Original Article

Efficacy of Dry Needling Therapy Versus IASTM on Myofascial Trigger Point in Patient with Neck Pain

Syed Md Akram Kashif G[1], Ramana K[2], Anitha A[3], Kamalakannan M[4]

[1]Postgraduate, [2]Assistant Professor, [3,4]Associate Professor, Saveetha College of Physiotherapy, Saveetha Institute of Medical and Technical Sciences, Chennai, Tamil-Nadu, India.

How to cite this article: Syed Md Akram Kashif G, Ramana K, Anitha A et. al. Efficacy of Dry Needling Therapy Versus IASTM on Myofascial Trigger Point in Patient with Neck Pain. Indian Journal of Physiotherapy and Occupational Therapy / Volume 18 Special Issue 2024

Abstract

Background: The background of the study is soft tissue mobilization and dry needling among neck pain subjects, which indirectly affect functional activity and pressure threshold for pain over the neck area.

Purpose: To evaluate the effects of IASTM and dry needling therapy on myofascial trigger points in individuals with neck pain. And assess the effect of pain and functional outcomes by pressure algometer and NDI.

Methods: Thirty participants were randomly assigned to the two groups the dry needling therapy (DNT) Group and Instrument assisted soft tissue mobilization (IASTM) Group. The pretest measures of pressure pain threshold and functional activity of the neck were assessed by the pressure algometer and the neck disability index, respectively. The intervention DNT Group received dry-needling therapy, whereas the intervention IASTM Group received IASTM for a duration of 4 weeks. The same tests were measured after 4 weeks of treatment as post-test values.

Result: A substantial difference between the NDT group and the IASTM group was also discovered ($p = 0.001$). The study showed that dry needling significantly impacts pressure pain threshold and functional activity in neck pain participants. Conclusion: The dry needling therapy effectively improved functional activity and reduced pressure and pain thresholds.

Conclusion: Dry needling therapy has emerged as an effective therapeutic option for treating trigger points in the neck and relieving pain associated with them.

Keywords: Neck pain, Trigger point, Dry needling therapy, IASTM, Pressure Algometer, NDI

Introduction

Neck pain is a common musculoskeletal health problem that poses a huge socioeconomic burden. The most prevalent issue overall, affecting two-thirds of the population who are active, is non-specific neck pain[1]. At some point in their lives, they will experience it, with lifetime prevalence ranging from 14.2% to 71% and prevalence rates of 6% to 22% among the senior population[2]. The precise source of pain is unknown, and there are no known underlying disorders that cause it. However, a few studies have suggested that poor posture and postural insufficiency caused by mechanical factors may be the cause of pain, although

Corresponding Author: Ramana. K, Assistant Professor, Saveetha College of Physiotherapy, Saveetha Institute Of Medical & Technical Sciences, Chennai, India.

E-mail: ramana.scpt@saveetha.com

this is still under investigation[3]. Neck pain is most likely caused by a variety of different factors. Being a somewhat flexible structure, the neck can move in many different planes. Considering how mobile the neck is, it might be susceptible to harm and ailments that cause pain and restrict motion[4,5]. An awkward movement, bad posture, overuse, or other causes are commonly to blame for non-specific neck discomfort, which frequently radiates in a non-segmental manner up the arm, into the head, over the shoulder, or across the scapulae. Paraesthesia or hyperesthesia may also accompany it, although there isn't any objective loss of sensation or muscle strength[6].

NSAIDs, spinal injections such as (epidural steroid injections, trigger point injections, facet injections), braces, postural correction, ergonomic advice, etc. are among the other conservative treatments available. However, non-specific neck pain episodes occasionally resolve on their own after a period of rest[7,8]. Ice, heat, interferential treatment, ultrasound, warm-up exercises, light stretching, and strengthening exercises are some examples of physical therapy techniques[9]. The effectiveness of ergonomic therapies in minimizing mechanical neck discomfort has been established. These interventions include posture correction and changes to the workstation[10]. Conservative treatments for excruciating musculoskeletal diseases typically involve a variety of manual techniques to mobilize soft tissues and restore joint mechanics with supervised active exercises, education, and home programs including self-treatment. These methods might help with short pain relief by reducing discomfort and muscular spasm[11,14] Although the issue may recur, manual therapy, which also includes massage, fascial manipulation, passive mobilization through physiological and auxiliary movements, and stretching techniques for the superficial cervical muscles, offers short-term relief.[15,18]

Salaheddine DS et al., stated that active release technique helps in reducing pain and improve the range of motion in trapezius trigger point[19].

Recent research on female participants with persistent neck discomfort revealed that muscle chain stretching and conventional static stretching were equally helpful in reducing pain and enhancing range of motion and quality of life[19,20].Musculoskeletal weakness in the neck and trunk is linked to mechanical low back pain. Recently, there has been a lot of interest in instrument-assisted soft tissue mobilization (IASTM). To cure musculoskeletal pathology-related deficits, promote soft tissue healing, and lessen muscular stiffness, IASTM uses tools[21].

Aim

To find out the efficacy of Dry needling therapy versus IASTM on Myofascial trigger points in patients with neck pain

Materials and Methodology

It was an experimental study conducted on 30 subjects with neck pain carried out in a private hospital in Chennai during the period of July to October 2022. Samples were selected from the outpatient department of Saveetha Medical College Hospital, Thandalam, Chennai, according to the inclusion and exclusion criteria.

Inclusion Criteria:

- Age between 20 – 35
- Patient with neck pain
- Presence of active trigger point
- Both male and female Subjects are included

Exclusion Criteria:

- Previous whiplash injury
- Previous head, neck, cervical spine, or shoulder surgery
- Previous cervical radiculopathy
- Contraindication for dry needling and IASTM technique

Study Procedure

Following the determination of their eligibility based on the inclusion and exclusion criteria, subjects were invited to participate in the study. The subjects who consented to participate were divided into two groups, the Dry needling therapy (DNT) group, and Instrumental assisted soft tissue mobilization (IASTM), and their signed consent was obtained after a brief explanation of the study and the intervention.

The total numbers of subjects were 30, with 15 subjects in each group, allocation was done by

Convenient Sampling, a randomized allocation method, the NDT Group had 10 males and 5 Females whereas the IASTM Group had 8 females and 7 females.

The Neck Disability Index Scale, a pressure algometer, and pretest measures were performed on each person. The post-test will be given at the end of the sixth week. For four weeks, the subject will undergo treatment in three sessions per week.

NDT Group patients undergo DRY NEEDLING therapy for four weeks in three sessions each week. After four weeks, a physiotherapist reviewed the subjects to measure the pressure algometer and NDI.

For four weeks, the participants in the IASTM Group get IASTM for three sessions each week. After four weeks, the subjects underwent another evaluation by a physiotherapist to measure the pressure algorithm and NDI.

Dry Needling Therapy Group (DNT):

Solid filiform needles (50. 3 mm) are created as key needles for MTrPs. For DN procedure was started by making the participant lie on their back on a couch. The top layer of the skin was cleaned with alcohol. The solid filiform needle was initially placed in its plastic guide tube. MTrPs were palpated and a needle inserting space was made by placing the thumb and index finger on both sides. DN was then placed over the MTrP of the taut band of the muscle between the thumb and index finger. MTrPs were tapped before the needle was inserted. The needle was then moved to the muscle around the bundle, advanced and retracted to the tissue, and then advanced again to produce a transient muscle twitch called LTR. Once LTR was produced, needling was stopped. If no twitch was noticed needling was stopped after two or three stellate.

Instrumental Assisted Soft Tissue Mobilization (IASTM):

The myo-release instrument was used to massage the muscle tissue for IASTM for 5 minutes. The stainless steel myo-release was the instrument utilized in this surgery. The massage therapist gave the muscle three passive stretches for 30 seconds right away after the session. For four weeks, the therapy was administered three times each week. (12 sessions total)

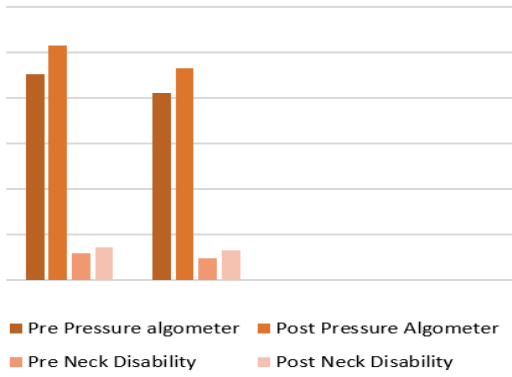
To apply cream and prevent friction between the participant's skin and the handlebar of the IASTM instruments, the participant in group A was told to lie down in a prone posture. The handlebar was then attached to the back of the neck using the scraping process. The neck muscle complex's fibers' direction and form were used to determine the IASTM application's direction.

To mobilize the whole surface of the neck muscle complex with continuous pressure, a "scraping" approach was used, moving from distal to proximal and lateral to medial.

- Session length: 40–120 seconds
- Weekly frequency: three days each week

Data Analysis

Statistics, both descriptive and inferential, were used to tabulate and analyze the gathered data. Mean, median, and standard deviation (SD) were applied to all parameters. Parametric statistics are used to statistically analyze pressure algometer data. The significant differences between pre-test and post-test measurements were examined using a paired t-test. The significance level of (p0.05) was utilized to analyze significant differences between the two groups using an unpaired t-test. Non-parametric statistics are used to statistically analyze NDI questionnaire data. The statistically significant differences between pre-test and post-test values were examined using the Wilcoxon signed rank test. Mann–Whitney the significance level (p0.05) employed in the U test to analyze significant differences between two groups were deemed statistically significant.



Graph No.1

INTERPRETATION: Shows the pretest and post-test of the Pressure Algometer and Neck Disability Index. NDT is more effective than IASTM Group

Results

Thirty people in all were chosen, and 30 of them underwent screening for neck pain. They were divided into two groups, each with 15 people. NDT Group patients with neck discomfort received dry needling therapy for trigger points. Individuals in the IASTM Group received treatment using the IASTM for neck discomfort.

NDT Group achieved the mean value on the parameters of the pressure meter and neck disability index, respectively. On the NDI and Pressure Algometer, IASTM Group received a mean value.

The NDT Group pre-test value of the pressure algometer is 225.4 and the IASTM Group pre-test value of the pressure algometer is 205.5 and has a mean difference of 19.9 and the post-test value of the NDT Group for NDI is 29.07 and post-test value of IASTM Group for NDI is 23.47 have the mean difference of 5.6.

Both dry needling and IASTM treatments showed equivalent benefits in lowering pain sensitivity, as seen by the same mean difference in pressure algometer values for both groups. Additionally, there was a constant mean difference in NDI scores between the two groups, indicating that both treatments had a similar effect on functional limits brought on by persistent neck discomfort.

These discoveries have significant effects on how persistent neck discomfort is treated. The use of dry needling and IASTM treatments seems to be an effective way to increase patients' pain sensitivity and functional ability. To properly address the intricacies of chronic neck pain, healthcare professionals and patients may consider these therapies as a part of an all-encompassing therapy approach.

The study employing the pressure algometer and NDI parameters to compare the results of IASTM therapy and dry needling on individuals with persistent neck pain produced positive findings. Following therapy, both groups showed considerable improvements in their pain sensitivity and functional limitations.

Discussion

The study investigated and compared the effect of dry needling therapy and IASTM to improve the functional outcomes of the neck and reduction of values in the pressure algometer.

NDT Group received dry needling therapy whereas the IASTM Group was given instrument-assisted soft tissue mobilization [IASTM] for the intervention of 4 weeks and 3 sessions per week.

Common neck pain is extremely prevalent among individuals over the age of 20 to 35, similarly in our study the mean age of the NDT Group was 28 and IASTM Group B was 26. In the present study, the outcome measures were Pressure algometer and NDI which were analyzed on alternative days for 7 days. Pre and Post analysis was done on 1st day and 7th day.

The study showed that both interventions significantly improved neck functional outcomes but compared to dry needling therapy and IASTM, the dry needling therapy showed more improvement in increased neck functional outcomes and reduction in the values of the Pressure algometer than the IASTM Group.

Our results also showed that each intervention had a positive impact on the study's main outcome measures. But dry needling therapy showed better results than IASTM.

Neck trigger points can be effectively treated with dry needling. The afflicted region experiences discomfort, stiffness, and limited movement as a result of the trigger point, which is a tiny, constrictive band of muscle. The therapist can relax the tension and lessen the discomfort by putting a tiny, sterilized needle into the trigger point.

It is significant to note that a full treatment program for neck pain and myofascial trigger points, which may also involve exercise, stretching, heat or cold therapy, and other modalities, often involves both dry needling and IASTM.

Conclusion

The study revealed that the Dry Needling group is considerably superior for myofascial trigger points in neck pain for treating patients in lowering pain and increasing functional results when compared to the IASTM group.

Dry needling therapy has emerged as an effective therapeutic option for treating trigger points in the neck and relieving pain associated with them. It works by reducing muscular tension, encouraging relaxation, and increasing blood flow to the afflicted region. According to existing research, dry needling treatment can result in considerable pain reduction and improved functional results.

Ethical clearance: Approved by the Institutional Scientific Review Board

Funding: Self

Conflict of interest: Nil

References

1. Vos, T, Flaxman, AD, Naghavi, M, et al., Years lived with disability (YLDs) for 1160 sequelae of 289 diseases and injuries 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010. Lancet .2012;380:2163–2196.
2. Falla, DL, Jull, GA, Hodges, et al., PW. Patients with neck pain demonstrate reduced electromyographic activity of the deep cervical flexor muscles during the performance of the craniocervical flexion test. Spine (Phila Pa 1976) .2004;29:2108–2114.
3. Falla, DL, Bilenkij, G, Jull, GA, et al., Patients with chronic neck pain demonstrate altered patterns of muscle activation during performance of a functional upper limb task. Spine (Phila Pa 1976) .2004;29:1436–1440.
4. Peolsson, A, Marstein, E, McNamara, T, et al., Does posture of the cervical spine influence dorsal neck muscle activity when lifting? Man Ther .2014;19:32–36.
5. Quek, J, Pua, YH, Clark, RA, Bryant, AL. Effects of thoracic kyphosis and forward head posture on cervical range of motion in older adults. Man Ther .2013;18:65–71.
6. Park, SY, Yoo, WG, et al., Effect of sustained typing work on changes in scapular position, pressure pain sensitivity, and upper trapezius activity. J OccupHealth .2013;55:167–172.
7. Pillastrini, P, Mugnai, R, Farneti, C, et al. Evaluation of two preventive interventions for reducing musculoskeletal complaints in operators of video display terminals. Phys Ther .2007;87:536–544.
8. Isgro, M, Buraschi, R, Barbieri, C, et al., Conservative management of degenerative disorders of the spine. J NeurosurgSci. 2014;58(2 suppl 1):73–76.
9. Bertozzi, L, Gardenghi, I, Turoni, F, et al., Effect of therapeutic exercise on pain and disability in the management of chronic nonspecific neck pain: systematic review and meta-analysis of randomized trials. Phys Ther .2013;93:1026–1036.
10. Hurwitz, EL, Carragee, EJ, van der Velde, G, et al., Treatment of neck pain: noninvasive interventions: results of the Bone and Joint Decade 2000–2010 Task Force on Neck Pain and Its Associated Disorders. Spine (Phila Pa 1976) . 2008;33(4 suppl): S123–S152.
11. Bertozzi, L, Villafañe, JH, Capra, F, et al., Effect of an exercise program for the prevention of back and neck pain in poultry slaughterhouse workers. OccupTherInt .2015;22:36–42.
12. Guzman, J, Haldeman, S, Carroll, LJ, et al., Bone and Joint Decade 2000–2010 Task Force on Neck Pain and Its Associated Disorders. Clinical practice implications of the Bone and Joint Decade 2000–2010 Task Force on Neck Pain and Its Associated Disorders: from concepts and findings to recommendations. Spine (Phila Pa 1976) . 2008;33(4 suppl): S199–S213.
13. Häkkinen, A, Salo, P, Tarvainen, U, et al., Effect of manual therapy and stretching on neck muscle strength and mobility in chronic neck pain. J RehabilMed .2007;39:575–579.
14. Childs, JD, Cleland, JA, Elliott, JM, et al., American Physical Therapy Association. Neck pain: clinical practice guidelines linked to the International Classification of Functioning, Disability and Health from the Orthopedic Section of the American Physical Therapy Association. J Orthop Sports Phys Ther. 2008;38: A1–A34.
15. Castaldo, M, Ge, HY, Chiarotto, A, et al., Myofascial trigger points in patients with whiplash-associated disorders and mechanical neck pain. Pain Med .2014;15:842–849.
16. Tozzi, P, Bongiorno, D, Vitturini, C, et al., Fascial release effects on patients with non-specific cervical or lumbar pain. J Bodyw Mov Ther .2011;15:405–416.
17. Souchard, P. RieducazionePosturaleGlobale (RPG–Il Metodo) . Milan, Italy: Elsevier; 2012.

18. Fortin, C, Feldman, DE, Tanaka, C, et al., Inter-rater reliability of the evaluation of muscular chains associated with posture alterations in scoliosis. BMC MusculoskeletDisord .2012;13:80.

19. Salaheddine DS, Alagesan J, Durairaj S, Kumar P. Efficacy of active release technique in the treatment of trapezius trigger points–case series. Gulf Medical Journal. 2016;5(S1):S94-8.

20. Vanti, C, Generali, A, Ferrari, S, et al., General postural rehabilitation in musculoskeletal diseases: scientific evidence and clinical indications [in Italian]. Reumatismo .2007;59:192–201.

21. Swetha S, Prathap S, Vinodhkumar R, Vignesh S, Kumaresan A, Jagatheesan A. Effect of Neck and Upper Trunk Exercises in the Management of Mechanical Low Back Pain. INTI JOURNAL. 2023;2023(18):1-7.

22. Bonetti, F, Curti, S, Mattioli, S, et al., Effectiveness of a "Global Postural Reeducation" program for persistent low back pain: a non-randomized controlled trial. BMC MusculoskeletDisord .2010;11:285.