

CORRELATION BETWEEN THE TEMPOROMANDIBULAR JOINT DISORDER AND EAR SYMPTOME

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ABSTRACT

Objective: The temporomandibular joint (TMJ) is one of the most frequently used joints of the human body. It is used when speaking, chewing, yawning, swallowing and other activities it is closely related anatomically to the ear and clinical conditions of the joint may produce symptoms must be distinguished from those directly associated with the ear. The purpose of this study was to determined correlation between the temporomandibular joint disorder and ear symptom **Material and Method:** In this prospective study study 50 patients with temporomandibular joint disorder diagnosed in the department of otolaryngology Head and Neck surgery in Baquba teaching hospital. History tacking and examination in theses patients focused on temporomandibular joint (TMJ) myofascial pain, headache tinnitus and vertigo. Physical examination of the facial framework and TMJ Temporomandibular joint magnetic resonance images. **Results:** statistically significant difference among headache as regard, tinnitus and vertigo with p-value, 0.022, 0.027, respectively using Chi-square .statistically significant difference among myofacial pain as regard, tinnitus, with p-value, 0.032; and insignificant among vertigo, using Chi-square test. **Conclusion:** There is a close relationship between the symptoms Temporomandibular joint inflammation, and ear symptom's like tinnitus and vertigo.

KEYWORDS: Tinnitus, Temporomandibular joint, Vertigo, myofacial pain.

INTRODUCTION

The temporomandibular joint (TMJ) is one of the most frequently used joints of the human body. It is used when speaking, chewing, yawning, swallowing and other activities during the day and even in sleep. The frequency of movement is assessed as approximately 1500–2000 times a day (Magee, 2002).

The etiology of temporomandibular disorders (TMDs) is multidimensional. Biomechanical, neuromuscular, biopsychosocial and neurobiological factors may contribute to the disorder (Suvinen et al., 2005).

The patients with temporomandibular disorders may also complain of aural symptoms such as otalgia, tinnitus, vertigo and impaired hearing (DeFelacio, 2008).

Several pathophysiological mechanisms have been proposed in the literature to explain the aural symptoms reported by TMD patients. These are spasms in the masticatory muscles associated with a dysfunction of the tensor tympani and tensor palatinus muscles, dysfunction of the auditory tube, interference in the petrotympanic fissure

and tension in the anterior malleolar ligament through speno-mandibular ligament (Gurel et al., 2010).

MATERIAL AND METHOD

The study population consisted of (50) patients from both genders above 20 years old, referred to the department of otolaryngology, Head and Neck surgery Baqubah Teaching Hospitals from 22th of August 2017 to 10th of February 2018. complaining from possible Temporomandibular joint dysfunction symptoms such as myofascial pain, headache and internal derangement associated with one or more aural complain such as tinnitus, vertigo. If examination is suggestive of the condition Temporomandibular joint magnetic resonance images was taken to. evaluation of the temporomandibular joint with defining different degrees of derangement.

RESULTS

Table (1): Distribution of the studied group as regard general data and age.

Variables	No	%
Gender		
Male	7	14%
Females	43	86%
Age		
Mean (\pm SD)	31 \pm 5.6 (20-42)	

This table shows that patients in males (14%) and females (86%) of sex and this table shows age (years) there was mean (31 \pm 5.6) and ranged (20-42) of the study patients.

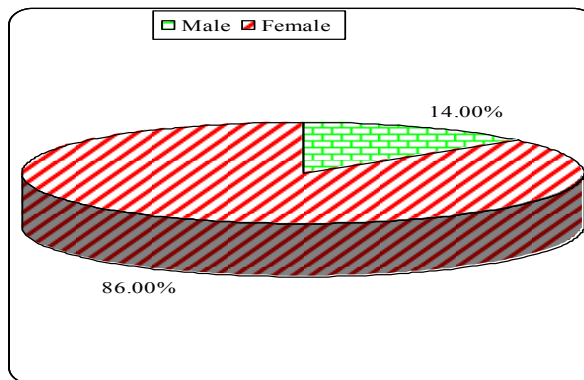


Fig. (1): Distribution of the studied group as regard general data.

Table (2): Distribution of the studied group as regard presenting symptoms.

Variables	No	%
Headache	40	80
Myofacial pain	43	85
Radiological finding (internal derangement)	22	44

This table shows that the headache (80%) and non headache (20%) of the study patients.

The myofacial pain was (85%) and non myofacial pain was (15%) of the study patients.

This table shows that the Internal derangement (44%) and Non internal derangement (56%) of the study patients.

This table shows that the aural symptoms vertigo (50%) and tinnitus (50%).

Table (4): Relation between difference stage of internal derangement in the right side of TMJ and aural symptoms.

	TMJ			
	I	II	III	IV
Tinnitus				
No	2(50%)	0	3(60%)	0
Yes	2(50%)	5(100%)	2(40%)	8(100%)
Vertigo				
No	3(75%)	2(40%)	0	5(62.5%)
Yes	1(25%)	3(60%)	5(100%)	3(37.5%)

This table shows the, tinnitus occur mostly in the stage IV and stage II, vertigo occur mostly in the stage III.

Table (5): Relation between aural symptoms versus headache.

Variables	Headache				Chi-square test	
	No (n=10)		Yes (n=40)		x ²	p
	No.	%	No.	%		
Tinnitus					5.212	0.022 (Sig.)
No	9	90	16	40		
Yes	1	10	24	60		
Vertigo					4.125	0.027 (Sig.)
No	8	80	17	42.5		
Yes	2	20	23	57.5		

This table shows statistically significant difference among headache as regard, tinnitus and vertigo with p-value, 0.022, 0.027, respectively using Chi-square test.

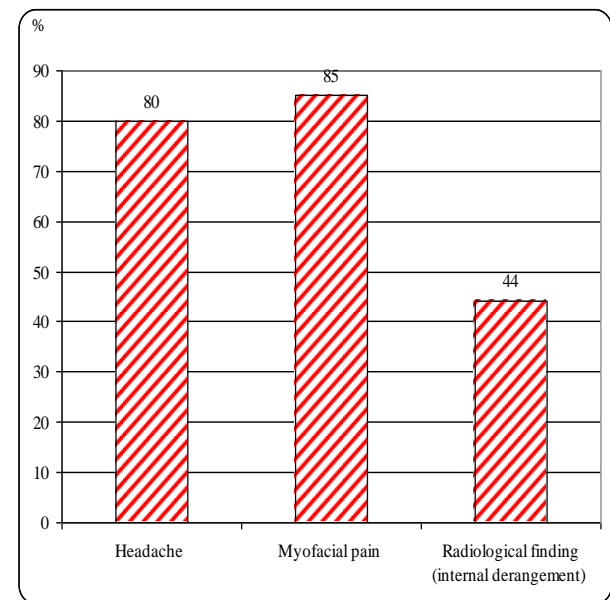


Fig. (2): Distribution of the studied group as regard presenting symptoms.

Table (3): Distribution of the studied group as regard aural symptoms.

Variables	No	%
Vertigo	25	50.0
Tinnitus	25	50.0

Table (1): Relation between aural symptoms versus myofacial pain.

Variables	Myofacial pain				Chi-square test	
	No (n=7)		Yes (n=43)		x ²	p
	No.	%	No.	%		
Tinnitus						
No	5	71.43	20	46.51	4.573	0.029 (Sig.)
Yes	2	28.57	23	53.49		
Vertigo						
No	4	57.14	21	48.84	0.013	0.948
Yes	3	42.86	22	51.16		

This table shows statistically significant difference among myofacial pain as regard, tinnitus, with p-value, 0.032; and insignificant among vertigo, using Chi-square test.

DISCUSSION

The temporomandibular joint is closely related anatomically to the external acoustic meatus and clinical conditions of the joint may produce symptoms of pain that must be distinguished from those directly associated with the ear. This study seeks to show some reasonable anatomical and pathophysiological connections between TMDS such as headache, myofacial Pains and aural symptoms like tinnitus, vertigo

In this study, (86%) of the TMD patients were females and 14% of patients were males with age range 20-42 years. and this prevalence is very close to the values reported in the literature, since many studies have shown that TMD signs and symptoms are more common in women aged between 20 to 42 years old (Silveira *et al.*, 2007).

Also, Velly *et al.* (2003) reported that females had approximately three times the risk of myofascial pain than males in a series of 83 patients, similar results were reported by different authors that show 80% of patients treated for TMD are females (Magnusson *et al.*, 2000; Macfarlane *et al.*, 2001; Tuz *et al.*, 2003; Azak, 2004 and Slade *et al.*, 2008).

The dominance of TMD in females that was explained by many authors as hormonal changes, physiological and psychological factors. Schmid-Schwab *et al.* (2013) show highest prevalence of TMDs during the reproductive years, beginning with puberty and decreasing after menopause.

In our study the incidence of aural symptoms in TMDs patient was (74%) with Otagia, (50%) with tinnitus, (50%) with vertigo, and (42%) with ear fullness this agree with another study.

David *et al.* (2001) found otalgia, tinnitus, vertigo, or perceived ear fullness, 67%, 64.1%, 65.2%, and 62.2% had TMD, respectively. Subjects with aural symptoms were significantly more likely to be females).

Tuz *et al.* (2003) reviewed 200 patients, the incidence of aural symptoms was found. Otagia, tinnitus, vertigo, and

ear fullness were reported by 63.6%, 59.1%, 50%, and 36.4%, respectively.

In another study found 42% of patients with TMD reported tinnitus, 35% reported otalgia, 18% reported dizziness, and 14% reported hearing loss (Luis *et al.*, 2011) this disagree with our study due to studies that have evaluated the prevalence of aural symptoms in TMD patients vary, both in symptoms reported and in the method of evaluation.

Several researchers have investigated the basis for the putative connection between aural symptoms and TMD symptoms. As early as 1934, aural symptoms, such as otalgia, stuffiness, tinnitus, vertigo, and hearing impairment, were included among the symptoms. Costen claimed that hearing impairment was secondary to Eustachian tube compression resulting from mandibular overclosure (David *et al.*, 2001).

Silvinelli *et al.* (2003) suggest that poor positioning of the mandibular condyle could cause symptoms of ear pain, tinnitus and vertigo. The tinnitus in TMD patients can be due to a neural signal induced by auricular temporal nerve or reduction of sensory signals.

Zipfel *et al.* (2000) noted that the most common mechanical origin of objective tinnitus is palatal myoclonus and middle ear myoclonus (rhythmic movement of the tympanic membrane secondary to repetitive contraction of the tensor tympani and stapedial muscles also (Ramirez *et al.*, 2005).

Okeson *et al.* (2003) show that the TMJ internal derangement (TMJ ID) is the most frequent type of TMD and is characterized by several stages of dysfunction involving the condyle-disk relationship. TMJ ID is considered to be a basic mechanism in the pathogenesis of TMJ dysfunction.

Regarding the type of disc displacement observed in the present study, (44%) of adult symptomatic patients with TMD have different stages of disk displacement. These agree with the findings of another study. Mahrokh *et al.* (2014) show normal disk position were reported in

(51.9%) of cases whereas disk displacement with or without reduction was found in 42.3% patients.

Our results also indicated that the all patients with different stages of internal derangement of disc position tinnitus most with stage IV. Vertigo mostly occur in stage III.

In our study (85%) reported pain in the temporal region followed by headache (80%). Similar results were mostly reported pain in the temporal region (92%), followed by headache (87%) (Bora *et al.*, 2012).

Also we found significant correlations between headache and aural symptom also significant correlations between myo facial pain and tinnitus but no significant correlations with vertigo This agree with Hazell reported 39% of patients suffering from tinnitus with frequent tension headaches with fatigue and muscle soreness in the facial and masticatory muscles.

Explanation of pain in the temporal region was reported by different authors. Kathleen *et al.* (2006) found the Inflammation of the capsular ligament may manifest with swelling and continuous pain localized to the joint. The joint movements that stretch the capsular ligament cause pain and limitation of joint movement. Significant inflammation may increase joint fluid volume, inflammation due to trauma or abnormal function may affect the retrodiscal tissue. Oedema in this area may cause anterior displacement of the condyle and an acute malocclusion with painful limitation of mandibular movements.

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