

Relation between Tenderness of Temporomandibular Complex and Tension Headache- A Questionnaire Based Study.

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Abstract

Temporomandibular Disorder (TMD) is a collective term that encompasses a number of clinical problems that involve the masticatory muscles, the Temporomandibular Joint (TMJ), and associated structures. The most common symptom of TMD is pain, usually located from the temporomandibular region to the retromandibular area through the masticatory muscles, and usually confused with chronic headaches reflected to these areas.

Aim: To determine the relationship between Temporomandibular complex and Tension Type Headache (TTH).

Materials and Method: Age and gender-stratified random sample of 200 students of 20 -25 years received the questionnaire. Questions were related to tension headache - signs and symptoms (pain duration, intensity, sleep cycle etc.) and pain in the temporomandibular complex (number of painful masticatory sites on palpation, mandibular range of motion). After screening the questionnaire, subjects who reported with the episodes

of headache were clinically examined for occlusal analysis.

Results: Among the muscles palpated in TTH patients, tenderness experienced was in an increasing order from temporalis, trapezius and followed by lateral pterygoid.

Conclusion: The practice of modern dentistry is grounded upon evidence based diagnostic and treatment modalities. The scientific evidence provided shows that temporomandibular disorders must be included in the differential diagnosis of persistent headaches. If this diagnosis is made early, prolonged patient suffering may be reduced.

Keywords: Temporomandibular Disorder, Primary headaches, Muscles of mastication.

Introduction: The Temporomandibular Disorder (TMD) is defined as a set of functional and pathological conditions affecting the Temporomandibular Joint (TMJ), Masticatory Muscles and adjacent Tissue Components.1 TMD was also known as Costen's syndrome, craniomandibular disorder or mandibular dysfunction.2 Characteristics of TMD are chronic, spontaneous, nonodontogenic pain which is referred to the masticatory muscles, periauricular region, teeth, and TMJ.3 Mandibular movements and masticatory actions might provoke the pain resulting in limited mandibular movements, TMJ clicking, and headache.4 Headaches mostly present as heterotopic pain produced by concomitant or even distant structures. Two of the most common structures that produce this heterotopic pain are vascular tissues and muscle tissues.2 Headache is divided into two broad categories: primary and secondary. Primary headaches are those where the headache is actually the disorder. Secondary headaches include acute and chronic headaches that occur after whiplash injury. Acute secondary headache develops within 7 days after the injury and resolves within 3 months. Chronic secondary headache also develops within 7 days after injury, although it persists for >3 months.5 The International Headache Society has classified three types of primary headaches action or verbal report of discomfort which are –Migraine Headache, Tension-Type Headache (TTH), and Cluster Headache and other Trigeminal Autonomic Cephalalgia.6 A common source of TTH pain is from muscle structures. It is essential to note that not all TTH originate from muscle sources. TTH presents as a constant, steady, aching pain. It is commonly described as the feeling of wearing a tight headband. TTH are not usually debilitating. Patients may carry out their daily activities even though they are experiencing the headache. These are mostly bilateral and can last for days or even

weeks. They are not accompanied by auras, and nausea is not common unless the pain becomes severe.2 Since the symptoms of TTH and TMD are similar, a study was conducted to check the relation between tenderness of Temporomandibular Complex and Tension Headache.

Material and methodology: This study was designed for dental students attending clinical postings after the approval from the Institutional Ethics Committee. The subjects comprised of 200 students of age ranging between 18 to 25 years. The subjects signed an informed consent before their participation in the study.

First questionnaire was related to tension headache - signs and symptoms, duration, frequency, intensity of pain. Any previous history of trauma, bruxism, dental treatment (restorations, orthodontic treatment, surgical removal of tooth), aggravating or relieving factors for the pain in TMJ. The subjects were instructed to mark only one answer for each question. (Figure 1)

After screening the first questionnaire, subjects who reported with the episodes of headache were clinically examined for occlusal analysis and a second questionnaire to be filled by the examiner. It consisted of thorough clinical examination for TMJ and intraoral examination. For TMJ, any deviation if observed on opening and protrusion was noted. Presence of joint sounds (crepitus or clicking) for right and left sides were noted. Load test was done. (Figure 2) For intraoral examination, teeth were observed for any signs of occlusal instability and type of occlusal scheme. Mandibular range of motion: Maximum mouth opening, horizontal movement- right and left lateral movements and maximum protrusion was noted.

Following muscles were palpated to check for tenderness: Temporalis, masseter, sternocleidomastoid, trapezius, diaphragmatic and mylohyoid. Functional manipulation was carried for inferior lateral pterygoid, superior lateral pterygoid and medial pterygoid.

The participant's response for muscle palpation was recorded on a 4-point scale as follows:

- 0 = no visible reaction or verbal report of discomfort
- 1 = mild mimic reaction but no verbal report of discomfort
- 2 = verbal report and mimic reaction of painful tenderness and discomfort,
- 3 = marked grimacing or withdrawal, verbal report of marked painful tenderness and pain.

Results: The study sample consisted of 42 males and 158 females. After screening for the first questionnaire, total of 11 participants (02 men and 09 women) were eligible for second questionnaire and clinical evaluation. Statistical analysis was done for the second questionnaire. Tenderness of the muscles palpated in TTH patients were found to be increased in the region of temporalis and trapezius. (Table no. 1, figure no. 3)

Table no. 1: Tenderness of muscles for right and left sides

Muscle	Side	Mean	SD	95% CI	P value
Temporalis	Right	0.55	0.820	-0.48-0.85	0.57
	Left	0.36	0.674	-0.48-0.85	
Masseter	Right	0.09	0.302	-0.63-0.26	0.4
	Left	0.27	0.647	-0.64-0.27	
Strenocleidomastoid	Right	0.09	0.302	-0.26-0.26	--
	Left	0.09	0.302	-0.26-0.26	
Trapezius	Right	0.45	0.522	0.12-0.78	0.001 (S)
	Left	0.00	0.000	-	
Digastric	Right	0.00	0.000a	-	--
	Left	0.00	0.000a	-	
Mylohyoid	Right	0.00	0.000a	-	--
	Left	0.00	0.000a	-	

Figure No 1: Tenderness of muscles for right and left sides

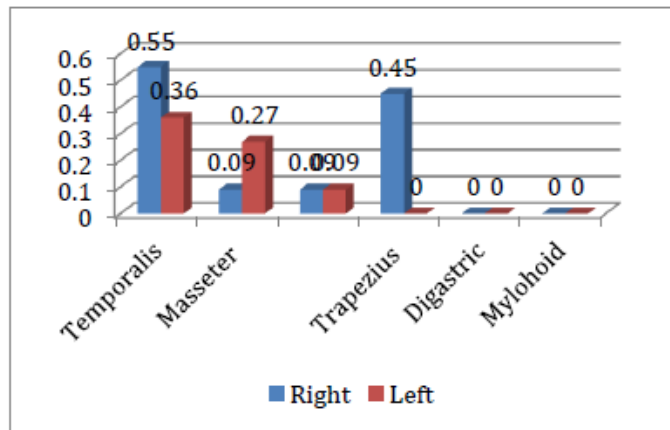


Figure no. 2: Comparison for tenderness score for Inferior lateral pterygoid and Temporalis muscle

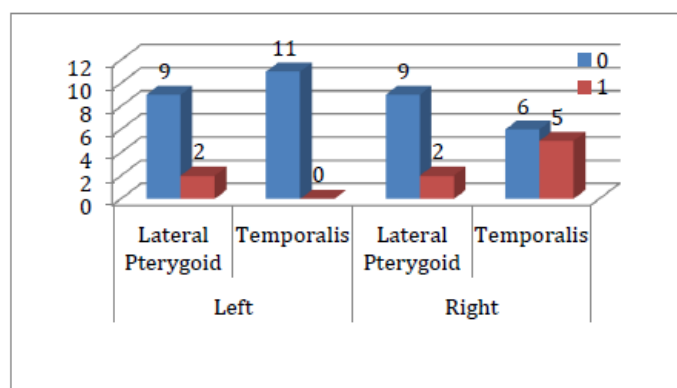
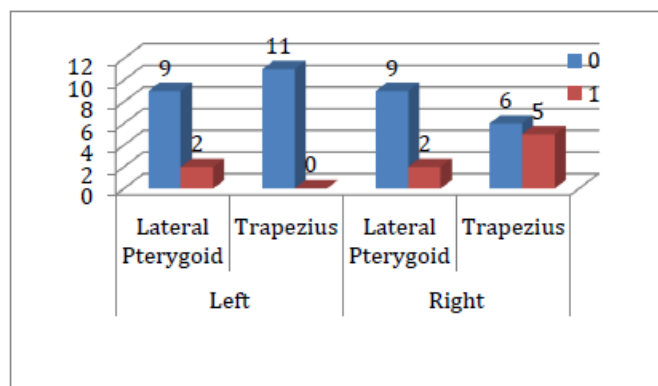


Figure no.3: Comparison for tenderness score for Inferior lateral pterygoid and Trapezius muscle



Discussion: Questionnaires confirmed the intense prevalence of self-reports of grinding, clenching, jaw-ache, aggravating and relieving factors that TTH patients exhibit. Owing to the close neuro-anatomical and biomechanical relationships between the TMJ and the cervical spine, symptoms emanating from the two regions

appear to be similar. Tenderness for trapezius and temporalis was found to be more than that of lateral pterygoid muscle. Sleep quality was also affected for TTH patients. Whether poor sleep quality leads to headache or conversely is unclear and whether the underlying mechanisms of TTH, TMD and sleep disorders are shared by a common denominator also needs clarification. In a study by Kjersti .A, et al 7 the pericranial tenderness was significantly elevated in patients with Chronic TTH compared to the general population. Caspersen N, et al 8 reported a clear presence of self-reported TMD symptoms, impaired sleep, and reduced oral health related quality of life in carefully classified TTH-patients compared to healthy controls. For the treatment of TMD and TTH, routine self-management instructions for the patients can be helpful so that their masticatory muscles rest by voluntarily limiting their use. The patient should avoid chewing hard foods and hold back on activities that overuse the masticatory muscles (avoid clenching teeth, holding tension in the masticatory muscles, chewing gum, and yawning wide). Further studies including investigations by use of imaging modalities, EMG, T-scans should be carried out.

Conclusion: The neck muscles are essential to maintain the balance of the head and the muscles of the stomatognathic system. This could be seen as a coordinated system, in which an intervention at any level could result in changes in this complex. This information should thus be 024681012 Lateral Pterygoid Trapezius Lateral Pterygoid Trapezius Left Right 91196202501 utilized to plan the optimal, multidisciplinary treatment for the TTH patients with derangement of temporomandibular complex.

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Tension Headache - Occlusion and TMJ Evaluation Sheet -1

Name of the Subject:

Gender:

Age:

Occupation: _____

Contact No. :

Subject's signature for consent:

1. Do you have frequent episodes of headache?

A) Yes B) No

2. How long does your headaches usually last?

A) None B) 1-3 days C) 6- 12 hours D) 12-24 hours E) 24 and above

3. What time of the day does your headache usually start?

A) Morning B) Noon C) Afternoon D) Evening E) Night

4. To rate your pain on the 1-10 scale, on average how painful were your headaches? (0-None, 10- Worst)

A) 0 B) 1-3 C) 4-6 D) 7-9 E) 10

5. On how many days in the last three months was your productivity reduced by half or more at work because of your headache? (IN DAYS)

A) None B) 1 – 3 C) 4 – 6 D) 7- 9 E) 10 and above

6. Are nausea / vomiting accompanying to your headaches? If Yes, Does it relieve your headache attacks?

A) Not at all. B) Yes. For temporary time C) Yes. Vomiting triggers more pain. D) Yes. It relieves

7. Have you noticed any kind of Food / Drink/ Beverages triggers your headache?

A) Hot B) Cold C) Sour D) Salty E) Sweet F) Raw G) Spicy and Oily H) None

8. Can you localize your pain? If yes, where is your pain located?

A) No. I can't B) Yes. In temple areas C) Yes. On my face D) Yes. In my jaws E) Yes. In my teeth

9. When was the last time did you receive dental treatment?

A) Last month B) In the last 6 months C) In the Last year D) More than a year Type of treatment done:

10. Have you ever been diagnosed with TMD/Idiopathic masseter muscle hypertrophy (IMMH) ?

A) No. B) Yes. I have TMD C) Yes. I have IMMh D) Yes. I have both

11. Do you have bruxism (grinding / clenching)?

A) No. B) Awake Bruxism C) Sleep Bruxism D) Yes. I have both

12. Do you have any tooth ache or pain in your mouth? If yes, can you localize your pain?

A) No B) Yes, Can't localize C) Yes, Molar Area D) Yes, Premolar Area E) Yes, Anterior Area

13. Have you ever received an injury to your jaw or face?

A) Yes B) No If yes: Describe:

14. Do your joints make any noise such as snapping, clicking, or popping?

A) Yes B) No

15. Do your joints lock when you are trying to open your mouth wide?

A) Yes B) No

16. Are you taking or have you taken any medication for these symptoms of headache and joint pain?

A) Yes B) No If yes:

Describe:

17. History of orthodontic treatment – Yes / No (Duration -)

18. History of disimpaction (Removal of Third Molar) – Yes / No

Tension Headache - Occlusion and TMJ Evaluation Sheet -2

Name of the Subject:

Gender:

Age:

Contact No. :

A) Signs of Occlusal Instability (worn, broken, or loose teeth)

B) Jaw Opening

Upon full opening, does the patient deviate to the right? Upon full opening, does the patient deviate to the left? Does the jaw deviate in protrusion?

C) Evaluating Joint Sounds Right Joint

Is there crepitus when the patient opens slightly (on rotation)? Is there crepitus when the patient only opens wide (translation)? Is there a click when the patient opens slightly (on rotation)?

Is there a click when the patient only opens wide (translation)?

Left Joint

Is there crepitus when the patient opens slightly (on rotation)? Is there crepitus when the patient only opens wide (translation)? Is there a click when the patient opens slightly (on rotation)?

Is there a click when the patient only opens wide (translation)?

D) Load Test for Tenderness

Did the load test result in any tension or tenderness?

Occlusal Analysis

Type of occlusion

- Canine guided –left side right side
- Mutually protected -left side right side
- Missing teeth
- Supraerupted teeth
- Wear facets Cervical Abrasion
- Loose Teeth
- Loss of Posterior Support
- Loss of vertical dimension

➤ Slide CR-CP - Direction Extent

Muscle Palpation: (tick + if tender)

Sr. no.	Muscles	Left	Right
1.	Temporalis		
2.	Masseter		
3.	Sternocleidomastoid		
4.	Trapezius		
5.	Digastric		
6.	Myloheid		

Functional Manipulation: (tick + if tender)

Sr. no.	Muscles	Left	Right
1.	Inferior Lateral Pterygoid		
2.	Superior Lateral Pterygoid		
3.	Medial Pterygoid		

RANGE OF MOVEMENT (ROM)-

Vertical Opening (N = 40 – 65 mm)

Maximum active opening (MAO)

Slight =30-40 Moderate =20-30 Moderate/Severe =10-20

Severe =0-20

Horizontal Movements: Maximum Left (N=9mm)

Maximum Right (N=9mm)

Maximum Protrusive (N=9mm)