17691-Effect of trigger point approaches in chronic pain pathologies

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EFFECT OF TRIGGER POINT APPROACHES IN CHRONIC PAIN PATHOLOGIES

ABSTRACT

OBJECTIVE: The aim of this study was to determine the effect of trigger points approaches in improving chronic pain.

METHODOLOGY: Study was conducted in Pakistan Railway Hospital from July 2016 to December 2017. In this randomized clinical trial, in which 37 male participants who full filled the inclusion criteria i.e. Pain persist more than 12 weeks, gradual onset of pain, and Impaired level of activity were randomly allocated to either sustained pressure and ischemic compression treated groups. Both groups received 8 treatments sessions. They were evaluated at base line and after 8th visit through numeric pain rating scale and chronic acceptance questionnaire (CPAQ).

RESULT: Pain was improved in both groups but there was no significant improvement in pain when we compare ischemic compression and sustained pressure. We also use the CPAQ questionnaire, on the comparison of CPAQ questionnaire pain activity was not significant with ($p= 0.11$), CPAQ pain willingness was also not significant with ($p=0.594$), but the CPAQ SUM ($p=0.043$) was significant.

CONCLUSION: This study concluded that Ischemic compression and progressive sustained pressure which are manual techniques for trigger point management both have significant effect in improving patients with chronic musculoskeletal pain pathologies.

KEY WORDS: Chronic pain, myofacial pain syndrome, trigger points.

INTRODUCTION:

Pain is a symptom of disease or injury in any part of body. Pain is classified as acute and chronic pain. Sudden onset of pain is defined as acute pain whereas chronic pain is the pain that persists for 6 months or more than 6 months and cause damage to the body(1)

Principally chronic pain is a complex, polygonal phenomenon deprived of a broadly accepted definition that's why it is defined as the pain which persist beyond its healing time(2)

Identical survey questions and criteria for chronic pain conducted a study previously in population of Canada among adults of more than 18 years. In old age it was observed that prevalence of chronic pain was more in females than males and the most frequent cause of chronic pain was arthritis and commonly effected lower back region(3).

According to a study conducted in Libya, osteoarthritis, rheumatoid arthritis, back pain and headaches were the most common causes of chronic pain and most of the people experienced chronic pain in the back and joints, followed by head and neck(4)

Myofascial pain is common in patients seen in pain clinics. It is usually associated with injury or occupational repetitive activity. Muscle balance and function is restored by physiotherapy treatment rather than medication. Identifying and managing perpetuating factors (posture, repetitive actions, occupational factors) is a priority. Commonly applied diagnostic criteria for myofascial trigger point are the local twitch response, tender spot in a taut band of muscle, patient pain recognition and pain referral pattern(5).

During examination, palpation of the muscles is used to assess tenderness, patterns of pain referral, skin temperature, muscle tone, swelling, skin moisture, and the location of trigger points. MTrPs are typically located in those areas that are prone to impaired circulation and

increased mechanical strain (e.g., upper trapezius, Levator scapulae, infraspinatus, Quadratus lumborum, and gluteus minimus)(2).

Myofascial trigger point treatment is given to relieve pain and tightness of involved muscles, inactivate the trigger points, improve circulation and range of motion and eliminate the causing factors. When patient is treated for specific muscle syndrome, patient must avoid overstress activities and postures causing biomechanical imbalances of local muscles Treatment approaches use to inactivate the MTrPs are medications, Needling, Stretching, Psychiatric therapies, Massage, hand manipulation and Chiropractic techniques. These approaches also consolidate the effects of other therapies as supplementary treatments(1)

In the trigger point management we use multiple approaches like ischemic compression and sustained pressure. In this study we are going to find out which treatment approach is better for the management of myofascial pain syndrome. This study will also highlight patients with chronic myofacial pain syndrome and the expected effect of trigger point approaches, it will also be useful to educate and treat people with the most simple and effective treatment approach more easily. Our objective was to determine the effects of trigger point approaches in improving chronic pain, prevent from disability due to chronic pain; improve range of motion, muscle extensibility (flexibility) and quality of life.

MATERIALS AND METHODS

The Study design was randomized control trial (RCT) and Data was collected from Physiotherapy OPD of Riphah Rehabilitation and Research center, Pakistan Railway General Hospital. The study was completed in 6 months from July 2016 to December 2016. A total patients (n=37) having chronic musculoskeletal pain were included in the study and were divided into two groups. (Group A=19. and Group B=18). The Non-probability purposive sample technique was used to collect sample. Patients were randomly assigned using coin toss method according to the inclusion criteria that is Pain persist more than 12 weeks, Gradual onset of pain and Impaired level of activity. The Exclusion criteria of the study were acute injuries, PIVD, Disability, recent surgery and amputations.

Out-come measuring tools were Numeric pain rating scale and Chronic Acceptance Questionnaire. The Numeric pain rating scale (NPRS) is a one-dimensional measure of pain intensity in individuals. It is 11 point numeric scale usually called numeric edition of visual analogue scale in which an individual select a number between 0-10. Both 0 and 10 represent the pain extreme with 0 means no pain and 10 representing the worst as you can imagine. The patient is asked to point a number on the scale to rate their pain intensity which is noted. Higher score indicates greater pain intensity(6). NPRS was used and patients were asked to rate their pain before the first session of treatment and at the end of last treatment session.

The importance of acceptance of chronic pain has been demonstrated over the past decade. McCracken, Vowles and Eccleston proposed 20 items based two factors Chronic Pain Acceptance Questionnaire (CPAQ) for the assessment of chronic pain. This two-factor model has been supported but awaits further confirmation(7). There have been 2 factors identified in the CPAQ: **1-**Activity engagement (pursuit of life activities regardless of pain) Items

1,2,3,5,6,8,9,10,12,15,19. **2**-Pain willingness (recognition that avoidance and control are often unworkable methods of adapting to chronic pain) Items 4,7,11,13,14,16,17,18,20. In our study CPAQ was used for the assessment of chronic pain on all included participants on the first session of treatment and at the end of last treatment session.

Structural questionnaire was used for first and final assessment. All the diagnosed patients fulfilling the inclusion criteria were included in this study. The subjects were randomly divided into 2 groups (group A and B) by coin toss method using convenient sampling technique and informed consent was taken from each patient participated in the study. Total number of 47 patients came to the settings with complaint of chronic pain. Numbers of patients excluded from the study were 10. People who met the inclusion criteria and included in study were 38. Among them 19 patients were randomly assigned to each group. 1 patient in group B was dropouts as he did not come for follow up. In group A 19 patients and in group B 18 patients were analyzed for further study. Base line measures were taken at 1st visit. ROM, NPRS score and CPAQ score were calculated. 2 weeks treatment was given (no of sessions = 8). End values of variables were calculated after completion of treatment sessions.

Total numbers of patients assessed for the eligibility were 47. Patients included in the study were 38, they met the inclusion criteria and excluded numbers of patients were 09 and they were excluded from the study after the assessment because they do not met the inclusion criteria. The included 38 patients were then randomly divided into two groups, Group A and Group B. One patient was drop out from the group B because he was from Abbottabad and due to family issues he did not complete the sessions so total number of patients analyzed in Group A was 19 and total number of patients analyzed in Group B were 18. **GROUP A** received Sustained (Progressive) pressure: Hot pack: (10-15 min), Stretching: 3 sets of 10 repetitions with 10

seconds hold (of targeted muscles) and Active range of motion exercises: 3 sets of 10 repetition. **GROUP B** received Ischemic compression: Hot pack: (10-15 min), Stretching: 3 sets of 10 repetitions with 10 seconds hold (of targeted muscles) and Active range of motion exercises: 3 sets of 10 repetition All the patients were assessed at the base line before intervention and at the completion of the 2 weeks intervention plan. Data was analyzed by using IBM SPSS 21 (statistical package for social science) and expressed in forms of tables and charts. Researcher assumed data to be normally distributed unless exploratory analysis suggested otherwise, in which case a kolmogorov-smirnow was to be applied. When test of normality were applied to data, it was seen that data was normally distributed so parametric test were applied. Independent t-test was applied on the base line to test whether there was reduction in pain and increase in ROM. Base line and end line values of variables between groups were determined by independent t-test.

RESULTS:

The mean age was 44.35±12.03, among 37 individuals all were male and labor by profession. The other demographic and clinical data was summaries in table no 01.

Within the group A (Sustained progressive pressure) the pre and post mean value for NPRS was 5.05±1.17 and 2.63±.955 with p-value of 0.000 showing the difference is statistically significant. For CPAQ activity engagement the pre and post mean values was 32.00±2.42 and 41.74±2.53 and the difference was statistically significant with a p-value of 0.000. Upon comparing CPAQ pain willingness the pre and post mean and std. deviation values of 29.42±3.04 and 32.63±2.91 and the difference was statistically significant with p-value of 0.001. The mean values for the CPAQ sum was 61.42±3.67 and 73.84±3.64 with p-value of 0.000 showed significant difference. In the group B (Ischemic compression) the pre and post mean value for NPRS was 5.28±1.07 and 2.39±.77 with p-value of 0.000 showing the difference is statistically significant. For CPAQ activity engagement, the mean value was 32.33±1.64 and 43.50±1.20 showed difference was significant with p-value of 0.000. CPAQ pain willingness the mean values was 32.28±1.74 and 32.22±1.43, difference was statistically not significant with p-value of 0.923. The mean and std. deviation for the CPAQ (Chronic pain acceptance questionnaire) sum was 64.61±2.42 and 75.72±1.12 with p-value of 0.000 showed significant difference.

The base line mean values of the both group A (Sustained progressive pressure) and group B (ischemic compression) respectively. The mean values for NPRS of group A was 5.05±1.17 and group B was 5.28±1.074 with p-value of 0.547 showed results are not significant statistically. The CPAQ (Chronic pain acceptance questionnaire) activity engagement of group A the mean values was 32.00±2.42 and group B the mean value was 32.33±1.64 with p-value of 0.630 showed not significant results. For the CPAQ pain willingness, for the group A the

mean value was 29.42±3.04 and for group B the mean value was 32.28±1.74 showed significant difference with p-value of 0.001. The mean value for CPAQ sum of group A was 61.42±3.67 and mean value for group B was 64.61±2.42 with p-value of 0.004. The difference is significant statistically. For comparison on the end value Independent t-test was applied for the mean values of the both group A (Sustained progressive pressure) and group B (ischemic compression) respectively. The mean values for NPRS of group A was 2.63±0.95 and group B was 2.39±0.77 with p-value of 0.404 showed statistically not significant. The CPAQ activity engagement of group A, the mean values was 41.74±2.53 and for group B the mean value was 43.50±1.20 with p-value of 0.011 which shows significant difference. For the CPAQ pain willingness the mean value of group A was 32.63±2.91 and for group B the mean value was 32.22±1.43 with p-value of 0.594 showed that statistically not significant. The mean value for CPAQ sum of group A was 73.84±3.64 and mean value for group B was 75.72±1.17 with p-value of 0.043 significant statistically. (Table No 02)

DISCUSSION:

In the present study we compared the effect of progressive sustained pressure and ischemic compression in patients with chronic pain pathologies. The results of this study showed that both techniques are equally effective in the management of chronic pain, as measured by NPRS scale and CPAQ (chronic pain acceptance questionnaire). But in comparison of both groups, group A that received progressive sustained pressure showed greater improvement in CPAQ activity engagement and pain willingness as well as in CPAQ sum values when compared to group B that showed lesser improvement in CPAQ pain willingness.

In a study by Neveen A Abdel-Raoof et al (July 2007) they examine the Comparison between Myofascial Release and Progressive Pressure Release on Low Back Dysfunction. They found that progressive pressure release is more effective treatment than myofacial release in treatment of patients with low back dysfunction(8).

F. Javier Montanez Aguilera et al 2009 did a study on Immediate Effect of Ultrasound and Ischemic Compression Techniques for the Treatment of Trapezius Latent Myofascial Trigger Points in Healthy Subjects: A Randomized Controlled Study and they concluded that both treatment shows immediate effect but ischemic compression showed short term positive effect in the treatment of trapezius MTrP sensitivity(9).

Cesar Fernandez-de-las-Penas (2005) examine the effect of ischemic compression technique and transverse friction massage on tenderness of active and latent myofascial trigger points: a pilot study and they concluded that there are no differences between the improvements in both groups. Ischemic compression technique and transverse friction massage were equally effective in reducing tenderness in MTrPs(10).

In a RCT study by Hugh Gemmell and his colleagues (2007) they compared the effect of ischemic compression and trigger point pressure release on neck pain and upper trapezius trigger points and found that ischemic compression is five time more effective treatment in the non-specific neck pain and upper trapezius trigger point than SUS (sham ultrasound)(11).

Bron et al (2011) conducted a study on Treatment of myofascial trigger points in patients with chronic shoulder pain: a randomized, controlled trial and they concluded that treatment of MTrPs in shoulder muscles reduces the number of muscles with active MTrPs and is effective in reducing symptoms and improving shoulder function in patients with chronic shoulder pain(12).

Gary Fryer and his colleagues (2005) did a study on The effect of manual pressure release on myofascial trigger points in the upper trapezius muscle and they suggest through their results that manual pressure release may be an effective treatment for motor trigger points in upper trapezius(13).

Rocio Llamas-Ramos et al (2014) did a study on Comparison of the Short-Term Outcomes Between Trigger Point Dry Needling and Trigger Point Manual Therapy for the Management of Chronic Mechanical Neck Pain: A Randomized Clinical Trial and they concluded that there was short term greater improvement in MTrP dry needling group than MTrP manual therapy(14).

CONCLUSION:

This study concluded that Ischemic compression and progressive sustained pressure which are manual therapy techniques both have significant effect on improving the pain of patients with chronic musculoskeletal pain pathologies. Progressive pressure has marked improvement in patient's activity engagement, pain willingness and sum of CPAQ and NPRS.

Table No 01	Demographic Data		
Variables	**Overall**	**Group A**	**Group B**
Age	44.35±12.03	44.57±13.30	44.11±10.90
Occupation	Labor:62.2% Other:21.8% Retire life:10.8%	Labor:68.4% Other:15.8% Retire life:10.5%	Labor:55.6% Other:27.8% Retire life:11.1%
Referral	Ortho:59.5% Other: 21.6% GP & Self: 8.1%	Ortho:57.9% Other:21.1% GP & Self:10.5%	Ortho:61.1% Other: 22.2% GP & Self:5.6%
Onset of Pain	Six month before:45.9% Nine month before:21.6% Twelve month before:16.2 %	Six month before:52.6% Nine month before:26.3% Twelve month before:10.5%	Six month before:38.9% Nine month before:16.7% Twelve month before:22.2%
Muscles	Supraspinatus:13.5% Splenius cervices:13.5% Trapezius:10.8%	Supraspinatus:15.8% Splenius cervices:5.3% Trapezius:10.5%	Supraspinatus:11.1% Splenius cervices:5.6% Trapezius:11.1%
Resisted movement	Normal:56.8% Painful:43.2%	Normal:47.4% Painful:52.6%	Normal:66.7% Painful:33.3%
NPRS	5.16±1.11	5.05±1.17	5.28±1.07

Table 02	Comparison on base line				Comparison on End value		
Variables	**Groups**	**No**	**Mean±SD**	**P value**	**Variables**	**Mean±SD**	**P value**
Pre NPRS	Group A	19	5.05±1.17	0.548	**Post NPRS**	2.63±0.95	0.404
	Group B	18	5.28±1.074			2.39±0.77	
Pre CPAQ Activity	Group A	19	32.00±2.42	0.630	**Post CPAQ Activity**	41.74±2.53	0.011
	Group B	18	32.33±1.64			43.50±1.20	
Pre CPAQ Pain willingness	Group A	19	29.42±3.04	0.001	**Post CPAQ Pain willingness**	32.63±2.91	0.594
	Group B	18	32.28±1.74			32.22±1.43	
Pre CPAQ Sum	Group A	19	61.42±3.67	0.004	**Post CPAQ Sum**	73.84±3.64	0.043
	Group B	18	64.61±2.42			75.72±1.17	

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