



IMMEDIATE AND SHORT-TERM EFFECTS OF LASER AS AN ADJUNCT TO MYOFASCIAL TRIGGER POINTS IN UPPER TRAPEZIUS

Community Medicine

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ABSTRACT

The purpose of the article: Upper trapezius trigger point cause neck pain, with restriction in cervical ROM & increased disability according to NDI. The manual therapy (trigger point compression, PNF, self MFR) when combined with another modality (ultrasound, Electrical stimulation, Heat/cold) produces superior results. Low Level laser therapy seems to be beneficial for reducing myofascial pain caused due to myofascial trigger points by using algometry and thermography.

Method: 30 patients with trigger points in upper trapezius were taken. They were divided into two groups by chit method (random sampling).

Material required: Light amplification by stimulated emission of radiations (LASER), electronic muscle stimulator (galvanic current), Goniometer

Results: Immediate and short-term effect in conventional and experimental group was significant ($p < 0.0001$). The CROM, FT were improved in the experimental group when compared to conventional group.

Conclusion: Adding LASER as an adjunct on myofascial trigger points was slightly effective but did not have any profound effect as such.

KEYWORDS

LASER, Myofacial trigger points, upper trapezius, immediate effects of LASER,

I. INTRODUCTION

Upper trapezius trigger point causes neck pain, with restriction in cervical ROM & increased disability according to NDI.

- Trigger point compression followed by stretching can be used as one of the early
- Interventions in the treatment of myofascial trigger points.
- The manual therapy (trigger point compression, PNF, self MFR) when combined with another modality (ultrasound, Electrical stimulation, Heat/cold) produces superior results.

II. PROBLEM STATEMENT

To study the Immediate and short-term effects of LASER as an adjunct on myofascial trigger points in Upper Trapezius.

III. OBJECTIVES

- To measure pain pre and post treatment by using VAS
- To measure Cervical Range of lateral flexion pre and post treatment
- To measure tenderness at trigger point pre and post treatment
- To measure the differences in the thresholds (FT, PT, PTT) pre and post treatment.
- To compare the differences in the outcome measures between two groups
- To repeat the outcome measures on the fourth day of treatment to study the short-term effects of LASER.

IV. METHODOLOGY

- Study design: Interventional study.
- Study setting: Smt Kashibai Navale General Hospital PT OPD
- Sample population: Patients with trigger point in upper trapezius
- Sample size: 30
- Sampling technique: Random sampling
- Study duration: 6 months

A. INCLUSION CRITERIA

- Patients in age range between 20 – 50 year.
- Both males and females.
- Patients with trigger points in upper trapezius (unilateral)

B. EXCLUSION CRITERIA

- Patients receiving other therapies than physiotherapy.
- Patients with cognitive deficits
- Patients with trigger points in muscles other than upper trapezius and bilaterally in upper trapezius.
- Patients with recent trauma or fracture of the cervical spine.
- Patients with any cervical pathology

V. PROCEDURE

- The Institutional Research Committee (IRC) & Ethica Committee Clearance and informed consent was obtained.

- The permission from Respected Principal sir and The HOD of musculoskeletal department of physiotherapy was taken.
- The subjects were recruited according to the inclusion criteria.
- The subjects were explained about the procedure & a consent form was signed.
- Patients were randomly divided into two groups by chit method.
- Trigger point was assessed using the essential criteria for its assessment. It is marked by using a marker.
- Outcome measures were used before giving the treatment to both the groups.
- Patients in the conventional & experimental group received hot fomentation.
- Trigger point compression was given followed by it. Patient position: Sitting **Technique:** Compression was applied over the identified trigger point by thumb or by finger of the therapist. Either 90 seconds-low pressure up to the pain threshold or 30 seconds- pressure up to the pain tolerance.
- Stretching was given after trigger point compression.
- The experimental group received LASER as an adjunct to the therapy received same as that of conventional group. Patient were given protective goggles during the treatment.

GROUP 1	GROUP 2
HOT PACK	HOT PACK
STRETCHING	STRETCHING
Trigger point compression	Trigger point compression
	LASER

Treatment parameters used were:-

- Wavelength: 830 nm
- Power: 50 mW
- Continuous mode was used.
- Treatment Duration: 1 min 25 sec

- After treatment the outcome measures were again repeated within 10 mins of treatment.
- The treatment was continued for 4 days and outcome measures were repeated on 4th day after the treating the patients in both the groups.

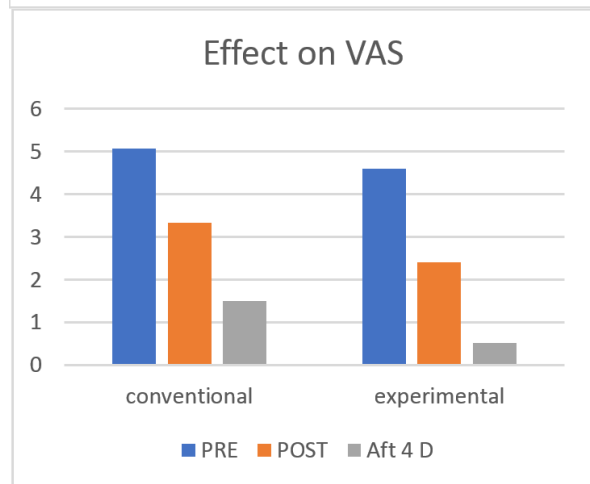
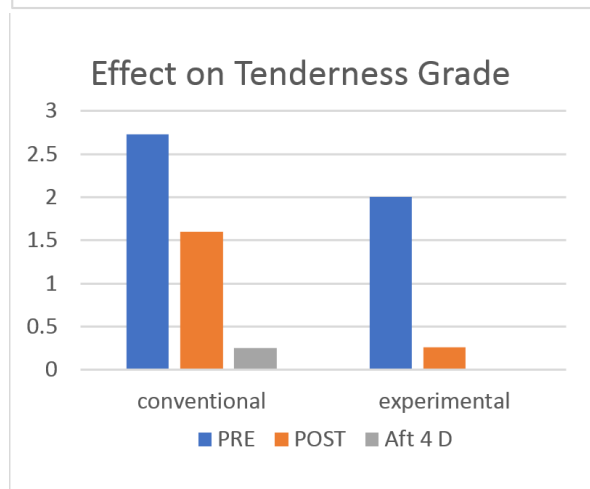
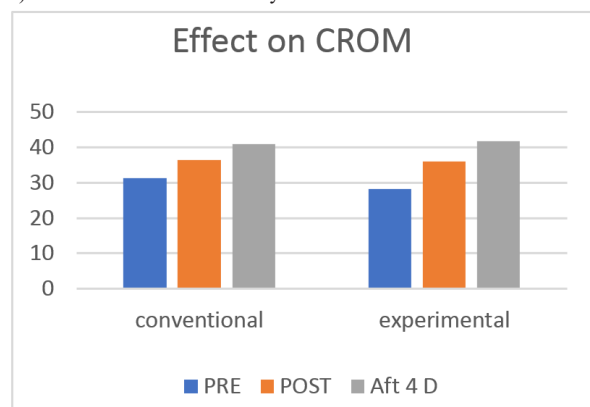
VI. STATISTICAL ANALYSIS

- The data was analyzed by using Graph pad instat software.
- To study immediate and short-term effects within the groups paired t-test was used.
- To compare the immediate and short term effects between conventional and experimental group unpaired t-test was used.

VII. RESULTS

Immediate and short-term effect in conventional and experimental group was significant & both the treatment were effective. p value was observed to be extremely significant ($p < 0.0001$).

- a) Effect on CROM
- b) Effect on Tenderness Grade
- c) Effect on VAS
- d) Immediate effect on sensory threshold
- e) Short term effect on sensory threshold

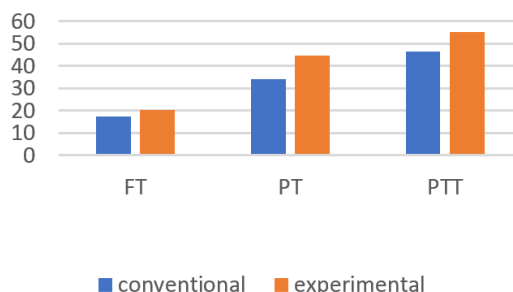


VIII. DISCUSSION

Energy crisis theory of myofascial trigger points postulated that increased demand on the muscle leads to Ca release & prolonged shortening of sarcomere (Bengtsson 1986). There is ischemia and hypoxia at the trigger point (Bruckle 1990).

Improvement in VAS: -Ischemic compression stimulates the mechanoreceptors & brings pain relief as well as it causes local ischemia followed by sudden gush of blood to that area. LASER is believed to have an effect on endorphin levels & gate control of pain. So the pain which was measured by VAS improved in both the groups but when compared between two groups the change in the experimental group was more than the conventional group but was not statistically significant.

Immediate effect on sensory thresholds



Improvement in CROM: - Ischemic compression causes sustained stretch to a Trigger point & forces the tension out of the muscle. LLLT improved local micro-circulation resulting in supplying oxygen to the hypoxic cells at the same time removes the collected waste product. This must have lead to appropriate lengthening of myofibrils & reduction of pain allowing patient to perform painless and unrestricted lateral flexion.

Improvement in sensory thresholds: -Ischemic compression followed by stretching was effective in pain relief & increasing pressure pain thresholds in trigger points. LASER is intended to have effect on membrane potential & ATP synthesis. So the resulting effect is increase in thresholds – FT & PT; but patients were not able to tolerate higher intensities even after the treatment so the PTT did not improve much.

Improvement in VAS: - The combined effect of LASER, Trigger point compression, stretching & hot water fomentation results in flushing out of the metabolic products and substance p like molecules which sensitize the nociceptive mechanism.

IX. CONCLUSION

- a) The immediate and short-term effects in experimental group improved cervical range of lateral flexion, sensory threshold – FT & PT, tenderness over trigger point.
- b) Whereas Laser had no significant effect in improving pain intensity over the conventional therapy.
- c) It can be concluded that adding LASER as an adjunct on myofascial trigger points was slightly effective but did not have any profound effect as such.

DECLARATION OF INTEREST

The authors report no declarations of interest.

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