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Effectiveness of Manual Therapy and Transcutaneous Electrical Nerve Stimulation for Migraine: A Case Study

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Abstract

Background: A common feature of migraine is throbbing pain in one area of the head that lasts for four to seventy-two hours. Other symptoms include light or sound sensitivity, nausea, and vomiting. Manual therapy treatment for the management of headaches commonly consists of mobilization and relaxation in combination with specific exercises, posture corrections and myofascial soft tissue techniques. Transcutaneous electrical nerve stimulation is a non invasive analgesic technique used in the treatment of nociceptive, neuropathic and Musculo-skeletal pain.

Objective: To assess the effectiveness of Manual therapy and TENS in migraine patient.

Methodology: A 25year old patient with migraine was provided an individualized therapy for 4 weeks. NPRS and the Headache Impact Test-6 are used as an outcome measure.

Result.: The NPRS and The Headache Impact Test-6 results after four weeks indicated reduced pain intensity, monthly attacks in patients with migraine.

Conclusion: Manual therapy and Electrical nerve stimulation may be beneficial for patients with Migraine.

Keywords: Migraine, Manual therapy, TENS

INTRODUCTION

Migraine causes severe headache and is associated with other characteristic symptoms. A common feature of migraine is throbbing pain in one area of the head that lasts for four to seventy-two hours. Other symptoms include light or sound sensitivity, nausea, and vomiting. Before or during a migraine, some people suffer visual disturbances known as auras, which might seem as flashing lights or zigzag lines. An estimated 10% of people worldwide suffer from migraines, which most commonly afflict those between the ages of 20 and 50. Women are affected by migraines almost three times more frequently than males. In a large US survey, 17.1% of women and 5.6% of men reported having migraine symptoms[1.]

Manual therapy (MT) treatment for the management of headaches commonly consists of mobilization and relaxation in combination with specific exercises, posture corrections and myofascial soft tissue techniques. Reduced pressure pain thresholds in the trapezius muscle and upper cervical tissues are prevalent in migraine patients. Migraine is associated with cervical musculoskeletal dysfunction such as cervical myofascial trigger points, decreased endurance of the neck flexor muscles and restricted mobility of the upper cervical spine[2.]
Modern physiotherapy focuses on rehabilitation and exercise, while manual treatment emphasises postural corrections, soft tissue work, stretching, active and passive mobilization and manipulation techniques[2.]
Transcutaneous electrical nerve stimulation (TENS) is the delivery of pulsed low voltage electrical currents across the intact surface of the skin to stimulate peripheral nerves for pain relief. As a noninvasive neurostimulation technique, TENS has gradually been the subject of extensive research in the treatment of headache disorders.Transcutaneous electrical nerve stimulation(TENS) has been applied as an abortive and prophylactic treatment for migraine recently[3]
Transcutaneous Electrical Nerve Stimulation (TENS) is a non-invasive analgesic technique used in the treatment of nociceptive, neuropathic, and musculo-skeletal pain. This therapy uses a noninvasive, self-administered device. This apparatus applies an electrical current that activates peripheral nerves, hence producing an analgesic effect. During therapy, a portable device supplies the electrical current, which is then applied to the skin via electrodes. This apparatus applies an electrical current that activates peripheral nerves, hence producing an analgesic effect. Rigorous neurophysiological evidence shows that this device inhibits the central nervous system's nociceptive signal transmission[4].

CASE STUDY

A 25 year old male presented with a complain of unilateral pulsating headache once or twice every month from past 10 years. It is initiated on exposure to sunlight (photophobia) or stress.The Headache Impact Test (HIT-6) score was 60 indicating the headaches are having a very severe impact on the life and NPRS score was 8/10 suggesting severe pain.
The intervention was based on Progressive Muscle Relaxation that involves tensing and releasing muscles, progressing throughout the body, with the focus on the release of the muscle as the relaxation phase. Stretching such as side neck bend, seated forward fold, child's pose, thread the needle and downward facing dog were also done. TENS is an electrical modality that is transcutaneous electrical nerve stimulation wherein 2 electrode were used, active electrode on the frontotemporal area while the inactive electrode was placed on the C7 survival region. The frequency, pulse width, and time is 1Hz, 125 μs, and 10 minutes for 4 weeks once in a day. The treatment approach aimed to reduce pain during the attacks and inhibit the recurrence of attacks.

RESULT:

Following a comprehensive intervention over a 4-week period, the patient demonstrated notable reduction in migraine symptoms based on objective measures. Numerical Pain Rating Scale (NPRS) initially rated at 8 out of 10, indicating severe pain, decreased to 5 out of 10 post-intervention. This reduction indicates a substantial alleviation of pain intensity associated with migraines. Headache Impact Test-6 (HIT-6) initially scored at 60,

highlighting a severe impact of migraine on daily life, the score decreased to 46 after the intervention. This improvement indicates a reduction in the overall impact of migraine on the patient's daily activities and quality of life.

These outcomes suggest that the combined approach of manual therapy and TENS effectively reduced both the severity of pain and the functional impact of migraines on the patient's life following the 4-week treatment period.

DISCUSSION:

The study was aimed at finding out the effectiveness of manual therapy and TENS in migraine patients. This integrated approach could provide a valuable addition to the therapeutic options available for migraine sufferers, potentially improving their quality of life and reducing the burden of this debilitating condition. The result have shown that Manual therapy and TENS is effective in migraine patients. Manual therapy consists of mobilization and relaxation in combination with specific exercises, posture corrections and myofascial soft tissue techniques.

While MT primarily focuses on musculoskeletal dysfunction and mobility restrictions in the cervical spine, TENS acts through neurostimulation mechanisms to modulate pain perception centrally. The result showed a reduction in HIT-6 from 60 to 46 and NPRS from 8 to 5 post-intervention indicating that MT effectively reduced the severity and frequency of migraine attacks. The combination of these therapies in clinical practice could potentially offer a comprehensive approach to manage migraine symptoms, addressing both physical dysfunction and pain modulation.

LIMITATIONS AND SCOPE OF STUDY:

Since the experiment was conducted on subject with moderate functional discomfort, it is not known how it may affect individuals with severe functional limitations. The study can be performed as a series on a larger number of populations for better results. The study has only run for a maximum of four weeks and long term effects are unknown. In future research can be conducted in a larger population with longer duration with different outcome measures and with different exercise therapy interventions for individuals with migraine. A comparative study can also be done comparing this intervention with other treatment options to find out which treatment protocol provides better results in the cases of patients with migraine.

CONCLUSION:

Treatment with manual therapy and TENS caused a decrease in headache frequency, reduced the pain intensity, and improved overall quality of life. In the clinical practice TENS and Manual therapy can be given as a combined treatment for people suffering from migraine.

Conflict of interest: None

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