neuralgia [2]. Furthermore, the inflammation associated with mastoiditis can lead to restricted mouth opening (trismus) [3], which may further complicate the clinical picture, this overlap in symptoms can lead to misdiagnosis, with physicians potentially attributing the pain and reduced mouth opening solely to trigeminal neuralgia without considering the underlying mastoiditis. Therefore, it is crucial for clinicians to maintain a high index of suspicion for acute mastoiditis in patients presenting with facial pain.Chronic conditions are alarming when accompanied by otological symptoms or systemic signs of infection.

Therefore, this clinical dilemma emphasizes the importance of a thorough examination, imaging studies, and an awareness of the anatomical and pathological relationships between the mastoid region and the trigeminal nerve pathway. Early diagnosis and intervention are vital to prevent complications associated with untreated mastoiditis, which can include hearing loss, intracranial infections, and, in severe cases, life-threatening conditions.[4]

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2. Case report

A 23-year-old female patient reported to the department with the chief complaint of reduction in mouth opening for the past seven months. Her dental history revealed that this condition followed the extraction of an upper left back tooth, after which she also experienced a persistent, nagging pain on the left side of her face. The patient mentioned a previous physical assault to the same side of her face, further complicating the clinical picture.

On general examination, the patient was moderately nourished and oriented to time and place. On intraoral examination no evidence of odontological infection, there were no visible abnormalities only reduction in mouth opening noted, measuring about 22mm of inter incisal distance.On radiographic examination included an Orthopantomogram (OPG), which revealed no abnormalities and also regarding TMJ there is no abnormalities evident in Both OPG and TMJ Tomography and a CT scan of the head, which also showed no structural abnormalities to explain her condition . Based on these findings, the initial diagnosis was Myofascial Pain Dysfunction Syndrome (MPDS). She was prescribed muscle relaxants and low-level laser therapy, with post care instructions to return for a follow-up after one week.

At the follow-up visit, there was no improvement in the patient's symptoms.Visual analog scale initially was 8 and after one week also it remains the same.She continued to suffer from constant, throbbing pain on the left side of her face, exacerbated by simple activities such as washing her face, exposure to cold air, or even the lightest touch. The limited mouth opening remained unchanged at 22 mm.

Due to these persisting symptoms, the clinical focus shifted. Using Sweet's criteria for diagnosing trigeminal neuralgia (TN), trigger zones were identified on the left side of the patient's face, including the temple, malar region, and parasymphyseal area. The pain followed the trigeminal nerve distribution, strongly suggesting TN. She was prescribed Tegretol (carbamazepine 100mg twice daily) and advised to undergo an MRI for further evaluation.

The MRI results provided a significant finding: an ill-defined lesion in the left masticator space, measuring approximately 4 x 3.8 cm. This lesion extended to the skull base, indicating a potential underlying infection, given impression as left-sided mastoiditis. This diagnosis was unexpected, as the patient did not exhibit the typical symptoms of mastoiditis, such as ear pain or fever; however, the imaging confirmed its presence. The mastoid and masticatory space infection was likely the source of the patient's facial pain and restricted mouth opening.

Following the revised diagnosis, the patient's prior medications were discontinued, and she was promptly referred to an ENT specialist for definitive management. Appropriate antibiotic therapy was initiated, and an incision and drainage procedure was performed to treat the infection. These interventions resulted in complete resolution of the patient's symptoms, with full recovery of mouth opening and elimination of the persistent facial pain.

Figure 1 Trigger areas - 1a) Temple region 1b) Malar region 1 c) Parasymphysis region

Figure 2 Mouth Opening -22mm

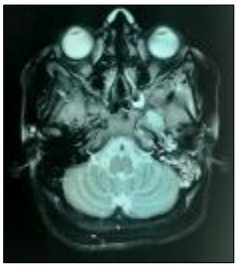

Figure 3 MRI-BRAIN (with ciss sequence)

Figure 4 Mouth opening - 34mm

3. Discussion

Pain is an unpleasant feeling that can be sharp or dull, and may come and go or be constant. It can feel like a prick, tingle, sting, burn, ache, or electric sensation.Pain behind the ear is a primary symptom of mastoiditis, an infection of the mastoid bone it is a dignsotic challenge as it the least occurrence.hence, the present case highlights the diagnostic challenge posed by atypical presentations of facial pain and reduced mouth opening, where multiple potential causes may overlap. Initially, the patient's symptoms of restricted mouth opening, continuous left-sided facial pain[5], and a history of trauma and dental extraction led to a provisional diagnosis of myofascial pain dysfunction syndrome (MPDS). MPDS is commonly associated with facial pain and limited jaw movement, often triggered by muscle tension or trauma. This diagnosis seemed plausible given the patient's symptoms and history.[6]

However, despite treatment with muscle relaxants and low-level laser therapy, the patient's symptoms persisted, particularly the throbbing pain triggered by minor stimuli, such as facial washing, cold breeze, and light touch. These sensory triggers, combined with the restriction in mouth opening and the presence of trigger zones in the trigeminal nerve distribution, shifted the diagnostic focus toward trigeminal neuralgia (TN).[7] TN typically presents with sharp, shooting pain triggered by touch or movement, often confined to one side of the face, which aligned with this patient's presentation.[2]The provisional diagnosis of Trigeminal neuralgia and initiation of (Tegretol), the persistence of symptoms prompted further investigation via MRI. The MRI results revealed a lesion in the left masticator space, extending to the skull base, which was later diagnosed as left-sided mastoiditis. This finding was unexpected, given the absence of typical signs of mastoiditis such as ear pain, fever, or swelling. Mastoiditis can occasionally present with atypical symptoms like facial pain and trismus (reduced mouth opening), mimicking conditions such as TN or temporomandibular disorders.

This case underscores the importance of considering infectious etiologies, such as mastoiditis, in the differential diagnosis of persistent facial pain and reduced mouth opening, especially when symptoms such as pain[8] from MPDS or TN is not clinically presented.Imaging modalties like MRI, were crucial in identifying the underlying pathology, leading to a change in management. If mastoiditis was diagnosed, appropriate treatment with antibiotics and surgical drainage resulted in complete resolution of the patient's symptoms.

Gradenigo's syndrome is classically defined by the triad of suppurative otitis media, pain in the distribution of the trigeminal nerve, and abducent nerve palsy. In our case, two of these symptoms were present suppurative otitis media and trigeminal nerve pain leading to a diagnosis of Incomplete Gradenigo's syndrome, a variant that has also been reported in the literature. [9, 10, 11]

The present emphasizes the need for a thorough diagnostic approach in patients with facial pain, particularly when symptoms persist despite treatment. Early identification and treatment of underlying causes, such as Otomastoiditis, are essential for preventing complications and ensuring positive outcomes.

Clinical significance - (Diagnostic complexity)

The case report highlights how facial pain and restricted mouth opening can have multiple overlapping causes, including myofascial pain dysfunction syndrome (MPDS), trigeminal neuralgia (TN), and infectious etiologies like mastoiditis. This emphasizes the need for a broad differential diagnosis.

4. Conclusion

This case illustrates the diagnostic complexity when overlapping symptoms are present. While the initial working diagnoses of myofascial pain dysfunction syndrome (MPDS) and trigeminal neuralgia appeared plausible based on the patient's clinical presentation, the persistence of symptoms and the eventual identification of left-sided mastoiditis necessitated a significant shift in the diagnostic approach. The successful resolution of the case following targeted treatment underscores the critical importance of comprehensive investigations and imaging when conventional diagnosis and treatment prove ineffective. This case serves as a reminder that, even with atypical presentations, infections such as mastoiditis with spread of infection should be carefully considered as potential causes of facial pain and trismus.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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