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COMPARISON OF ISCHAEMIC COMPRESSION, MYOFASCIAL RELEASE AND BOWENS TECHNIQUE IN NON SPECIFIC NECK PAIN - A RANDOMIZED CLINICAL TRIAL

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ABSTRACT

BACKGROUND: Neck pain is a mild musculoskeletal condition but frequent enough to be a possible health crisis. Several conservative treatment strategies are used for treatment of mechanical neck pain. Ischemic compression is a harmless and efficient method to successfully treat elicited myofascial trigger points. Myofascial release is an extremely interactive stretching practice to assist in highest relaxation of tight or restricted tissues. Bowen technique is a soft tissue remedial therapy and holistic approach to pain relief and healing. These techniques have proved to be effective in relief of various soft tissue conditions however there id dearth in information on comparison of these techniques in non specific neck pain.

OBJECTIVES: To evaluate and compare the effect of Ischemic Compression, Myofascial release and Bowen's technique on non specific neck pain.

METHODOLOGY: 48 subjects were recruited based on inclusion and exclusion criteria. Assessment of Visual Analogue Scale, Pressure threshold, cervical Range of Motion and Neck Disability Index was taken. The subjects were then allocated to Group A, B and C. Group A received Ischemic Compression along with Conventional Therapy which included Therapeutic Ultrasound, Neck exercises and Hot Moist Pack. Group B received Myofascial Release along with Conventional Therapy and Group C received Bowen technique along with conventional therapy. The three groups were re-assessed after the treatment (1week).

RESULTS: There was a statistical significant change within all the three groups in the VAS, NDI, PPT and ROM (cervical flexion and lateral flexion) with p- value of 0.0001. Pair wise comparison showed a high significance between Group A and C.

CONCLUSION: All the three techniques were effective in reducing pain intensity, increasing ROM,pressure threshold and improving functional status however Bowen Technique was more effective as compared to Ischemic Compression.

KEYWORDS : Non Specific Neck Pain, Ischemic Compression, Myofascial Release, Bowen Technique.

INTRODUCTION:

According to studies done in various parts of the world neck pain is a comparatively mild musculoskeletal condition but frequent enough to be a possible health crisis. Neck pain prevalence varies widely in different studies, with a mean point prevalence of 13 % (range 5.9% – 38.7 %) and mean lifetime prevalence of 50% (range 14.2% – 71.0 %)[1]. Neck pain may lead to extensive medical expenditure, work absenteeism and disability. Regardless of the duration of neck pain, pain can reduce the functional ability, quality of life and can lead to worry, anxiety and depression[2].

A muscle spasm is a reflex action of the body in order to protect the injured structures or as a means to guard itself from injury. Investigators have hypothesized many causes for muscle spasm, including the following: 1) decreased blood flow to muscle fibres with ischemia and build-up of waste products, 2) muscle tearing, 3) irritation of the nerves serving injured ligaments or joint capsules, 4) accumulation of irritating by-products of inflammation[3]

A Myofascial Trigger Point is a hyperirritable spot, located within a taut band of a skeletal muscle that is painful on compression or stretch and that can give rise to a typical referred pain pattern as well as an autonomic phenomena[4].

Simons et al,[5] defined ischemic compression (IC) as "release of trigger point pressure" and described it as application of gradually escalating, pain free pressure above the trigger point until a barrier of resistance of the tissue is encountered.

Myofascial release is an extremely interactive stretching practice that requires the reaction from the patient's body to establish the direction, strength and the period of the stretch and to assist in highest relaxation of tight or restricted tissues. It is a safe and effective method. This technique can correct the tissue malalignment if the structures involved are not fixed by bone remodelling[6].

Bowen technique is a soft tissue remedial therapy named after its founder Tom Bowen. It is a multidimensional and holistic approach to pain relief and healing that has attained extraordinary results[7]. The Bowen technique comprises of series of small moves at diverging pressures, all at a specific site on the body. The Bowen technique is safe to use on anyone, from newborns to the elderly and for any musculoskeletal or related neuromuscular complaint[8].

Therapeutic ultrasound is one of the most vital physical treatment equipment in physical therapy which is used for heating deep tissues. It has shown positive results in reducing pain and plummeting the stiffness on the trigger point as well as providing relaxation[9]. Hydro collator packs are a form of superficial heating modality. Heat from these superficial heating methods usually penetrates to depths of less than one cm[10]. Neck exercises are crucial for the cervical spine as the neck is constantly under strain. Neck exercises may be given to develop amplified mobility, to improve the recruitment of deep cervical musculature, muscle endurance, strengthening, muscle coordination, proprioception, reposition and postural stability[11].

There are various studies that have proven the effect of ischemic compression on the reduction of the trigger point sensitivity, pain and improvement of the functional status of muscle. Myofascial release has proved to be effective in decreasing pain and relieving spasm. Bowen's technique has proven to be effective in reducing pain in soft tissue and in providing relief and improving flexibility. The objectives of the present study were to evaluate the effect of Ischemic Compression ,Myofascial release and Bowen's technique on non specific neck pain and to compare the effect of Ischemic Compression, Myofascial release and Bowen's technique on non specific neck pain.

METHODS

The purpose of the study was explained and a written informed consent was obtained from all the subjects which was approved by the Institutional Review Board of the University. 48 subjects were recruited from Physiotherapy OPD, Tertiary Health Care Centre, Belagavi. Both males and females 20-40 years of age, with acute non specific neck pain (<3months) and a palpable tender spot/ trigger point and willing to participate in study were included and patients with cervical radiculopathy, healing fractures over neck and upper back region, history of orthopaedic surgery to neck, long term anticoagulant therapy or clotting disorders and corticosteroid therapy (<6 months). Baseline values for all the outcome measures- visual analogue scale, neck disability index, pressure threshold and cervical range of motion were noted prior to the beginning of the study.

The subjects were then divided randomly into 3 groups: Group A:

Ischemic Compression + Conventional Therapy, Group B: Myofascial Release + Conventional Therapy and Group C: Bowens Technique + Conventional Therapy.

CONVENTIONAL THERAPY:

Active Neck exercises including cervical flexion, extension, right and left rotation and side flexion. All exercises were given for 10 repetitions and 5 seconds hold[12]. Therapeutic Ultrasound was given with an intensity- variable according to pain threshold but within 1.5 watts/cm2, continuous, treatment time- 5 minutes[9]. Hot pack was applied on the site of pain for a duration: 15 minutes.

Group A: Ischaemic compression

Gradual pressure was applied to the trigger point using the right thumb with the left thumb reinforcing it from the top. Pressure was gradually increased to produce localized discoloration as well as symptoms in the target area and was held till 90 seconds or till the patient reported easing of local and referred pain followed by a release of 10 seconds. This was repeated 3times. Outcome measures were scored on day 1 and after 7 sessions of treatment[13].

Group B: Myofascial Release

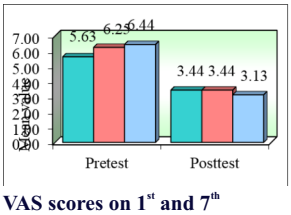
Deep transverse friction was given for 10 minutes followed by myofascial stretching of muscle for 3 times, each holding for 90 seconds. Then myofascial release was given using ulnar border of both palms of the therapist[14]. Outcome measures were scored on day 1 and after 7 sessions of treatment.

Group C: Bowen technique

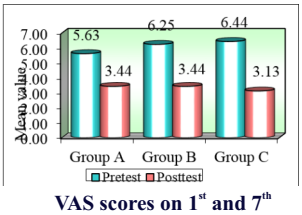
Thumb of the therapist was placed on the top of the targeted muscle. The skin was carried away gently from the spine without disturbing the muscle. The thumb was then hooked into the lateral aspect of the muscle to form a pressure on the muscle. Then the thumb was flattened in the medial direction, when this happened the muscle would plop or respond in some way. The session lasted for twenty minutes[15]. Outcome measures were scored on day 1 and after 4 sessions of treatment on alternate days.

STATISTICAL ANALYSIS:-

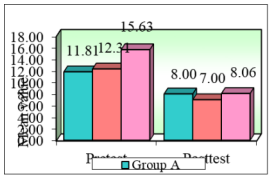
Statistical analysis was done by using statistic software SPSS version 20 in order to verify results obtained. VAS, pressure threshold, NDI and ROM were analyzed for all the three groups. Normality of pre and posttest scores of various variables was done by Kolmogorov-Smirnov Z test. Within group analyses was done by paired t test and between group (pair wise) analyses was done by Tukeys multiple posthoc procedures.



VAS scores on 1st and 7th day (between groups)



VAS scores on 1st and 7th day (within group)



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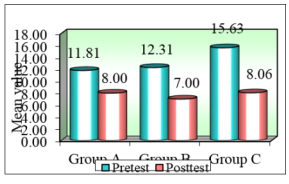
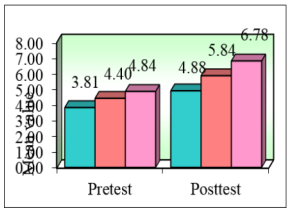
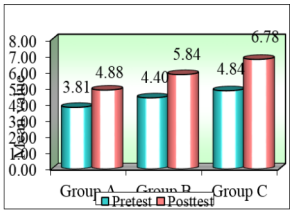


NDI scores on 1st and 7th day (within group)



PPT scores on 1st and 7th day (between groups)



PPT scores on 1st and 7th day (within groups)

Comparisons of three study groups (A, B, C) within groups and between groups with respect to pretest and posttest VAS, NDI, PPT and ROM scores by one way ANOVA Table 1, Table 2, Table 3 and Table 4 respectively.

Table 1: Comparisons of three study groups (A, B, C) with respect to pretest and posttest VAS scores by one way ANOVA

Groups	Pretest		Posttest		Difference	
	Mean	SD	Mean	SD	Mean	SD
Group A	5.63	1.41	3.44	0.96	2.19	0.98
Group B	6.25	1.34	3.44	0.96	2.81	0.66
Group C	6.44	1.90	3.13	1.20	3.31	1.08
% of change in Group A					38.89%#, p=0.0001*	
% of change in Group B					45.00 %#, p=0.0001*	
% of change in Group C					51.46 %#, p=0.0001*	
F-value	1.1773		0.4723		5.9706	
P-value	0.3174		0.6266		0.0050*	
Pair wise comparison of groups by Tukeys multiple posthoc procedures						
Group A vs Group B	p=0.5027		p=0.9999		p=0.1460	
Group A vs Group C	p=0.3171		p=0.6794		p=0.0036*	
Group B vs Group C	p=0.9391		p=0.6794		p=0.2856	

*p<0.05, # applied paired t test

Table 2: Comparisons of three study groups (A, B, C) with respect to pretest and posttest Neck Disability Index scores by one way ANOVA

Groups	Pretest		Posttest		Difference	
	Mean	SD	Mean	SD	Mean	SD
Group A	11.81	4.98	8.00	4.35	3.81	2.81
Group B	12.31	4.05	7.00	3.67	5.31	3.28
Group C	15.63	5.40	8.06	4.52	7.56	3.76
% of change in Group A					32.28%#, p=0.0001*	
% of change in Group B					43.15%#, p=0.0001*	
% of change in Group C					48.40%#, p=0.0001*	
F-value	2.9281		0.3228		5.2154	
P-value	0.0638		0.7258		0.0092*	
Pair wise comparison of groups by Tukeys multiple posthoc procedures						
Group A vs Group B	p=0.9542		p=0.7799		p=0.4119	
Group A vs Group C	p=0.0776		p=0.9991		p=0.0069*	
Group B vs Group C	p=0.1409		p=0.7555		p=0.1435	

*p<0.05, # applied paired t test

Table 3: Comparisons of three study groups (A, B, C) with respect to pretest and posttest Pressure Threshold scores by one way ANOVA

Groups	Pretest		Posttest		Difference	
	Mean	SD	Mean	SD	Mean	SD
Group A	3.81	1.00	4.88	1.30	1.06	0.70
Group B	4.40	1.04	5.84	1.09	1.44	0.51
Group C	4.84	1.34	6.78	1.26	1.94	0.54
% of change in Group A					27.87%#, p=0.0001*	
% of change in Group B					32.81%#, p=0.0001*	
% of change in Group C					40.00%#, p=0.0001*	

F-value	3.3163	9.7497	8.8070
P-value	0.0453*	0.0003*	0.0006*
Pair wise comparison of groups by Tukeys multiple posthoc procedures			
Group A vs Group B	p=0.3185	p=0.0748	p=0.1736
Group A vs Group C	p=0.0358*	p=0.0003*	p=0.0005*
Group B vs Group C	p=0.5163	p=0.0873	p=0.0576

*p<0.05, # applied paired t test

Table 4: Comparisons of three study groups (A, B, C) with respect to pretest and posttest Flexion scores by one way ANOVA

Groups	Pretest		Posttest		Difference	
	Mean	SD	Mean	SD	Mean	SD
Group A	35.31	3.74	38.44	2.71	3.13	1.78
Group B	36.25	3.75	39.44	2.83	3.19	2.48
Group C	38.44	4.43	43.13	4.05	4.69	1.45
% of change in Group A					8.85%#, p=0.0001*	
% of change in Group B					8.79%#, p=0.0001*	
% of change in Group C					12.20%#, p=0.0001*	
F-value	2.5919		9.2267		3.2830	
P-value	0.0860		0.0004*		0.0467*	
Pair wise comparison of groups by Tukeys multiple posthoc procedures						
Group A vs Group B	p=0.7846		p=0.6619		p=0.9956	
Group A vs Group C	p=0.0790		p=0.0006		p=0.0500*	
Group B vs Group C	p=0.2766		p=0.0069		p=0.0871	

*p<0.05, # applied paired t test

The group treated with Bowen`s Technique showed significant improvement in pain intensity, pressure threshold and neck function and range of motion (p<0.05) as compared to ischaemic compression therapy.

DISCUSSION

The present randomized controlled trial was aimed to compare the effectiveness of Ischemic Compression, Myofascial Release and Bowens Technique in terms of reduction of pain intensity using VAS, improvement in the pressure threshold using pressure algometer, improvement in cervical ROM using universal goniometer and improvement in the functional status using NDI score. Conventional therapy was a common treatment given to all the three groups. In the present study there wasn't much difference in parameters in Bowen Technique as compared to Myofascial Release. Bowen Technique was more effective in reducing pain, increasing pressure threshold, improving the NDI scores and increasing cervical ROM (flexion and lateral flexion) as compared to Ischemic Compression.

In the present study Bowen technique reduced the pain intensity (VAS) scores, which was consistent in a study where this therapy was used for patients with chronic low back pain and had a disk protrusion shown in Magnetic Resonance Imaging (MRI). However the study only evaluated VAS and level of bothersomeness. In the present study, pressure threshold, cervical ROM and function were also evaluated[16].

Bowen technique was given in a six week program where community health service staff was treated with this therapy with the objective to provide improved physical health and reduced stress. Bowen Technique was successful in decreasing pain, increasing mobility and energy, improving sleep and decreasing stress[17]. Neck pain can be caused by psychosomatic reason[2]. In the present study also Bowen Technique showed decreased pain, improved function and mobility.

A probable explanation for Bowen Technique being effective in neck pain is because it is a holistic approach, it causes relaxation and usually patient falls asleep. The changes are a sign of insightful release from stress and a shift to parasympathetic system[8].

The specific moves stimulate proprioceptors in muscles and tissues that instigate brain response to normalise resting rate of tissues which leads to increased blood and fluid movements, decreases pain and boosts tissue repair, it also enhances motor firing that causes softening of muscles and improves ROM.

A study compared the effectiveness of direct myofascial release technique with indirect release technique in 63 patients with tension type headache with 24 sessions. Both the techniques proved to be effective in decreasing the pain and frequency of headaches[18]. This is consistent with the present study where MFR showed significant reduction in pain intensity and improvement in functional status however the improvement in this study was shown in 7 sessions in a week of treatment. The probable explanation for myofascial release being effective is that it works on the principle of Onion metaphor i.e it begins with gross superficial stretching then the therapists hand moves more deeply to the base of the spasm. This leads to increased extensiveness of tissues and efficiency as the tightness get relieved, decreases soreness and stress hence decreases the pain and increasing the mobility and corrects muscle imbalance[6].

A study was conducted where ischemic compression and trigger point pressure release on neck pain was performed and the immediate effects were assessed using a pressure algometer, NDI and range of motion using goniometer and was concluded that ischemic compression is highly effective[19] which is seen in the present study as well where ischemic compression was given with conventional therapy and there was improvement in the same parameters. It purposefully increases local blood flow and decreases the blockage of blood in the trigger point area. This washes away the metabolic waste products, supplies necessary oxygen and helps the affected tissue to heal hence leads to decrease in pain.

A contribution of the Electrotherapy in causing an improvement in the outcome measures are consistent where a study was done to assess the effects continuous ultrasound therapy in patients with knee osteoarthritis, where ultrasound was applied at 1 hz for 5 minutes in one group. It was concluded that ultrasound effective and well tolerated[20]. A study was conducted where exercises were given to patients suffering from chronic neck pain. Results revealed that after the 6 week management significant improvement in the verbal numerical pain scale was found exercise group[21]. In the present study VAS was taken and it shows significant improvement. The exercises were common in all the three groups and were a part of conventional therapy.

Limitations of the study are that homogeneity in gender was not considered and the study investigated only the short term effects and did not consider effects after 7th session.

CONCLUSION:

On the basis of the present study, it is concluded that Ischemic Compression, Myofascial Release and Bowen therapy were effective in reduction of pain, improving pressure threshold, improving mobility and functional status. Bowen Technique showed the most improvement as compared to Ischemic compression and Myofascial Release showed similar improvement as that of Ischemic Compression and Bowen Technique.

FUTURESCOPE:

A longer follow up period can be used to see long term effects of the technique and biochemical analysis can be considered to check changes in components after therapy.

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