



TO FIND IMMEDIATE EFFECT OF TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION ON PRESSURE PAIN THRESHOLD OF ACUTE TRAPEZITIS

Physiotherapy

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ABSTRACT

Background- Trapezitis is define as "The inflammation of trapezius muscle leading to pain which is present even during rest and is aggravated by activity." Pain occurs when person extend his neck, which occurs due to faulty posture during working, prolonged use of electronic devices. Hyperons and spasm is often seen in neck musculature. Working task involve. Normally symptoms include aching shoulder, a felling of neck hurting and is often deep and painful. **Objective** –To determine immediate effect of TENS for reduce pain pressure threshold among patients with acute trapezitis.

Methodology –

- Number of subject – 20
- Method of sampling - convenient sampling
- Study of design – pilot study

Result- TENS have significant role immediate relieving in pain pressure threshold in acute Trapezitis. **Conclusion-** In context to our study, practicing TENS for immediate (1 days) reduces pain in acute trapizitis.

KEYWORDS

acute trapezitis, pain pressure threshold , TENS (transcutaneous electrical nerve stimulation), algometer.

INTRODUCTION

Trapezitis is an inflammation of trapezius muscle which is involve myofascial pain syndrome. Trapezius is a triangular flat muscle it takes origin from medial one third of superior nuchal line of occipital bone, ligamentum nuchae, spinous process and from supraspinous ligament of all thoracic vertebrae. Upper fiber is inserted into posterior border of lateral one third of clavicle. Middle fiber inserted into medial border of acromion and upper lip of crest of spine of scapula and lower fiber inserted by recovered tendon of deltoid tubercle. Myofascial pain syndrome includes a large group of muscle disorder characterized by trigger points within one or more muscle or connective tissues together with syndrome of pain, muscle spasm, tenderness, stiffness, limitation of movement, weakness and occasionally autonomic dysfunction⁽¹⁾.

An acute episode of myofascial pain often follows overuse unconditioned muscle, prolonged stress on musculoskeletal structure due to poor posture during activity such as computer oriented work, sports injuries and automobile accident. Particularly, when the person has been walking in a leather sole shoes on highly waxed floor. in this the muscular accommodation is necessary to maintain the balance, plus abnormal adjustments gait can aggravate muscle with existing trigger points causing acute onset of pain in hip, knee, ankle, foot, law back, head or neck. Myofascial trigger point is a hyper irritable sport found within the taut band of skeletal muscle⁽¹⁾.

Trapezitis pain occur for when person does neck extension. This muscle helps in shrugging of shoulder and during neck movement⁽²⁾ and all movement in the upper extremities is reflected in the neck musculature as the muscle of neck and shoulder region always function as single unit, the muscle of shoulder and neck particularly upper trapezius and levator scapula and deep muscle are activated while arm movement which may be slow or fast, resisted or unresisted movements, muscle recruitment will be more pronounced if the patient carries heavy load or has developed poor motor habit, hypertonus and spasm is often seen in neck musculature, working task involve⁽³⁾.

Trigger point is focal tenderness present in palpable taut band, which causes referred pain in skeletal muscle⁽⁴⁾. Trigger point increases blood circulation, it is caused due to repetitive trauma or acute trauma⁽⁵⁾.

The pathogenesis results from overloading and injury of muscle tissue, leading to involuntary shortening of localized fiber, This area of tissue receive less O₂, glucose nutrient delivery and subsequently Accumulation of metabolic waste product resulting in alteration in tissue status, pain, develop tenderness, in Trapezitis, hyperalgesia and limited range of motion (ROM) resulting in limited functional activity of head⁽⁶⁾.

Symptoms normally include shoulder pain, neck pain. Sometime it is accompanied by a headache, especially in the temples or behind the

eye or at the base of the skull. A burning sensation between the shoulder blades is the felt when sitting in front of the computer without elbow support. There may also be difficulty in movement if neck due to spasm. Pain and stiffness in the neck and trapezius muscle may last for usually 3-5 days individual. Trapezius is a large muscle that extend from the edge of the skull to the upper back area and holds functional importance during our day to day activity⁽⁷⁾.

Trapezitis condition is divided as acute, sub-acute, chronic based on period of time. it acute occurs for less than one month, Sub-acute condition last for 1-3 month and chronic is present for 3, or more than 3 month⁽⁸⁾.

The prevalence is highest in female with middle age are affected more than male, neck pain occurs commonly In upper trapezius muscle and muscle spasm occur immediately After injury, if the injury is not treated it leads to trigger point⁽⁹⁾.

Physical therapy is of great help to reduce the muscle spasms, pain and other symptoms of trapezitis. Rehabilitation exercise, which include flexibility and strength training, help to improve the movement, functioning and strength of the neck and back muscle. Those people suffering from trapezitis those people need assistance, so they can take timely treatment and get recover. Knowing causes & studying symptoms of trapezitis closely can help to understand the severity of the tissue, so that can be offered in time. Medical professionals follow the treatment guidelines for trapezitis and offer the best treatment options to alleviate the symptoms and cure the condition⁽¹⁰⁾.

The precipitating factor for trapezius myofascial pain can occur in prolong driving, sitting, over cell phone speaking with flexed neck and prolong laptop user. Our study is based on myofascial pain relief in trapezitis with the use of TENS (transcutaneous electrical nerve stimulation). This increases the range of motion in the neck and mobilizes the soft tissue. TENS is application of pulse rectangular wave current via surface electrode place on the patient skin by the mechanism of pain gate theory⁽¹¹⁾.

Gate control theory of pain: -stimulation of the skin evoke nerve impulses that are transmitted to three spinal cord system: the cells of the substantia gelatinosa in the dorsal horn, the dorsal column fibers goes toward the brain & first central transmission (T) cells in the dorsal horn. We propose that the substantia gelatinosa function as a gate control system that modulates the afferent patterns before they influence the T cell; the afferent patterns in the dorsal column system act, in part at least, as a central control trigger which activates selective brain processes that influence the modulating properties of the gate control system; and the T cell activate neural mechanism which comprise the action system responsible for response and perception⁽¹²⁾.

Algometer are used for pain sensitivity measure and term algometer may imply pressure tolerance testing, the maximum amount of pressure one may endure, and the first point at which a pressure Sensation is sensed as pain⁽¹³⁾. Pressure-pain thresholds (PPTs) occurs at the minimum transition point when applied pressure is sensed as pain⁽¹⁴⁾ and diagnosis of myofascial pain dysfunction syndrome and myofascial pain syndrome⁽¹⁵⁾.

Many times, these devices are handheld and have a "maximum hold" function that displays the maximum obtained in any one application. The device are handheld and these device have a 1cm² pressure application surface and display force reading in newtons or kilograms of forces, it has be noted that the force application should be perpendicular of the body surface⁽¹⁶⁾. Application of force at a faster rate may provoke a low false threshold reading (16). pressure algometer highly reliability and validity⁽¹⁷⁾.

AIM OF STUDY

- The aim of study is to evaluate the immediate effect of transcutaneous electrical nerve stimulation in treatment of acute trapezitis with the help of pain pressure threshold.

Objectives Of Study

- To determine immediate effect of transcutaneous electrical nerve stimulation to reduce pain and improve functional range of motion among patients with acute upper trapezitis.
- To determine change in algometer finding after application of TENS among patient with acute upper trapezitis.

Need Of Study

The efficacy of TENS in the management of pain pressure threshold in acute trapezitis is unclear. Need of the study is to find out the effectiveness of TENS reduce pain pressure threshold with acute trapezitis.

Methodology

Number of subjects - 20

Method of sampling- Convenient sampling

Study Setting - Students of RK University

Study design- Pilot study

Inclusion criteria- Subject with age 18 to 25 years Acute upper trapezitis(< 1 month)

Exclusion criteria- Skin disease Recent surgery in or around shoulder Any neurological problem

Study duration- 3 months

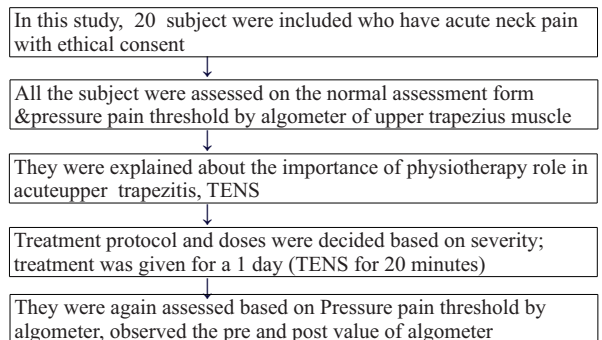
Tools and parameters:

- TENS instrument
- Algometer
- Chair,
- Table
- Gel,
- Micro pore
- Goniometer
- Cotton,
- Pen

Outcome Measure – Algometer (in kgs)

- "Nominal type" of scale
- Which is use for the pain pressure threshold of acute trapezitis patients
- Which was taken before and after treatment (TENS)

METHOD



Pressure pain threshold		
	PRE	POST
MEAN	2.700	3.515
SD	0.7011	0.6991

Algometer was taken by therapist

- Algometer is a nominal scale.
- Algometer reading is taken by kilogram (kg).
- Patient position: sitting on chair with supported

Treatment was giving to the patient- TENS

- patient position: sitting on chair with supported
- Placement of tens for upper trapezitis: in neck area of greater intensity of pain
- Parameter for acute trapezitis:

Frequency- 100 – 150 Hz

Pulse width- 100 – 500 ms

Intensity- as per patient tolerance

Duration- 20 minutes (1 day only)

RESULT& INTERPRETATION

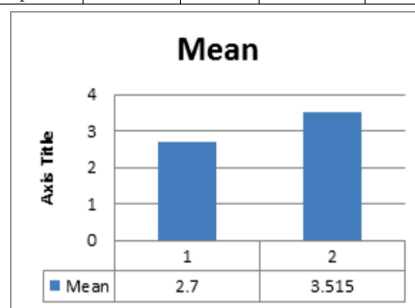
Data analysis

Table no. 1 mean and standard deviation value of pre and post data

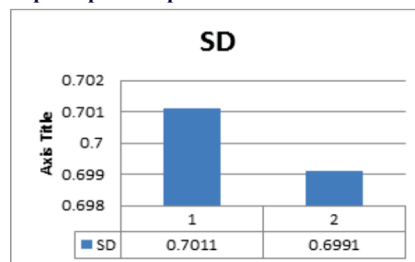
Pressure pain threshold		
	PRE	POST
MEAN	2.700	3.515
SD	0.7011	0.6991

Table no. 2 comparison of paired sample T test

Comparison of paired sample T test				
	Mean	SD	T	Sig(2-tailed)
Pair 1 pre-post	0.815	0.3463	-10.463	0.00



Graph no. 1 pre & post comparison of mean



Graph no. 2 pre & post value comparison of SD

- For the statistical analysis, data were obtained before the treatment and after the 1 session of treatment.
- Algometer was taken for pain pressure threshold before intervention & after 1 session.
- Paired t test- was used for the comparison between the pre and post values of outcome measures within the groups.
- The significance level of the statistical tests was <0.05 and CI was kept at 95%. All statistical tests were performed using SPSS Version 16 software.

CONCLUSION

In context to our study, practicing TENS for immediate effect on (1 session) reduces pain in acute trapezitis. The results of the present study suggest that pain pressure threshold is reduce in acute trapezitis subjects. This study provided evidence to support the TENS in short term for reducing pressure pain threshold as a management of acute trapezitis participants.

DISCUSSION

This present study was conducted to reduce pain with applying of tens in acute trapezitis. The study involved 20 subjects with acute trapezitis. The present study provides the positive result in pain reduction in acute trapezitis. To our best knowledge, an experimental study has been perform to check the effect of tens to reduce pain in acute trapezitis.

Tens is work on pain gait theory. Nociceptor are the sensory receptor which carries pain stimulus. They carries pain stimulus towards the higher center. Afferent fiber are carries pain sensation towards spinal cord. 3 tracts are use in pain sensation. LSTT, Spinoreticular and spinoencephalic. nociceptor afferent enter the SC via dorsal root and make synapse with inter neuron. Second order neuron cross the midline of SC and transmit information and make a 3rd order neuron in thalamus. They will carries noxious stimulus toward cortex. SG cell have inhibitory effect on t cell. SG cell from peripheral afferent there are descending influence on t cell from higher center, mid brain (PAG) and medulla (RN). Both have excitatory effect on SG cell, so that also reduce the pain transmission. This pathway are thought to exert there effect on SG by releasing noradrenaline and 5-hydroxytryptamine.

During pain inhibition on PAG and RN are removed influences of limbic system thus allowing PAG and RN to exert effect at SG. Large diameter as there is highly sensitive to ES and quickly conducts the impulse to SC. A delta and c fiber are not that much large so they unable to passes signal as fast as large fibers.

In context to the result of our study, by implementing TENS shows significant in reduction of pain in acute Trapezitis by statistical and clinical. Selection of procedure like TENS must have played key role by increasing pain threshold and through pain gait mechanism thus relieving acute trapezitis. Pain pressure threshold when compared (pre&post), a difference is obtain.

In study conducted on rehabilitation intervention for neck pain and associated muscle spasm, patients important outcome were decided by consensus as being pain, function, and patient global assessment, cervical ROM, shoulder ROM, quality of life and return to work. For this purpose, pain intensity can be measured by algometer.

Limitation Of Study

- 1) The study was conducted for a short term effect.
- 2) The study was conducted use only TENS.
- 3) The study was not considered of bilateral side.

Further Recommendation

- 1) The study can be conducted on long term effect.
- 2) The study can be considered further of bilateral side.
- 3) The study can be used another modality.

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