

## Original Article

# EFFECT OF TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION IN TRAPEZITIS

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## ABSTRACT

Myofascial trigger point release using TENS with stretching is very effective in the treatment of trapezititis. Palpating the trigger point is important it is the point where maximum tenderness occur with minimum pressure in the muscle. The aim of my study is to find which parameters of TENS is more effective to relieve trigger point as well as pain for acute stage of trapezititis. 100 number of patients affected with trapezititis were grouped into moderate acute stage and severe acute stage of pain receiving a 7 to 15 days treatment with two session and passive stretching is given to the patients. The improvement is reassessed with the help of VAS SCALE. Difference were found between the moderate and severe acute pain group of treatment using TENS particularly in a trigger point with this parameter produced greater relief of pain and passive stretching increases the range of motion to the patients.

**KEYWORDS:** Trapezius; TENS; Trigger point.

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## INTRODUCTION

Trapezititis is an inflammation of trapezius muscle which involve myofascial pain syndrome, that can be commonly encountered in clinical practice. Trapezius is triangular and 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 twelve thoracic vertebrae. Upper fibers is inserted into posterior border of lateral one- third of clavicle. Middle fibers inserted into medial border of acromion and upperlip of crest of spine of scapula and Lower fibers inserted by a recovered tendon of deltoid tubercle. Myofascial pain syndrome constitute a large group of muscle disorder characterized by the

trigger points within one or more muscle or the investing connective tissue together with a syndrome of pain, muscle spasm, tenderness, stiffness, limitation of movement, weakness and occasionally autonomic dysfunction. An acute episode of myofascial pain often follows overuse of unconditioned muscle, prolonged stress on musculoskeletal structure due to poor posture during activities such as computer-oriented work, sports injuries and automobile accidents. Particularly, when the persons 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 adjustment of gait can aggravate muscles with existing trigger points causing acute onset of

pain in hip, knee, ankles, foot, low back, head or neck. Myofascial trigger point<sup>1</sup> is a hyperirritable spot found within the taut band of skeletal muscle, in modern computerized world we are facing more frequent musculoskeletal problem like Trapezitis, Joint pain, Cervical problem and so on. The precipitating factor for trapezius myofascial pain can occur in prolonged driving, sitting in an overstuffed chair, prolonged cell phone speaking with flexed neck and prolonged laptop users. Our study is based on myofascial pain relief in Trapezitis by using TENS (Transcutaneous Electrical Nerve Stimulation) and stretching of trapezius muscle. This increases the range of motion in the neck and mobilizes the soft tissue. TENS is the application of pulsed rectangular wave current via surface electrodes placed on the patient's skin by the mechanism of PAIN GATE THEORY.<sup>2</sup>

## MATERIALS AND METHODS

Study comprised of total 100 number of patients from both the gender of acute pain stage of patients with trapezius muscle spasm. The acute stage of pain is divided into 5 groups.<sup>3</sup> They were Ia. ANNOYING Ib. UNCOMFORTABLE Ic. DREADFUL Id. HORRIBLE and Ie. AGONISING. In this horrible and agonizing is severe type of pain the remaining three are mild to moderate type of pain. According to the type of pain, using various frequency of TENS in trigger point with trapezius stretching with mean age group of 25-45 years who were attended outpatients department in ADIPARASAKTHI COLLEGE OF PHYSIOTHERAPY. We included patients with trapezius muscle spasm in the mean time we exclude conditions like Cervical disc lesion, Fracture around cervical region, Malignant tumor over cervical region, Periarthritic shoulder, Pacemaker fixation and Trapezitis with cervical pathology. Patient is assessed with shoulder depression test<sup>4</sup> and jump sign.

### PROCEDURE : ACUTE STAGE (MILD-MODERATE)

Ia. Annoying pain-15 number of patients, duration of treatment-7 days with 2 session

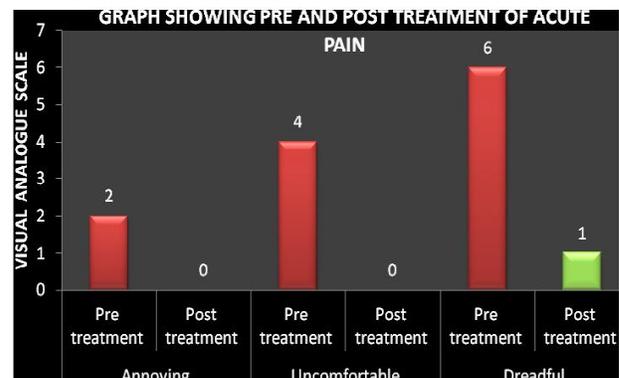
Ib. Uncomfortable pain-20 number of patients, duration of treatment – 7 days with 2 session

Ic. Dreadful pain-15 number of patients, duration of treatment - 7 days with 2 session.

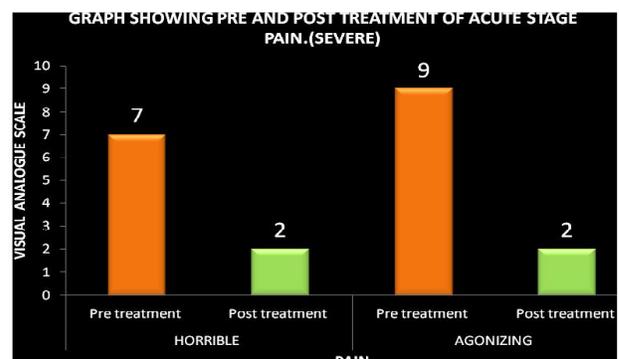
Patient was positioned in relaxed prone lying. One electrode is placed on trapezius trigger point another electrode to the radiating pain and then asked him to relax for 1 minute finally passive stretching of trapezius is given, followed by pain assessment by using visual analogue scale. TENS with amplitude of current at a comfortable low intensity just above the threshold for duration of 20 minutes with pulse duration of 150ms & frequency of 100 Hz is given over trigger point.

**ACUTE STAGE (SEVERE):** Horrible- 30 number of patients, duration of the treatment -12 days with 2 session. Agonizing-20 number of patients, duration of treatment- 15 days with 2 session. Patient was positioned in relaxed prone lying. One electrode is placed on trapezius trigger point another electrode to the radiating pain and then asked him to relax for 1 minute finally passive stretching of trapezius is given, followed by pain assessment by using visual analogue scale. TENS in trigger point with amplitude of current at a high intensity for duration of 20 mins with pulse duration of 100ms & frequency of 50 Hz is given over trigger point.

## RESULTS



**Graph 1:** The acute stage of annoying, uncomfortable pain during pre treatment was 2,4 with visual analogue scale had significant decrease to 0 after post treatment. But the dreadful pain which is 6 during pre treatment has to 1 after post treatment session.



**Graph 2:** The acute stage of horrible and agonizing pain during pretreatment was 7 and 9 with the visual analogue scale had significant decrease to 2 after post treatment.

## DISCUSSION

Graff-Radford<sup>5</sup> compared the effect of 4 modes TENS on myofascial pain. Pain reduction occurs with 100hz, 250ms stimulation followed by 100hz, 50ms. No pain reduction found in 2hz, 250ms. These authors reported that high intensity TENS is effective in decreasing myofascial pain measured with a VAS. In this study we are using the parameters for moderate acute pain is 150ms, 80-100hz and for severe acute pain is 50ms, 100hz to reduce the myofascial pain and trigger points. Both showing a decrease in myofascial pain. In our study also we are not using 1-5hz for reducing the pain. Hou CR<sup>6</sup> suggested that hot pack plus active range of motion, TENS plus stretch with spray is more effective for myofascial trigger point pain and increasing the range of motion. In this study we found that the use of 150ms, 80-100hz this parameters of TENS reduces the acute pain and increases the range of motion. Decrease the severe acute pain in 100ms with 50hz parameters respectively. Proper passive stretching can bring back the muscle to normal length this increases the range of motion. Simons DG<sup>7</sup> hypothesis and his biopsies demonstrate segmental shortening of group of sarcomere in a muscle fiber and possible contracted sarcomere to account for palpable taut band. In our study we palpate taut band and we place one electrode over that more irritable point of taut band to release the trigger point using TENS after the treatment the contracted soft tissues around the muscle get relaxed, if the trigger point left untreated, more trigger points will form and it leads to myofascial syndrome (Christine Beckman). According to Bijur PE, Silver W, Gallagher EJ<sup>8</sup> 2001, reliability of VAS for acute pain reaches maximum of 9mm in the pain scale has approaches to the high of 90% which have assessed by ICC is sufficiently reliable. Based on this study we have used the VAS for acute pain which were divided into mild-moderate as - annoying, uncomfortable and dreadful and severe as- horrible and agonizing pain and this VAS measurement is more reliable. Sweet Charles carvalho<sup>9</sup> coded that prolong use of telephone in elevated position of shoulder produces shortening of trapezius muscle this will be one of the cause for trapezius muscle spasm.

Our study also coincide with that so that after the completion of treatment session we have given passive stretching to the trapezius muscle to elongate the shortened muscle.

## CONCLUSION

This study is mainly to concentrate on acute pain to determine which parameter of TENS is more effective to reduce the Myofascial pain. We find out the exact duration of treatment while grouping this acute stage of pain into two, so far no one grouped the acute pain stage. This is combined with passive stretching to get the normal range of motion. This treatment is helpful to avoid the Myofascial syndrome. Using of TENS is safe and non-invasive during treatment.

**Conflicts of Interests:** None

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