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RESEARCH ARTICLE

EFFECT OF ISCHEMIC COMPRESSION ON UPPER TRAPEZITIS

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ABSTRACT

Background: Trapezititis is an inflammatory pain causing a severe neck spasm. Ischemic compression is frequently employed as a means of deactivating Trigger point. The pressure is gradually applied, maintained and the gradually released.

Aim: To evaluate the effect of ischemic compression therapy in the treatment of upper trapezititis.

Methodology: Moderate digital pressure will be applied to the identified Trigger point as subjects rated their level of pain on a scale from 1 to 10. The position of ease is produced through positioning the muscle in a shortened/relaxed position. Ease is defined as the point where a reduction in pain of at least 70% is produced. For upper trapezius, high sitting with the head side bent towards the involved side while the practitioner positioned the ipsilateral arm in flexion, abduction and external rotation to report the Trigger point pain. Once the position of ease is identified, it will be held for 20-30s.

Results and Discussion: Paired t test was utilized for within the group and unpaired t test was utilized for the level of significance between the groups.

Conclusion: Ischemic compression is effective in treating spasm and pain relief of upper trapezititis.

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INTRODUCTION

Trapezititis is an inflammatory pain arising from the trapezius muscle causing a severe neck spasm. This muscle lies at the back of the neck and helps in shrugging movement of the shoulders along with upward movement of the head^[1]

The upper trapezius is that part of the trapezius muscle extending from the occiput to the lateral third of the clavicle and acromion process of the scapula. A strain of this muscle results in pain in posterolateral region of the neck.^[13]

Bad posture is frequently incriminate as the cause of trapezititis. Watching television or working on a computer with an awkward posture or even use of a thick pillow can cause neck spasm.^[1] The stress that gives rise to this condition is often a combination of tension on, and contraction of, the muscle. stretching sideways to reach for an object while holding the head tilted in the opposite direction can cause such an attack. A typical example may be someone on the floor reaching to recover an object that rolled under a desk or sitting in the front seat of a car reaching to recover an object from the back seat.^[13]

The abduction of the arm requires scapular fixation by action of the trapezius, and the sideways tilt of the head puts tension on the muscle at the same time .The muscle develops a knot or cramp better described as segmental spasm in the muscle.^[13]

Ischemic compression is a manual therapy technique which is frequently employed as a means of deactivating Trigger point. It involves applying direct sustained digital pressure to the Trigger point with sufficient force over dedicated time

duration, to slow down the blood supply and relieve the tension within the involved muscle. The pressure is gradually applied, maintained and the gradually released.^[15, 16]

Ischemia means a lack of blood supply, with associated tissue irritation and congestion .Ischemic compression used in trigger point work. The purpose of ischemic compression is to deliberately increase the blockage of blood to an area so that, upon release, there will be a resurgence of blood. This washes away waste products, supplies necessary oxygen and helps the affected tissue to heal .This increase of blood flow to the area is called a hyperaemia.^[14]

Trigger points form in the muscle's fibres ,close to the motor end plate(neuromuscular junction).Excess acetylcholine(Ach) is released at the synapse ,usually associated with overuse or strain, leading to release of calcium. Resulting ischemia creates an O₂ deficit and energy crisis without available ATP. Calcium ions, which are keeping the gates open for Ach to keep following cannot be removed .A chemically sustained contracture (without motor potentials) is different from a contraction (voluntary with motor potentials) and a spasm (involuntary with motor potentials). Actin-myosin filaments shorten in the area of the motor endplate. A contracture "knot" forms the characteristic trigger point nodule. The remainder of the sarcomeres of that fibre are stretched, creating the palpable taut band. "To apply ischemic compression to a trigger point, the relaxed muscle is stretched to the verge of discomfort. Initially a thumb (or strong finger) is pressed directly on the TP to create tolerably painful (7 to 8 on a client pain scale of 10), sustained pressure. As the discomfort tends to abate, pressure is gradually increased by adding a thumb or finger from the other hand, as necessary, for reinforcement.

This process is continued up to 1 minute with as much as 20 or 30 m lb of pressure. If TP tenderness persists, the procedure can be repeated, preferably after a hot pack and active range of motion".^[14]

The first treatment should be conservative, lasting one or two minutes only, followed by a day of rest for the treated part. The treatment is resumed on alternate days until the pain abates and full usage is returned, usually within 3 to 10 session. Appropriate application of ice following treatment is recommended.^[14]

The pain VAS is a unidimensional measure of pain intensity^[2] which has been widely used in diverse adult populations, including those with rheumatic diseases^[4-7].

The pain VAS is a continuous scale comprised of a horizontal(HVAS) and vertical (VVAS)line, usually 10 centimetres (100 mm) in length, anchored by 2 verbal descriptors, one for each symptom extreme^[4,8]. Instruction, time period for reporting and verbal descriptor anchors have varied widely in the literature depending on intended use of the scale^[9]. The pain VAS is a single-item scale. To avoid clustering of scores around a preferred numeric value, numbers of verbal descriptors at intermediate points are not recommended^[6, 11]. A higher score indicates greater pain intensity and lower score indicates lower pain intensity. The following cut points on the pain VAS have been recommended: no pain (0-4 mm), mild pain (5-44 mm), moderate pain (44-74 mm), and sever pain (75-100 mm)^[17]. Normative values are not available.

Aims & objectives

Aim of Study

Aim of study was to evaluate the effect of ischemic compression therapy in the treatment of upper trapezitis.

Objectives of the Study

- To determine the effect of ischemic compression in reducing pain and improving functional range of motion among patients with upper trapezitis.
- To determine the effect of regular physiotherapy treatment in reducing pain an improving functional range of motion among the patients with upper trapezitis.
- To compare the effectiveness of ischemic compression over regular physiotherapy treatment in reducing pain and improving functional range of motion among patients with upper trapezitis.

METHODOLOGY

Study design: This study is an Experimental study design involving the pre and post test analysis of data.

Sampling method: Purposive sampling.

Sample size: 20 subjects with 10 in each group.

Population: Female subjects diagnosed with upper trapezitis pain will be included for the study based on selection criteria

Criteria for Selection

Inclusion criteria

- Female

- Subjects with age 18-25 years.
- sub acute^[19]
- Subjects who are diagnosed with upper trapezitis.
- Subjects who are willing to participate.
- Unilateral or Bilateral trapezitis.

Exclusion criteria

- Any other cervical instability and other degenerative disorder.
- Recent surgery in and around shoulder and cervical region.
- Thoracic outlet syndrome.
- Cervical radiculopathy.
- Skin disease and infection.
- History of whiplash injury.

MATERIALS USED IN THE STUDY

Hot packs
Towel
Cotton
Gel

Procedure

After fulfilling the inclusion criteria and obtaining an informed consent subjects will be recruited for this study.

Study sample consist of 20 subjects will be then divided into 2 groups based on random sampling.

Group A: Subjects receive ischemic compression with daily physiotherapy treatment.

Group B: Subjects receive only daily physiotherapy treatment.

Pre intervention measurement for Intensity of Pain using Visual Analogue Scale (VAS), will be carried out for each patients before starting the treatment (For both group A and B).

For Group A

Ischemic Compression

Moderate digital pressure will be applied to the identified Trigger point as subjects rated their level of pain on a scale from 1 to 10.If pain is unable to be identified, pressure will be increased. If pain is reproduced, the pressure is maintained over the active Trigger point as the position of ease is identified. The position of ease is often produced through positioning the muscle in a shortened/relaxed position. Ease is defined as the point where a reduction in pain of at least 70% is produced. For upper trapezius ,high sitting with the head side bent towards the involved side while the practitioner positioned the ipsilateral arm in flexion, abduction and external rotation to reported the Trigger point pain. once the position of ease is identified, it will be held for 20-30 s and will be repeated for there to five times.^[18]

For Group B

Daily physiotherapy treatment

Ultra sound
Stretching of the muscle

Treatment Sessions: Both group will be treated 7days and will be instructed to maintain their normal activities while avoiding any undue stress to the neck.

Outcome Measures: Treatment efficacy will be measured with

Visual Analogue scale (VAS)

RESULTS

Data Analysis

All the statistical analysis was done by using SPSS 20 version for windows software. Paired t- test was used for Intra group analysis and unpaired t -test for Inter group effect analysis.

Statistical Analysis for Experimental Group (Group A)

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	ExperimentalPreVAS	7.1000	10	.56765	.17951
	ExperimentalPostVAS	3.0000	10	.94281	.29814
Paired Samples Correlations					
		N	Correlation	Sig.	
Pair 1	ExperimentalPreVAS & ExperimentalPostVAS	10	.208	.565	

Paired Samples Test									
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
					Lower	Upper			
					Paired Differences				
Pair 1	ExperimentalPreVAS - ExperimentalPostVAS	4.10000	.99443	.31447	3.38863	4.81137	13.038	9	.000

Interpretation: Above result shows that experimental pre vas mean was 7.1000 and post vas mean was 3.0000, t value was 13.038 and degree of freedom was 9.

Statistical Analysis for Control Group (Group B)

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	controlprevas	4.6000	10	1.26491	.40000
	controlpostvas	2.3000	10	2.00278	.63333
Paired Samples Correlations					
		N	Correlation	Sig.	
Pair 1	controlprevas & controlpostvas	10	.404	.248	

Paired Samples Test									
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
					Lower	Upper			
					Paired Differences				
Pair 1	controlprevas - controlpostvas	2.30000	1.88856	.59722	.94900	3.65100	3.851	9	.004

Interpretation: Above result shows that experimental pre vas mean was 4.6000 and post vas mean was 2.3000, t value was 3.851 and degree of freedom was 9.

Statistical analysis for Control Group and Experimental Group

Paired Samples Correlations				
		N	Correlation	Sig.
Pair 1	controlprevas & controlpostvas	10	.404	.248

DISCUSSION

The upper trapezius is that part of the trapezius muscle extending from the occiput to the lateral third of the clavicle and acromion process of the scapula. A strain of this muscle results in pain in posterolateral region of the neck.^[13]

Bad posture is frequently incriminate as the cause of trapezititis. Watching television or working on a computer with an awkward posture or even use of a thick pillow can cause neck spasm.^[1]

Ultrasound is used in the treatment of trapezititis .Ultrasound are sound waves but of a higher frequency .Effects of ultrasound application include increased rate of tissue repair and wound healing, increased blood flow ,increased tissue extensibility, breakdown of calcium deposits , reduction of pain and muscle spasm through alteration of nerve conduction velocities and changes in cell membrane permeability.

According to **Young et al.**^[20] when ultrasound enters the body, it can exert effects on cells & tissues via thermal & nonthermal mechanisms of which some are still inconclusive. **Marij et al.**^[21] stated that ultrasound influences transmission of painful impulses & elevates pain threshold.

Hugh Gemmell, et al (2007) have studied that the immediate effect of ischemic compression, trigger point pressure release and placebo ultrasound on pain, degree of cervical lateral flexion and pressure pain threshold of upper trapezititis trigger points in subjects with non-specific neck pain. The results showed that ischemic compression is superior to sham ultrasound in immediately reducing pain in patients with non-specific neck pain and upper trapezius trigger points.^[11]

Study was performed on 20 patients suffering from upper trapezititis with age 18 to 25 years including of female. The study was performed in physiotherapy centre.

All the materials that were needed for the study were collected before starting it. All the subjects were assessed using VAS score and tenderness grindings. 10 patients were given ischemic compression and normal routine physiotherapy treatment. Another 10 patients were given only normal routine physiotherapy treatment.VAS score were checked on Day 1, at the end of Day 7. At the end of study the following results were obtained after performing statistical data: there was significance defference between group 1 and group 2.So, concluded that Group 1 was more effective then the Group 2.And ischemic compression was more effective in reliving symptoms of pain and spasm of upper trapezititis.

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
VAR00003	Equal variances assumed	2.976	.102	-1.000	18	.331	-.70000	.70000	-2.17065	.77065
	Equal variances not assumed			-1.000	12.802	.336	-.70000	.70000	-2.21464	.81464

CONCLUSION

Ischemic compression is effective in treating spasm and pain relief in upper trapezitis.

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