

Effects of Ultrasound Therapy versus Transverse Friction Massage Along With Eccentric Exercise Program on Chronic Achilles Tendinopathy

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Abstract

Background: Achilles tendinopathy is highly prevalent and caused by intrinsic or extrinsic factors. The multiple minor traumas can lead to Achilles tendinopathy. Physical therapy treatment includes soft tissue mobilization and exercises. To compare ultrasound and transverse friction massage in chronic Achilles tendinopathy.

Methods: The study was randomized control trial. The non-probability convenient sampling technique was used to include n=70 patients having pain and activity limitation of Achilles tendon and randomly allocated in to groups A and B by lottery method. The outcome measuring tools were numeric pain rating scale (NPRS) for pain, the Victorian Institute of Sports Assessment-Achilles questionnaire (VISA-A) for severity and goniometry for ROM. The Group A was treated with transverse friction massage and the group B was treated with ultrasound therapy. Both groups also performed eccentric exercises. The assessment was done at the baseline on the 1st session, at end of the 9th and 18th session. The data was analysed by SPSS23 using independent-test and repeated measures ANOVA.

Results : The results of RM-ANOVA with pairwise comparison showed that both groups improve significantly ($p<0.05$) throughout the treatment duration with large effect size for all variables. While comparing the groups within dependent t-test, TFM group showed more improvement in all variables as compared to UST group ($p<0.05$) after 3rdweek as well as after 6thweek of intervention.

Conclusion: The Transverse friction massage (TFM) was more effective than ultrasound therapy (UST) when combined with eccentric exercises in improving pain severity of tendinopathy and ROM of ankle.

Keywords: UST, ROM, NPRS

Introduction

Insertional Achilles Tendonitis is a condition which involves gradual degradation of the Achilles tendon at its meeting point of the calcaneus or heel bone present in the foot. Insertional Achilles tendonitis causes inflammation, swelling, and pain in the heel. Aged individuals participating in repetitive high-impact activities such as running and hill climbing often get affected with insertional Achilles tendonitis. Overweight individuals

are also more prone to get affected with insertional Achilles tendonitis.¹

The ultrasound is a commonly used modality for tendinosis. It Improves microcirculation, migration and synthesis of collagen fibers to the achilles tendon. A study compared ultrasound (US) with friction massage and both techniques were effective in tendinitis. Eccentric exercises improve range of motion, functional activity, decrease pain and also effect on the rapid recovery of Achilles tendinosis. In a study when soft tissue treatment was added with eccentric exercises there was the better effect on function and pain in achille tendinosis. Transverse friction massage (TFM) is one of the Cyrix approaches the direction of massage must be transverse from direction of fibers of affected structure. It improves pain and mobility by breaking the adhesion and releasing the scar in muscle and tendon.²⁻⁵

The Ultrasound, transverse friction massage and eccentric exercises had effects on Achilles tendinopathy but there was no comparison of ultrasound with transverse friction massage when eccentric exercises are baseline treatment. This study aimed to compare transverse friction massage.

Methods

A randomized control trial on n=60 patients were included in the study who were 18 to 65 years of age, had pain on Achilles tendon palpation, the VISA-A scale score of >20 and <80 points and had activity limited due to symptoms for the last 6 months. The exclusion criteria were patients having AT surgery previously, intra-articular injection for the past 6months, having rheumatoid arthritis; and primary and secondary osteoarthritis. The Group A was treated with transverse friction massage (TFM) along with eccentric exercises (EE) and the group B was treated with ultrasound therapy (UST) along with eccentric

exercises (EE). A total of n=60 patients from n=60 samples were included, TFM group (n=30) and UST group(n=30). The Eccentric exercises of plantar flexion were performed while standing on the step with 6 sets of 15 repetitions. The gastrocnemius and soleus were targeted by 3 sets of plantar flexion while knee in extension and 3 sets while knee in slight flexion. The Ultrasound settings were pulse 20% duty cycle 8ms interval/2ms emission, 2ms burst of 1.0 MHz sine waves repeating at 100Hz, 0.5w/cm² of intensity. Transverse friction massage was performed by thumb for 3 min over 3cm-5cm area. The duration of treatment was 6 weeks with 3 sessions per week the assessment was done at the baseline on the 1st session, a tend of the 9th and 18th session. The Numeric pain rating scale (NPRS), a valid and reliable scale (ICC=0.63). To measure the severity of Achilles tendinopathy, self-administered,

Results

Table 1: Outcome

Variable		Group-A	Group-B	p-value
Mean age		42.61±5.52 years	41.23±4.21 years	>0.05
NPRS	0 week	8.52±0.56	8.36±0.50	>0.05
	3 rd week	5.21±0.21	6.23±0.48	<0.05
	6 th week	1.89±0.36	4.26±0.59	<0.05
VISA-A	0 week	26.36±4.23	26.98±4.26	>0.05
	3 rd week	59.36±5.36	48.35±5.21	<0.05
	6 th week	84.36±5.28	72.39±6.24	<0.05
Planterflexion	0 week	12.35±4.02	12.25±4.05	>0.05
	3 rd week	23.21±4.16	18.36±5.08	<0.05
	6 th week	31.28±4.58	23.68±5.21	<0.05
Dorsiflexion	0 week	5.23±1.05	5.23±1.05	>0.05
	3 rd week	10.23±2.15	8.36±1.12	<0.05
	6 th week	16.32±3.21	12.08±2.31	<0.05

Discussion

VISA-A score of eccentric exercises and ultrasound in Achilles tendinopathy in our study comparable to a meta-

analysis was conducted in 2019. In that meta-analysis, a study compared two groups, group A was treated with deep friction massage (DFM), ultrasound and in group B eccentric exercises were added with deep friction massage, ultrasound. The mean difference of VISA-A for group B was 35 ± 3.00 and for group, A was 22 ± 10.00 . In current study, the mean difference of VISA-A for transverse friction massage group was 57.19 ± 0.18 and for the ultrasound group was 44.5 ± 0.96 . In the previous study the treatment plan was of 12 weeks with 1 week interval. In current study treatment was of 6 weeks but was continuous. That 1 week pause of treatment in previous study can affect the outcomes. Another study in this meta-analysis also uses DFM and ultrasound for AT and there was no significant improvement in VISA-A but in current study, there was a significant improvement in VISA-A score for both groups. In That meta-analysis, deep friction massage showed better improvement in VISA-A as compared with traditional physical therapy. In the current study, ultrasound was compared with transverse friction massage and eccentric exercises were common in both groups. By comparing the current study with this meta-analysis it can be concluded if eccentric exercise is added with transverse friction massage or ultrasound there will be more significant positive effects on Achillestendinopathy.⁶⁻⁷

Conclusion

The transverse friction massage (TFM) was more effective than ultrasound therapy (UST) when combined with eccentric exercises in improving pain and severity of tendinopathy.

References

1. Rio E, Moseley L, Purdam C, Samiric T, Kidgell D, PearceAJ,etal.Thepainoftendinopathy:physiologicalo

1. rpathophysiological?Sportsmed.2014;44(1):9-23.doi10.1007/s40279-013-0096-z
2. Sobhani S, Dekker R, Postema K, Dijkstra PU. Epidemiologyof ankle and foot overuse injuries in sports: a system atic review. Scandjmedscisports.2013;23(6):669-86 . doi. Org /10.1111/j.1600-
3. .WaldeckerU,HofmannG,DrewitzS.Epidemiologicinv estigationof1394feet:coincidenceofhindfootmalalign ment and Achilles tendondisorders. FootAnkleSurg.2012;18(2):119-23.
4. Franceschi F, Papalia R, Paciotti M, FranceschettiE, DiMartino A, Maffulli N, et al. Obesity as a risk factor fortendinopathy:a systematicreview.Int.J.Endocrinol.2014;2014.
5. Young IA, Cleland JA, Michener LA, Brown C. Reliability, construct validity, and responsiveness of the neck disabilityindex, patient-specific functional scale, and numeric painrating scale in patients with cervical radiculopathy. Am JPhysMedRehabil.2010;89(10):831-9.
6. McCormack J, Underwood F, SlavenE, Cappaert T. The Minimum clinically important difference on the visa-a andlefs for patients with insertional achilles tendinopathy. Int J sports Phys Ther.2015 ;10(5):639-44.23.
7. Jayaseelan DJ, Mischke JJ, Strazzulla RL. Eccentric exercise for Achilles tendinopathy: A narrative review and clinical decision-making considerations. J. Funct. Morphol. Kinesiol.2019;4(2):34