RESEARCH PAPER

Promethazine-induced Temporomandibular Joint Dislocation: An altered manifestation of Drug-induced acute orofacial motor disorders

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ABSTRACT
Temporomandibular joint (TMJ) dislocation is an uncommon clinical condition that can occur due to trauma, neurological issues, or side effects of medications. We describe a rare instance of TMJ dislocation following the oral administration of promethazine, an antihistamine known for its sedative and antiemetic effects. This case highlights the possibility of drug-induced TMJ dislocation, in those who tend neurological reactions to specific drugs. This case report describes the importance of Early Right diagnosis and specific management.

Keywords: TMJ dislocation, drug-induced, promethazine, dystonia.

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INTRODUCTION

The temporomandibular joint (TMJ) is the joint between the mandible and the temporal bone in the skull, facilitating crucial activities like chewing, speaking, and swallowing. TMJ dislocation happens when the mandible's condyle shifts forward past the articular eminence, leading to an inability to close the mouth. The majority of cases are traumatic, yet idiopathic, muscular, and neurological origins have been recorded. A less common cause of TMJ dislocation is drug-induced, especially from medications with sedative, anticholinergic, or dopaminergic properties, like promethazine.[1,2]

Promethazine, a first-line antihistamine, is frequently utilized for its ability to prevent nausea, induce sedation, and avert motion sickness. Although generally well-tolerated by several individuals, promethazine has been noted to cause extrapyramidal side effects, such as dystonic reactions and muscle stiffness. Dislocation of the TMJ caused by drugs is exceptionally uncommon, with a limited number of cases reported in literature, frequently associated with dopamine blockers or neuroleptic drugs.[3,4] This case report details a TMJ dislocation caused by promethazine, highlighting the necessity of recognizing this possible complication.

CASE PRESENTATION

Patient Information

A 15-year-old female with a past medical history of mental retardation presented to the emergency department with a chief complaint of an inability to close her mouth for 5 days. The patient had been administered 25 mg of syrup promethazine 5ml OD for sedation following the patient's attendant complaints of insomnia. 3 days after administration, she developed an open mouth with an inability to close her jaw. The patient's speech was markedly altered due to the dislocation of the TMJ.

Clinical findings

During the physical examination, the patient appeared alert and oriented, but distressed due to her inability to close her mouth. The subsequent observations were recorded: Evident anterior dislocation of the mandible, with the lower jaw extended forward, obstructing the alignment of the teeth. No facial injuries or swelling are appreciated. Tenderness upon palpation of the TMJ, yet no detectable fractures or soft tissue irregularities. The neurological

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evaluation was normal, showing no indications of facial nerve paralysis or other impairments. The patient's medical history revealed Mental retardation, she was prescribed syrup Promethazine 5ml BD for the recent occurrence of insomnia for the previous 3 days.





Figure legend:
Fig A - Pre operative lateral view of patient showing TMJ dislocation

Fig B - Pre operative profile view of patient showing TMJ dislocation

Diagnostic Assessment:
A CT scan of the head and neck was advised, but could not be carried out as the patient was not cooperative. The diagnosis was based on clinical examination.

Therapeutic Intervention:
After multiple failed attempts of manual reduction of the TMJ under local anesthesia due to lack of patient cooperation, relocation was done under monitored anesthesia care with calculated administration of Propofol and the TMJ was repositioned successfully without further complications. Following the reduction, the patient recovered complete jaw mobility and could close her mouth easily. Barton's bandaging was done to stabilize the jaw. She was monitored for 24 hours following the procedure. The promethazine was discontinued and no additional instances of dislocation were noted. The patient was discharged with guidance to refrain from using promethazine going forward, as well as suggestions for subsequent care.

Outcome and follow-up:
During a follow-up visit one week later, she displayed no lingering symptoms or complications, and her TMJ function had reverted to baseline levels.





Figure legend:
Fig C- Post operative profile view of patient after successful relocation of TMJ.

Fig D - Post operative lateral view of patient after successful relocation of TMJ.

DISCUSSION

Promethazine is a first-generation antihistamine known for its sedative, antiemetic, and anticholinergic effects. While mainly employed for nausea and sedation, promethazine is recognized for having considerable neurological side effects, such as dystonia, rigidity, and various extrapyramidal symptoms, particularly in older adults or individuals with neurological vulnerabilities.[5] The likely explanation for this involves dopamine antagonism within the central nervous system, influencing both motor and non-motor pathways. This may result in unusual muscle contractions and heightened muscle tone, potentially making individuals more susceptible to muscle spasms or joint dislocations.

The mentioned case of TMJ dislocation caused by promethazine is rare, as this adverse effect is not extensively recorded in the literature. Nonetheless, there are associated instances of TMJ dislocation connected to dopamine-blocking medications like neuroleptics (antipsychotics), which may result in extrapyramidal symptoms.[6] These medications, notably at elevated doses or among susceptible groups, can result in dystonic reactions, such as muscle spasms affecting the jaw and subsequent dislocation of the TMJ.

TMJ dislocations are typically categorized as traumatic, spontaneous, or iatrogenic. The process of dislocation involves a muscular imbalance, where the lateral pterygoid muscle, tasked with opening the mouth, contracts improperly, causing the head of the mandible to be pulled forward past the articular eminence. In our situation, promethazine might have triggered muscle rigidity or dystonia, resulting in unusual muscle contractions that led to the anterior dislocation.

Ellis and Moos[6] recorded that TMJ dislocation typically happens after an injury or as a result of muscle spasm. Although spontaneous dislocations may happen in certain people, they are frequently triggered by actions such as yawning or sneezing, in addition to medications influencing the neuromuscular system. Ellis also observes that dopamine antagonists are recognized for causing dystonic reactions, which may lead to dislocations in different joints, such as the TMJ.

Foster & Delaney[5] additionally elaborated on the adverse effects of promethazine and related medications, especially the potential for extrapyramidal symptoms. Their research emphasizes that these symptoms are frequently overlooked in clinical environments, potentially postponing correct diagnosis and treatment.

Sundaram & Schlenker[7] examined instances of drug-induced TMJ dislocation, highlighting that although numerous cases were associated with neuroleptic medications, a minor group of antihistamines such as promethazine could also be involved because of their anticholinergic and dopaminergic effects. This additionally bolsters the argument for promethazine as a rare yet possible factor in TMJ dislocation.

Kim & Lee[8] reported a case of drug-induced dystonia in a patient receiving dopamine antagonists, resulting in TMJ dislocation. Their situation illustrated how neurological side effects can worsen muscle rigidity and lead to dislocation. This parallels our case, in which the

neurotoxic effects of promethazine likely contributed to the TMJ dislocation.

CONCLUSION

TMJ dislocation caused by promethazine is an uncommon yet significant clinical condition, especially for healthcare providers who might administer sedatives or antiemetics to patients predisposed to neurological adverse effects. Even though the basic pathophysiology of drug-induced TMJ dislocation is not well comprehended, it is crucial to acknowledge that drugs with dopaminergic and anticholinergic characteristics, such as promethazine, can trigger unusual muscle contractions that might result in joint dislocations. This case illustrates the necessity for timely diagnosis, immediate joint reduction, and cessation of the problematic medication to avert additional complications.

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