



COMPARATIVE STUDY BETWEEN THE IMMEDIATE EFFECTS OF EXTRACORPOREAL SHOCKWAVE THERAPY AND DRY NEEDLING THERAPY ON UPPER TRAPEZIUS TRIGGER POINTS

Physiotherapy

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ABSTRACT

A total of 30 participants were divided into two groups; ESWT group (n=15) and DNT group (n=15). Participants received one session of DNT and ESWT (2500-3000 shocks) and outcome variables were recorded before, immediately after, and after 48 hours, 72 hours and 1 week of treatment session. The results showed a significant improvement in pain, range of motion, function and pressure pain threshold which were measured using Visual Analogue Scale (VAS), a standard goniometer, Neck Disability Index (NDI) and F-meter between the two groups. The study helped to find out that both the therapies have a significant effect on muscle trigger point after a single session but ESWT showed faster and optimal results.

KEYWORDS

ESWT, DNT, Upper Trapezius trigger points, NDI

INTRODUCTION

Myofascial Trigger points (MSTPs) are hyperirritable spot(s) in a tight band of skeletal muscle which is painful on contraction and stretching evokes referred pain distant from the point where the trigger point is present.¹ A trigger point can be identified as two types- active or latent. An active trigger point presents with pain at rest, while doing any movement or on the application of direct pressure, whereas a latent trigger point, indicated pain and uneasiness when pressure is applied.²

An odd habit of a trigger point is its capacity to initiate reference to remote tissue or in the skin with no essential nociceptive aggravation. Pain is principally agitated in the muscle trigger point itself or it can also be provoked at a distance of approximately 4 cm from the trigger point, most of the times in case of active trigger point i.e. 47% as compared to latent i.e. 23%.³

Trapezius is an extremely common muscle affected by the MsTPs which is because of the reason that the trapezius is a postural muscle and since it is utilized throughout the day therefore making it prone to develop trigger point(s). A trapezius trigger point can be activated by working for extended periods of time, utilizing PCs with awful postures and writing, drawing or watching TV without sufficient rest breaks which can prompt localized pain. Shortening of trapezius muscle produces a reduction of rotation on the ipsilateral side and decreases lateral flexion on the contralateral side.

The treatment options for myofascial trigger points can be divided into non-invasive treatment. The non-invasive treatment involves massage therapy, stretching and ultrasound while the invasive treatment is about the infusion of meds, dry needling.⁴

Extracorporeal Shockwave Treatment (ESWT) is, as of now, considered a practical treatment for myofascial pain disorder. ESWT is done with electromagnetic stimulation and produces low-level energy wave, may be effective in increasing blood flow to the affected area. This technique was first created as an alternative to manual treatment method.⁵

Dry Needling Therapy (DNT) is a common technique utilized by physiotherapists for the treatment of different conditions. It has appeared to be successful in providing pain relief, increasing range of motion (ROM), and improvement in quality of life.

Considering the results in performed studies on effects of ESWT and DNT on upper trapezius trigger points and lack of comparative research on the effects of these two therapies, the motive of this study is to evaluate and compare the effects of a single session of these two methods for the reduction of pain, increasing ROM and improving function in patients with MsTPs in the upper trapezius muscle.

METHODOLOGY

Participants:

The study was conducted at A+OSM, Hauz Khas with STORZ Medical ESWT machine and Tian Xie acupuncture needles. A total of 30 participants who has presence of MsTP in the upper trapezius muscle were selected. Participants who were 18-40 years of age, had experienced pain in the neck or shoulder girdle region for at least 3 months, and palpation of diagnosed MsTP aggravated pain were included in the study.⁵ The participants were excluded if they had cervical radiculopathy, surgery of head/neck/shoulder girdle region, consumed NSAIDs or muscle relaxants, history of any neurological disorder, needle phobia, skin lesion, presence of infection at the site of MsTP or any systemic disorder.⁶ The participants were thoroughly informed about the study and an informed written consent was obtained prior to treatment session.

Procedure:

A total of 30 participants were selected to participate in the study with the help of convenient sampling method and were randomly divided into two groups; Group A (n=15) i.e. ESWT group and Group B (n=15) i.e. DNT group. The participants were then asked to lie in prone position on the treatment table.

The participants in Group A received 2500-3000 shocks⁷ with a repetition frequency of 5 Hz over the diagnosed trigger point(s) using STORZ Medical ESWT machine⁹ for 12-15 minutes. The participants in Group B received a single session of DNT by a dry needling expert being blinded to the recordings of baseline measurements.⁸

Assessments:

The outcome variables were measured before the treatment session, immediately after, and after 48 hours, 72 hours and 1 week of treatment session. Visual Analogue Scale (VAS) was used to measure the changes in pain, a standard goniometer was used to measure the cervical ROM, Neck Disability Index (NDI) was used to measure the presence of disability caused by pain and pressure pain threshold was measured using an F-meter.⁹

DATA ANALYSIS

MS Excel 2013 (15.0.4420.1017) was used to analyze the data. The measurements for VAS, ROM, NDI and F-meter were compared between the two groups using independent t-test and within the same group were analyzed by using the dependent t-test.

RESULTS

A combined number of 30 patients participated in the study that comprised of 19 females and 11 males. Out of the 15 participants in ESWT group 12 were females and 3 were males whereas DNT group comprised of 7 females and 8 males.

Table 1:

Column 1	Baseline	Post	48 hours	72 hours	1 week
VAS	5.93±1.43	3.87±1.24	2.87±1.64	2.4±1.18	1.4±1.05
ESWT	5.27±1.03	5.07±1.58	4±2.33	2.4±1.18	1.4±1.05
DNT					
ROM R	0	4±3.87	5.67±4.57	8±6.49	9±6.60
ESWT	0	3.33±4.08	7.33±4.16	8±5.27	9.67±6.39
DNT					
ROM L	0	6.33±5.49	8.8±6.33	9.33±6.77	10±6.54
ESWT	0	2.67±4.16	2.67±4.16	4±4.30	4.67±4.80
DNT					
NDI	13.87±10.26	-----	9.2±4.76	6.13±2.05	4.4±2.16
ESWT	21.87±11.62	-----	13.87±7.50	6.13±2.05	7.73±3.45
DNT					
F-meter	15.8±4.85	21.67±9.81	21.73±8.41	21.4±9.39	21.93±10.81
ESWT	7±3.40	7.07±3.08	8.6±2.55	9.73±2.28	10.6±3.13
DNT					

Comparison of baseline values with post, 48 hours, 72 hours and 1 week values respectively.

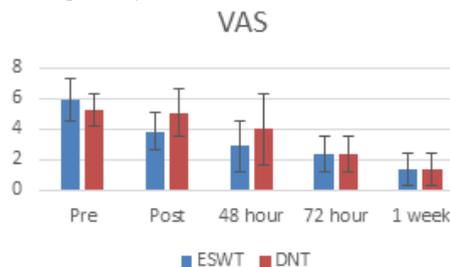


Figure 1: Comparison of VAS values between the two groups.

Results showed a significant reduction in VAS in both the groups where ESWT showed immediate decrease while DNT took up to 72 hours to show a significant effect. A significant improvement in ROM was noted on the contralateral side in both the groups in which ESWT showed a greater increase than the DNT. No significant increase in function was found before 72 hours in both groups and comparison showed greater improvement in the DNT group. Also, a significant improvement in pressure pain threshold was found in ESWT group till 1 week while DNT showed lesser but a constant and significant improvement was seen after 72 hours of treatment session.

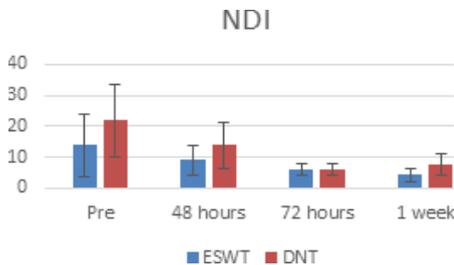


Figure 2: Comparison of NDI between the two groups.

DISCUSSION

Studies conducted in recent times have shown that ESWT was effective in pain reduction and improvement of function in musculoskeletal disorders. DNT has been presented as an effective method to treat MsTPs.¹²The encouraging effects of DNT could be because it increases blood flow and oxygenation which may neutralize contracture caused by muscle shortening.⁸

This study examined the effects of ESWT and DNT on upper trapezius trigger points and results of both the groups are very encouraging. A single session of ESWT and DNT showed improvement in symptoms in the patients with MsTPs in the upper trapezius muscle.

Average pain intensity was significantly reduced at 72 hour follow-up of muscle pain, maximum pain and for pain during ADLs. The average VAS score in both the groups showed a significant reduction but no significant difference between the two therapies was found at the final, 1 week follow-up. ESWT showed a significant reduction throughout the treatment in which the symptoms seemed to have reduced immediately after the treatment and continued to improve until the follow-up duration. On the other hand DNT showed no significant

effect until 72 hours after the treatment in which there was a significant reduction in symptoms between the 48 hour and 72 hour duration.

The measurements of ROM had showed an increase in ranges on the contralateral side to where the treatment was given. ESWT showed faster and more significant effect in the improvement of ranges on the contralateral side but significant increase was seen on the treatment side. No notable difference in improvement in ranges on the same side of treatment was found between the two therapies.

A significant reduction in disability was seen between the 48 hour and 72 hour follow-up in which ESWT showed better results as compared to DNT. Individually, both the therapies showed a significant improvement in function in which ESWT showed a constant improvement whereas DNT showed a faster reduction before 1 week.

The pressure pain threshold was measured with F-meter which was applied over the taut band to find out the minimum pressure that induces pain and the results showed improvement in both the therapies and ESWT showed an immediate increase that remained constant till 1 week.

In conclusion, we can say that both therapies are effective in reduction of symptoms but ESWT provides faster and optimal results.

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