DOI: https://doi.org/10.53350/pjmhs211592745

ORIGINAL ARTICLE

Comparison of Nonsteroidal Anti-Inflammatory Drugs and Muscle Relaxant in Patients with Temporomandibular Dysfunction

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ABSTRACT

Objective: To compare the outcome of nonsteroidal anti-inflammatory drugs versus muscle relaxant for the adult patients with temporomandibular dysfunction.

Material and Methods: A total of 120 patients of TMD of both genders and aged 20 to 50 years were enrolled. Subjects in group A were given oral non-steroidal anti-inflammatory drug (ibuprofen 400mg) twice a day. Subject of group B were given one oral diazepam (5 mg) tablet daily. At baseline, pain score was assessed.

Results: Comparison of mean post-treatment visual analog scale (VAS) pain scores in both study groups showed that mean post-treatment VAS pain score was significantly less in Group A in comparison to Group-B (2.15±1.12 vs. 3.20±1.04, p<0.001).

Conclusion: Nonsteroidal anti-inflammatory drugs (ibuprofen) was found to have significantly better reduction in pain scores in comparison to muscle relaxant (diazepam) among adult patients with temporomandibular dysfunction.

Keywords: Ibuprofen, diazepam, temporomandibular dysfunction.

INTRODUCTION

Temporomandibular disorder (TMD) is a multifactorial ailment including the temporomandibular joint complex, surrounding musculoskeletal and neuromuscular structures. In adults, its occurrence rate is 10-15%, with a highest prevalence between the ages of 20-40years.[1] Female to male ratio is 4:1suffering from TMD.[2] Associated factors with temporomandibular disorder consisted of fibromyalgia, chronic headaches, autoimmune disorders, psychiatric illness and sleep apnea.[1]

Exact pathophysiology of TMJ syndrome is not yet exactly known as it varies from individual to individual but it is believed, that the etiology is multifactorial and arises from both local insults and systemic disorders including biologic, environmental, social, emotional, local and cognitive triggers.[3] Physical factors and inflammatory changes such as traumatic secondary synovitis, infection, irritation, can also be found. TMD may also be associated with disc dysfunction, with or without reduction.[4] TMD could be diagnosed on the bases of medical history, physiological examination and radiographic representation and arthrographic investigations.[5,6]

Treatment of TMD includes a combination of noninvasive therapies, ranging from patient education, self-care, cognitive behavior therapy, pharmacotherapy e.g., non-steroidal anti-inflammatory drugs and muscle relaxants and physical therapy to acupuncture, occlusal devices, benzodiazepines, antidepressants etc.[4, 7, 8]

Oral appliances, also called a stabilization splints are the most commonly used modality for the treatment of TMD, but its effectiveness remains unclear.[7,9] Use of cortisone injections and sodium hyaluronate is becoming increasingly popular, as corticosteroids may inhibit the release of arachidonic acid from phospholipids, thereby reducing the formation of prostaglandins, which contribute to the inflammatory process.[1,9,10] Moreover botulinum toxin injections are also found to be effective.[9] One trial found that the mean change in pain score was 4.63±0.66 (on 10cm scale) with NSAIDs and mean change in maximal mouth opening was 5.23±1.21 with NSAIDs.[11] With muscle relaxant the mean change in pain score was 45.0±14.9 (on 100mm scale which can be converted as 4.5±1.49 on 10cm scale) with muscle relaxant and mean change in maximal mouth opening was 8.4±1.4mm with muscle relaxant.[12] NSAID's are being used for TMD as routine practice, but is no such trial has been cited which compared the effect of NSAIDs and muscle relaxants for TMJ disorder. So there was a need to introduce a non-invasive treatment regimen i.e. oral muscle relaxant for patients of TMJ disorder. So, this study aimed at comparing the outcome of nonsteroidal anti-inflammatory drugs versus muscle relaxant for the adult patients with temporomandibular dysfunction

MATERIAL AND METHODS

This randomized controlled trial was conducted in Oral and Maxillofacial Surgery Department of Dental Hospital, University College of Dentistry, Lahore. The calculated sample size is 120 cases (60 in each group), with 95% confidence level, 80% power of study and taking magnitude of mean change in maximal mouth opening i.e. 5.23±1.21mm with NSAIDS and 8.4±1.4mm with muscle relaxant in patients with temporomandibular joint dysfunction. Data was collected using non-probability consecutive sampling technique.

Inclusion criteria:

1. Age range between 20-50years
2. Both genders
3. Patients of TMD (as per operational definition)

Exclusion Criteria:

1. Subjects with any type of arthritis, history of trauma to TMJ, occlusal disturbance
2. Subjects with primary psychiatric disease, muscular dystrophy, facial paralysis
3. Pregnant patients
4. TMJ ankylosis unilateral/bilateral

Data Collection procedure: After taking ethical approval from hospital ethical committee, 60 cases fulfilling inclusion/exclusion criteria were included in the study. Written informed consent was taken from each patients. Demographics like age, gender, duration of symptoms were noted. Patients were divided into two groups by using random number table, group A and group B. Subjects in group A were given oral non-steroidal anti-inflammatory drug (ibuprofen 400mg) twice a day. Subject of group B were given one oral diazepam (5 mg) tablet daily. At baseline, pain score and maximal mouth opening was assessed. Patients were followed up after 1 month for assessment of pain at jaw opening.

Data Analysis: For data analysis, SPSS version 25.0 was used. Independent sample t test was used to explore the difference between the group A and group B in terms of pain.

RESULTS

Out of a total of 120 patients, there were 65 (54.2%) female and 55 (45.8%) male. Overall, mean age was noted to be 33.81±9.65 years ranging from 20 to 50 years. Mean duration of symptoms was noted to be 8.2±4.0 weeks ranging from 3 to 20 weeks. Mean pre-treatment VAS pain score was recorded to be 6.20±1.1.

Mean pre-treatment VAS pain score was noted to be 6.15±1.12 in Group-A and 6.25±1.00 in Group-B and there was no statistically significant difference in terms of pre-treatment VAS pain scores in between both study groups (p=0.607).

Table 1| Comparison of Mean Pre-Treatment Pain Score in Both Study Groups

Pre-Treatment Pain Score	Group-A (n=60)	Group-B (n=60)	Sig.
Mean	6.15	6.25	0.607
Standard Deviation	1.12	1.00	

Mean post-treatment pain score was noted to be 2.15±1.12 in Group-A and 3.20±1.04 in Group-B and there was statistically significant difference in terms of post-treatment VAS pain scores in between both study groups (p<0.001) as post-treatment VAS pain score was significantly less in Group A in comparison to Group-B.

Table 2| Comparison of Mean Post-Treatment VAS Pain Score in Both Study Groups

Post-Treatment VAS Pain Score	Group-A (n=60)	Group-B (n=60)	P-value
Mean	2.15	3.20	<0.001
Standard Deviation	1.12	1.04	

DISCUSSION

The current study aimed to compare the mean post-treatment VAS pain scores in both study groups showed that mean post-treatment VAS pain score was significantly less in Group A in comparison to Group-B (2.15±1.12 vs. 3.20±1.04, p<0.001). In Double blind randomized clinical trial done by Pramod et al[13] from India comparing diazepam and placebo in terms of analgesic effects after 5 weeks of treatment in TMD found that pain score was better in 72% patients in diazepam group versus 65% with placebo but researchers found that there was near similar results in terms of analgesic effects in between both study groups.[13]

Significant decrease was reported by Singer and Dionne in the study conducted on chronic cases of oro-facial muscle pain in patients received diazepam alone and combination of diazepam with ibuprofen.[14] It is evident in the previous literature Temporomandibular disorder could be treated with numerous NSAIDs, including diflunisal, naproxen, ketorolac and ibuprofen. Difference in efficiency of NSAIDs was not proven which means that no other NSAID will show effect if one type is not helpful in inhibiting the TMD pain.[8,15,16] For the cardiovascular system as well as GI risk, among NSAIDs, Ibuprofen is the safest one.[15] As reported by Jagger, on the patients with TMD, the effectiveness of diazepam appeared to be better as compared to placebo, especially, TMD with mechanical in origin. [17] To conclude, the study findings revealed that pain relief was observed more in group A who were taking oral non-steroidal anti-inflammatory drug (ibuprofen 400mg). Further studies for the validation of drug usage as well as application of suitable therapies with respect to temporomandibular disorder.

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