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A Comparative Study of Effect of Physiotherapy and Pharmacotherapy in Patients with Trismus

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Introduction*: Trismus an inability to open the mouth is most common problem encountered by dental practitioners which has number of potential causes. Trismus can be treated through various means. The present study was conducted with the aim to analyze and compare the effect of 2 treatment options, pharmacotherapy and physiotherapy on pain and mouth opening in patients with Trismus. *Objective*: To compare the effect of Physiotherapy and Pharmacotherapy on Pain and maximal mouth opening in subjects with Trismus. *Method*: 60 subjects were divided into 2 groups. Group A received muscle relaxants and Group B subjects received TENS and Kalternborn mobilization. Treatment was given for 10 days. Outcome measures VAS, maximum Mouth opening was taken before and after the interventions. *Results*: The result showed improvement in pain and maximal mouth opening in both the groups, but pain was significantly improved in Group B as compared to Group A. *Conclusion*: Physiotherapy treatment is more beneficial in reducing pain in patients with Trismus as compared to Pharmacotherapy, whereas mobility is equally achieved by both the treatment options.

Keywords: Trismus, Pharmacotherapy, Physiotherapy, TENS, Kalternborn mobilization

1. Introduction

Temporomandibular disorder (TMD) is a generic term used for any problem concerning the jaw joint. Injury to the jaw, temporomandibular joint, or muscles of the head and neck can cause TMD. Other possible causes include grinding or clenching the teeth, which puts a lot of pressure on the TMJ; dislocation of the disc; presence of osteoarthritis or rheumatoid arthritis in the TMJ; stress, which can cause a person to tighten facial and jaw muscles or clench the teeth; aging[1.] Signs and symptoms of temporomandibular disorders (TMDs) may include pain, impaired jaw function, malocclusion, deviation or deflection, limited range of motion, joint noise, and locking. Headache, tinnitus, visual changes, and other neurologic complaints may also accompany TMDs.[2] The definition of trismus is an inability to open the mouth due to muscular spasm, but more generally it refers to limited mouth opening of any cause. Another definition of trismus is simply a limitation of movement. Trismus has number of causes, which may be simple and non progressive or may be potentially life threatening.[3]
The causes of Trismus includes infection, trauma, dental treatment, temporomandibular joint disorders, tumours and oral care, drugs, radiotherapy and chemotherapy, congenital problems, miscellaneous disorders.[4-6]

Treatments that are relatively accessible, not prohibitive due to expense, safe and reversible should be given priority. Treatments with these characteristics include education, self-care, physical therapy, intraoral appliance therapy, short term pharmacotherapy, behavioral therapy, and relaxation techniques. Although Clinical trials necessary to confirm the effectiveness of physiotherapy are lacking, the clinical literature suggests that physiotherapy is a reasonable part of initial therapy.

Pharmacotherapy includes analgesics, nonsteroidal anti-inflammatory analgesic drugs, antianxiety agents, tricyclic antidepressants, and muscle relaxants are medications used as part of treatment.

TENS is a well-known physical therapy, which is useful for the relief of pain. With TENS, electrical stimulation is transmitted to pain areas via surface electrodes, which reduces or eliminates pain. TENS is a safe, noninvasive, effective and swift method of analgesia and potential adverse reactions of other methods of pain control are eliminated.[7-9] Mobilization is another treatment option used in treating the temporomandibular joint. Kalterborn mobilization is a sustained 1ranslator joint-play techniques. The dosages of these techniques are as follows: Grade I – Neutralizes joint pressure without separation of joint surfaces. Grade II – Separates articulating surfaces, taking up slack or eliminating play within joint capsule. Grade III – Stretching of soft tissue surrounding joint.

Uses: Grade I- used for relief of pain. Grade II- used to inhibit pain and maintain joint play when ROM is not allowed. Grade III- used to stretch joint structures and thus increase joint play[9-14]

In day to day practice it is not unusual to patients with Trismus. It is a condition which highly impairs the day-to-day activities and needs to be managed at the earliest.

2. Literature Review

Ana Paula Dall´Anese , Karin Schultz , Karina Braga Ribeiro ,Elisabete Carrara-de Angelis conducted a study on Early and long-term effects of physiotherapy for trismus in patients treated for oral and oropharyngeal cancer with the aim to analyze early and late effects of physical therapy in

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the mouth opening of patients with trismus after treatment for oral and oropharyngeal cancer. 29 patients with oral and oropharyngeal squamous cell carcinomas treated by surgery and/or adjuvant radiotherapy were included in the study. Physical therapy including an active range of motion exercises, manual stretching and CRAC (contract-relax, antagonistcontract) technique were applied. Assessment of mouth opening was performed at three moments: pre-physical therapy, at the end of the last session of treatment (early results) and when patients were invited for a new functional evaluation (long-term results). The results showed that Mouth opening increased significantly in both early and long-term evaluations ($p < 0.001$). The initial mouth opening measurements (23.2mm) were significantly smaller than the post-physical therapy (33.9 mm) and long-term measurements (38.1 mm) ($p < 0.001$). Effect size was 1.0 and 1.4, related to early and late results, respectively. Surgically treated patients seem to have a better long-term response than those treated with adjuvant radiotherapy ($p = 0.053$). Thus the study concluded that Mouth opening increased significantly after physical therapy in patients with trismus, and these results were sustained after therapy had been concluded.[10]

Naikmasur VG, GuttalK S, Bhargava P, Bathi R J (2009): conducted study on Comparative Evaluation of Physiotherapy and Pharmacotherapy in the Management of Temporomandibular Joint Myofascial Pain A total of 40 patients included in the study. Subjects were randomly assigned to one of the two groups, each group consisting of 20 subjects. Subjects of Group A received a combination of muscle relaxants and analgesics and Group B subjects received, ultrasound, transcutaneous electrical nerve stimulation, or light amplification by stimulated emission of radiation. All the patients were evaluated for subjective and objective symptoms at baseline and then following one, four, eight, and 16 weeks post treatment. All the subjects were evaluated with visual analog scale, Global Pain Impact scale scores, number of tender muscles, and maximum comfortable mouth opening. The parameters evaluated revealed significant improvement in Group B following treatment and also during the follow period as compared to Group A subjects.[11]

3. Materials & Methodology

60 participants with trismus, who were referred to physiotherapy department of Krishna hospital, Karad and willing to take treatment for 10 days, were recruited for the study. The subjects were screened and were put in two groups- Group A (pharmacotherapy), Group B (physiotherapy) by convenience method. A written informed consent was taken from each participant. Ethical clearance was obtained from university's institutional review board. The inclusion criteria for the study was: Age group 20-40 years, Clinically diagnosed cases of trismus, Mouth opening to as measured by interincisal range <40 mm, Both male and female participants, Subjects willing to participate. The exclusion criterion of the study was Congenital anomaly, Inflammatory or neoplastic disease, acute trauma history, Presence of pacemaker, previous physiotherapy treatment, and Bilateral TMJ pain.

Interventions: Group A received pharmacotherapy and home exercises. The participants of group A were given muscle relaxants. The medications were advised for 10 days. Group B received physiotherapy which included TENS and Kalternborn mobilization for 10 days. Home exercises were given for the subjects. 3 grades of Kalternborn were used grade I traction (loosen), grade II traction (tighten) and grade III traction (stretch). Grade I initially was used to reduce chance of painful reaction. 10 second intermittent grade I & II traction was used. The mobilization was given in sitting position

Outcome Measures:
The pre and post intervention assessment of pain was done by using Visual analogue scale, and maximal mouth opening was measured by using scale. The interincisal distance was measured.

4. Statistical Analysis

Statistical analysis for present study was done manually as well as using the statistics software INSTAT so as to verify the results obtained. Various statistical measures such as mean, standard deviation (SD) and paired and unpaired test of significance were utilized for this purpose. Probability values less than 0.05 were considered statistically significant and probability values less than 0.0001 were considered statistically extremely significant.

5. Results

Age of the participants in this study was between 30-60 years. There was no statistically significant difference between mean age and standard deviation of the participants in two groups. Mean age of Group A was 46.86 years and that Group B was 41.8 years .(Table No.1) out of total 60 participants group A consisted 13 males, 17 females and group B had 18 males and 12 females.

Table 1: Baseline characteristics of participants

Group	Gender	Mean age
Group A	M=13, F=17	46.86 years
Group B	M=18, F=12	41.8 years

On comparing the pre intervention VAS score between group A and group B, there was no statistically significant difference with $p=0.1315$ (Table No.2). The pre-interventional VAS values were 7.9±1.094 in Group A and 7.33± 1.709 in Group B respectively, whereas the post interventional VAS values were 4.46±1.279 in Group A and 1.93±1.385 in Group B respectively. ($p<0.001$) which was statistically extremely significant.

Table 2: Comparative evaluation of VAS scores within two groups

Groups	*Pre-treatment*		*Post-treatment*	
	Mean±SD	*SEM*	*Mean±SD*	*SEM*
A	7.9±1.094	0.1997	4.46±1.279	0.2336
B	7.33±1.709	0.3120	1.93±1.285	0.2346
't'	1.530		7.653	
Df	58		58	
'p'	0.1315		<0.0001	

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On comparing the maximal mouth opening Value between both the groups there was no statistically significant difference with p=0.2713. The pre-interventional values of MOM were 26.2±3.438 in Group A and 25.166±3.761 in Group B respectively, whereas post-interventional values of MOM were 39.33±3.642 in Group A and 40.23±3.048 in Group B respectively. Intra Group results showed statistically no significant difference in post-intervention values for both the Groups. (p=0.3036).

Table 3: Comparative evaluation of maximal mouth opening in both the groups

Groups	*Pre-treatment*		*Post-treatment*	
	Mean±SD	*SEM*	*Mean±SD*	*SEM*
A	26.2±3.438	0.6277	39.33±3.642	0.6649
B	25.166±3.761	0.6866	40.23±3.048	0.5564
't'	1.111		1.038	
Df	58		58	
'p'	0.2713		0.3036	

6. Discussion

In the findings of present study there was improvement in pain score and maximal mouth opening in both the groups. The inter group analysis showed improvement in pain score and maximal mouth opening in both the groups. The intra group analysis showed reduction of pain was more significant in group B as compared to group A, whereas the mouth opening was improved in both the groups equally with no statistical significant difference.

The age and gender distribution showed no statistical difference in the groups, which represents the homogeneity of the participants.

The pre-interventional VAS values were 7.9±1.094 in Group A and 7.33± 1.709 in Group B, whereas the post-interventional VAS values were 4.46±1.279 in Group A and 1.93±1.285 in Group B. ($p<0.001$) which was statistically extremely significant. This suggests that there significant reduction in pain of participants in both the groups. Pain in group B was reduced more than Group A.

The pre interventional MOM values were 26.2±3.438 in group A and 25.166±3.761 in group B, whereas the post interventional MOM values were 39.33±3.642 in group A and 40.23±3.048 in group B(p=0.3036). this suggests that there is significant increase in Mouth opening in participants in both the groups and there was equal increase in both the groups.

The pain reduction in group A which was treated with muscle relaxants has helped since it reduces the tone of skeletal muscle. These drugs are also help to prevent and alleviate the increased muscle activity. They decrease the muscle tone without hampering the motor function by depressing the polysynaptic reflexes situated centrally.[12]

TENS therapy stimulates large, fast, myelinated, non-nociceptive neurons in painful area thus closing the central gate for those stimuli generated by pain specific fibers. This activation of endogenous opoid syatem is supposed to be responsible for analgesic effect of the TENS.[13]

The kalterborn mobilization helps in neutralizing pressure in joint without actual separation of joint surfaces. It helps in reducing pain by reducing the compressive forces of articular surfaces during mobilization. The traction applied in kalterborn helps in actual stretching of soft tissue surrounding the joint to increase mobility in a hypomobile joint.[14]

7. Conclusion

Thus, from the above study it was concluded that pain was significantly reduced in both the groups. But pain reduction was extremely significant in Group B as compared to Group A. the maximal mouth opening also significantly improved in both the groups post interventionally.

Future Scope

This study was conducted on small sample size. Functional assessment was not carried out in this study. Further follow up of the participants was not taken. Therefore, studies could be conducted with large sample size in order to generalize the results. Functional assessment scales can be used to assess the participants for functional rehabilitation. Patients can be called out for further follow up to analyze the long term effect of treatment and rule out for any relapse. Further study can also be undertaken by using other treatment modalities in physiotherapy.

References

[1] Gadd, A., and T. Goswami. Temporomandibular disorder and joint replacement. Biomed. Mater. Paper No. BMW- RANL-7PJRW3, 2009.
[2] Letcher MC, Piecuch JF, Lieblich SE: Anatomy and pathophysiology of the temporomandibular joint. In Peterson's Principles of Oral and Maxillofacial Surgery, edn 2. Edited by Miloro M. Hamilton (Ontario): BC Decker; 2004:933–947.
[3] Marine M. Trismus causes differential diagnosis and treatment. Gen Dent 1997; 45(4): 350- 355.
[4] nitzam DW, Shteyer A. Acute facial cellulites and Trismus originating in the external auditory meatus. Oral Surg Oral Pathol 1986; 61: 262-263.
[5] Backland LK, Chrisitiansen EL, Strutz JM. Frequency of dental and traumatic events in the etiology of temporomandibular disoerders. Endodont Dent Traumatol 1988;4: 182-185.
[6] Krishnan A, Sleeman DJ, Irvine GH. Trismua caused by retained forgein body in adult. Oral Surg Oral Med Oral Pathol1994: 77: 579-584.
[7] Wessberg GA, Carroll WL, Dinham R, Wolford LM. Transcutaneous electrical stimulation as an adjunct in the management of myofascial pain-dysfunction syndrome. The Journal of Prosthetic Dentistry 1981;45:307-13.
[8] Esposito CJ, Shay JS, Morgan B. Electronic dental anesthesia: A pilot study. Quintessence International 1993;24(3):167-70.
[9] Geissler PR, McPhee PM. Electrostimulation in the treatment of pain in the mandibular dysfunction syndrome. J Dent 1986;14:62-64.

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[10] Ana Paula Dall´Anese, Karin Schultz, Karina Braga Ribeiro ,Elisabete Carrara-de Angelis. Applied cancer research Vol 30, No 4(2010)
[11] Naikmasur VG, GuttalK S, Bhargava P, Bathi R J Comparative Evaluation of Physiotherapy and Pharmacotherapy in the Management of Temporomandibular Joint Myofascial PainIndian Journal of Physiotherapy & Occupational Therapy-An International Journal, Vol 3, No 1 (2009), Pagination: 27-32.
[12] Dmitroulis G, Gremillion HA, Dolwick MF, Walter JH. Temprormandibular disorders: II non-surgical treatment. Australian Dental Journal.1995; 40:372-6.
[13] Gam AN, Thorsen J, Lomberg F. The effect of low level laser therapy on musculoskeletal pain: a meta analysis.pain.1993;14:62-4.
[14] Kisner, C, Colby L.A. therzpeutic exercise: foundations and techniques, 4th ed.F.A.Davis:Philadelphia.

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