The Relationship Among Otic Clinical Findings and Temporomandibular Joint Disorders Population

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ABSTRACT:

BACKGROUND:

The otologic symptoms are frequents in temporomandibular joint (TMJ) disorder due to the proximity of the ear to the temporomandibular joint, TMJ pain can often be confused with ear pain.

OBJECTIVE:

To verify the frequency of otic signs and symptoms with TMJ disorder.

Study design: descriptive and transversal.

MATERIALS AND METHODS:

Thirty five patients, with pain complaint in tragus and peritragus area from otorhinolaringology department in Aljamhori Teaching Hospital in Mosul-Iraq. Patients with ear infection, even with TMJ disorder were selected and the ones with TMJ disorder with otalgia. Then sent to maxillofacial department to examine the TMJ. The data obtained were subdivided into two groups: TMJ disorder patients with otological exam in normal condition and TMJ disorder patients with abnormal otological condition.

RESULTS:

Thirty five patients, 14 men and 21 women aging from 18 to 75 years .There were 19 patients had TMJ disorder with otological examination in normal condition. Otalgia and TMJ tenderness were (89.74%) masticatory muscle tenderness (78.68%) and TMJ sound (63.15%), followed by itching and tinnitus (42.1% both). In second group all 16 patients with ear problems had TMJ tenderness (100%), were otalgia and itching (81.25%, 68.75%) respectively.

CONCLUSION:

The signs and symptoms most frequently associated with ear and TMJ disorder were TMJ tenderness, masticatory muscle tenderness- especially lateral pterygoid and temporalis -and click associated with otalgia; itching and tinnitus respectively. The results provide additional support for the notion that a relationship between temporomandibular disorder and otologic signs and symptoms does exit.

KEY WORDS: temporomandibular joint, otic findings.

INTRODUCTION:

Otic symptoms include otalgia, tinnitus, vertigo-dizziness, subjective hearing loss, and aural fullness. Such otic symptoms evidently can be originated in the auditory system (as a primary symptom) but are also habitually a symptom of an associated neighbored stomatognathic dysfunction (secondary or referred symptom)[1,2,3,4,5,6,7,8].

The temporomandibular joint (TMJ) is the jaw joint directly in front of the ear. If the joint or its attached muscles are damaged or inflamed, it can cause pain, limitation of jaw movement, muscle tenderness and joint clicking. [9,10]. There are many symptoms that can occur with this condition, and many patients with TMJ problems often have ear ache, tinnitus, fullness, and loss of hearing [1, 9,10,11,12]. Typically in these patients, examination of the ear usually shows normal ear canals and eardrums. Pressing a finger directly over the joint may recreate the pain and tenderness associated with this disorder [9,10].

The first description of the relationship between temporomandibular dysfunction and aural symptoms is thought to have been made by Costen in 1934. Costen reported various clinical cases of patients with ear and TMJ disorder [13]. After that, different hypotheses have been arising in order to explain the correlation between aural symptoms and temporomandibular alterations [9,14,15,16,17].

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A ligament connecting the disc and the malleus has observed in anatomic specimens [4,16]. The superior retrodiscal lamina has been considered to be a remnant of the ligament connecting the lateral pterygoid tendon to the malleus through the squamotympanic fissure in the fetus [17]. This anatomic finding has been used to explain the prevalence of auditory symptoms in TMJ disorder.

The conservative treatment is an effective way for managing TMJ disorder patients, moreover, otic signs and symptoms in TMJ disorder patients did respond to the treatment protocol instituted for all TMJ disorder patients, There have been many reports of relief or complete elimination of otalgia, tinnitus, vertigo, and deafness by various treatments for TMJ disorders [3,8,18,19,20].

MATERIALS AND METHODS:

Thirty five patients, with pain complaint in tragus and peritragus area were selected at an otorhinolaringology department in Aljamhori Teaching Hospital, Mosul-Iraq, period from 1st January 2011 to the end of March 2012. Functional diagnosis was done by physical examination through inspection, palpation, complemental examination by aoriscop, tunnirq fork, preliminary tone audiometry and tympanometry to the patients if necessary.

Patients with external and/or middle ear infection, even with TMJ disorder were selected and the ones with TMJ disorder with otalgia. The voluntary patients with TMJ disorder hypotheses were sent to maxillofacial department. The inclusion criteria was clinical examination conducted by oral medicine professional signs and symptoms that led to the diagnosis of TMJ disorder, palpation of TMJ will reveal pain and irregularity during condylar movement described as clicking, this done by pressing thumb inside anterior surface of ear and index finger in pritragus area that lateral pole of condoyle (figure 1). Digital palpation of muscle -at resting state - done by applying steady pressure that should be accompanied by asking the patient about the presence of pain at palpation site (figure 2). Four pairs of masticatory muscle was examined (temporalis, lateral pterygoid, medial pterygoid and masseter). Patients were sent to panoramic view radiograph on demand.

Subjects are subdivided into two groups: TMJ disorder patients with otological exam in normal condition and TMJ disorder patients with abnormal otological condition. Z -test was used in statistical analysis with significancy (0.05).

Figure 1: TMJ examination

Figure 2: digital examination of masseter muscle

RESULTS:

Thirty five patients, 14 (34.3%) men and 21 (65.7%) women aging from 18 to 75 years, the mean age ± SD was 39.9±13.2 (table 1).

There were 19 patients had TMJ disorder with otological examination in normal condition. Otalgia and TMJ tenderness, are the most sign and symptoms (89.74%), followed by masticatory muscle tenderness (78.68%) and TMJ click (63.15%) followed by itching and tinnitus (42.1% both).

And 16 patients had ear problems with TMJ disorder. All patients had TMJ tenderness (100%), were otalgia and itching perception most notice (81.25%, 68.75%) respectively. Statistically, there is no significant relation between TMJ disorder patients with normal

otological examination and patients with abnormal otological examination (table 2).

Lateral pterygoid then temporalis are the most prominent masticatory muscle tenderness in both groups (table 3and 4).

Table 1: Age and sex distributions of patients

Age (years)	Male	Female	Total (%)
-19	1	1	2 (5.7)
20-39	4	8	12 (34.3)
40-59	8	10	18(51.4)
60-	1	2	3 (8.6)
Total	14	21	35 (100)

Table 2: Statistical analysis between TMJ patients with normal and abnormal otological examination.

Signs and symptoms	ear signs and symptoms in 19 TMJ disorder patients with normal otologic examination.		ear signs and symptoms **in 16** TMJ disorder patients with abnormal otological examination		Z-test	Sig. 0.05
	frequency	%	frequency	%		
TMJ tenderness	17	0.897	16	1	1.39	Non sig.
Otalgia	17	0.897	13	0.812	0.56	Non sig.
Muscle tenderness	14	0.786	13	0.812	0.14	Non sig.
TMJ click	12	0.631	11	0.687	0.52	Non sig.
Itching	8	0.421	11	0.687	1.19	Non sig.
Tinnitus	8	0.421	7	0.437	0.06	Non sig.
Fullness	5	0.263	6	0.375	0.40	Non sig.
Vertigo	5	0.263	2	0.125	0.42	Non sig.
Discharge	0	0.000	2	0.125	0.53	Non sig.
Deafness	0	0.000	2	0.125	0.53	Non sig.

Z tab: 1.96

Table 3: Frequencies of muscle tenderness in 19 TMJ disorder patients with normal otological examination.

Muscles	unilateral	%	bilateral	%
Temporalis	6	31.5	5	26.3
Lateral pterygoid	10	52.6	2	10.5
Medial pterygoid	4	21.0	2	10.5
Masseter	6	31.5	2	10.5

Table 4: Frequencies of muscle tenderness in 16 TMJ disorder patients with abnormal otological examination.

Muscles	unilateral	%	bilateral	%
Temporalis	7	43.7	2	12.5
Lateral pterygoid	8	50.0	3	18.7
Medial pterygoid	4	25.0	1	6.25
Masseter	6	37.5	1	6.25

DISCUSSION:

Different hypotheses of reasons for common incidence of temporomandibular disorders and otalgia have been discussed. One of these hypothesis was the high prevalence of otalgia in patients with TMJ disorder may result in part from pain in the masseter muscle or in the temporomandibular joint which can feel like ear pain as a result significant fraction of patients seeking treatment due to pain in the ear have no findings in the ear, but in the TMJ and in the masseter muscle [15].

Several anatomic relationships existing between the ear and the temporomandibular joint have been proposed to account for the presence of aural symptoms that occur in some patients with TMJ disorder [9].

The frequency of TMJ disorders were higher in women this agree with other studies [1,3,14]. They are in forties and fifties of age.

Predominant signs and symptoms were: pain on the TMJ area, joint noise, and muscle pain which coincided with previous findings [1,14,22].

Pain is the most important reason for seeking medical and/or dental professional help in around 97% of the patients with painful TMJ disorders. It is not exclusively present in the masticatory system, it can also appear in other parts of the body, most frequently face and craniomandibular region [10]. The pain may be experienced as otalgia., Conversely, TMJ disorder is an important possible cause of secondary otalgia (2-8).

Other symptoms that presented significant frequency in our study were ear itching, that not included in other studies.

Tinnitus was frequent as ear fullness and itching. Tinnitus patients seem to suffer especially from myofascial and TMJ pain. A screening for TMJ disorder should be included in the diagnostic survey for tinnitus patients [1,14,21,22].

Williamson reported that noxious pain stimuli to the peridiscal tissues (similar to condyle or disc displacement) could result in the constriction of the internal auditory and posterior auricular arteries. Such constriction may result in a decrease in the blood supply to the middle and inner ears. Thus, the displacement of the TMJ may cause tinnitus [23].

Vertigo have been reported as associated with temporomandibular disorders [14,22],The results of this study also revealed that vertigo were more prevalent in the TMJ disorder group with normal aural examination than in either group.

CONCLUSION:

- The signs and symptoms most frequently associated with ear and TMJ disorder were TMJ tenderness, masticatory muscle tenderness-especially lateral pterygoid and temporalis -and click associated with otalgia; itching and tinnitus respectively.
- Close cooperation between dental specialist in craniofacial pain and otolaryngologist is of paramount importance in recognizing and diagnosing the TMJ disorder patients with otalgia. An otorhinolaryngologist should confirm the absence of any significant or detectable auditory, genetic, drug-related, or trauma-related causes of otalgia. Then, in cases with suspected TMJ disorder, the patient should be referred to a dentist with experienced treating TMJ disorder.
- This study requires further studies to detect the influence of proper diagnosis and selection of proper treatment in cooperation with TMJ centers.

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