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THE EFFECTS OF TRADITIONAL THAL SELF-MASSAGE USING WILAI MASSAGE STICK™ IN PATIENTS ON UPPER TRAPEZIUS WITH MYOFASCIAL TRIGGER POINTS: A RANDOMIZED CONTROL TRIAL

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ABSTRACT: The purpose of this study was to investigate the effects of traditional Thai self-massage using Wilai massage stick™ in patient with upper trapezius with myofascial trigger points. Sixty patients were randomly allocated to either a massage group using Wilai massage stick™ or a medication group. Both groups were advised to have the same daily stretching exercise. Pain intensity, pressure pain threshold (PPT) and tissue hardness were assessed at baseline, and the fifth day after the last treatment session. The results showed that after 5 days of treatment, there are significant improvement in all assessment time points ($p<0.05$). The adjusted post-test mean values for pain intensity, PPT and tissue hardness were significantly better in the massage group than medication group ($p<0.05$). We conclude that traditional Thai self-massage using Wilai massage stick™ provides better results than taking medication for patients who have upper trapezius pain associated with MTrPs.

Keywords: Massage stick, Myofascial trigger point, Upper trapezius, Thai Massage

1. INTRODUCTION

Myofascial trigger points (MTrPs) could result from various causes, including muscle overload, severe muscle injury from accident, post-operative conditions leading to the stiffness or immobility of the affected muscles, mental stress, mild injury that left untreated for a long time [1]. The common treatments are either medication and/or massage. In some patients, drug treatment results in gastrointestinal tract side effects. In the past 10 years, non-drug treatment such as massage, chiropractic and acupuncture have become more popular [2]-[3].

Traditional Thai massage (TTM) is one of the oldest forms of Thai remedies. TTM is promoted as an effective means of alleviating pain. In a study in the therapeutic effects of TTM on patients with scapulocostal syndrome, it was found that was effective in alleviating pain, muscle tension, and anxiety [4]. A study comparing the effects of TTM and Swedish massage on patients with back pain also indicated that both type of massage resulted in pain alleviation [5]. Despite it proven benefits, massage was done mainly by therapist. Self-massage is generally use for people but there are some limitations of use for back region. Therefore, a self-massage device to serve people's need for use to relieve muscle tension and pain. Wilai massage stick was a device under investigation because it can be used to determine the location of trigger points (TrPs) and to apply pressure massage line according to TTM principle. A pilot study suggested that it could decrease pain and increase AROM [6]. Our aim to evaluated the effects of Wilai massage stick™ (TTMW) on pain intensity, pressure pain threshold, and tissue hardness in patients with upper trapezius muscle pain associated MTrPs.

2. SUBJECTS AND METHODS

A randomized controlled trial, was conducted at Lad Lum Kaew Hospital, Thailand. The study was approved by Ethics Review Committee for Research Involving Human Research Subjects of Health Science Group of Chulalongkorn University (COA No.082/2557).

The main inclusion criteria were, aged 18-60 year, VAS pain ≥ 3, suffered from upper trapezius pain for longer than 3 months. Had with diagnosis 1) taut band, 2) nodules, and 3) spot tenderness. Patients should not have received any analgesic or anti-inflammatory drug within two days of entering the study. Those individual, who had undergone surgery, and those with dislocation, fractures, neurological deficits, systemic disorders, or contraindication to treatment were excluded. Informed consent was obtained. Patients who met the inclusion criteria were randomly allocated to either the massage treatment or drug treatment group. Outcome measures:

Pain intensity by visual analogue scale (VAS): Patients were asked to indicate the average

intensity of pain by pointing to a point along a 10-cm line; 0-cm indicating no pain and 10-cm severe pain. The pressure pain threshold (PPT) was the point where the patient started to experience pain by using a tissue hardness meter/algometer (OE-220, Japan). The measurement of tissue hardness meter/algometer (OE-220, ITO, Japan) equipped with a 10-cm diameter plastic disc. Pressure was exerted vertically on the painful pressure point to be examined, and tissue hardness was automatically recorded.

All outcome measures were evaluated by physio therapist who was not informed of subject's group assignment. Assessments were done pre-test the first day and post-test the fifth day treatment sessions.

Statistical analysis: Characteristic data were as mean±(SD) and percentage. An unpaired t-test was used to compare differences of massage group and drug group. The significance was set at an alpha level of 0.05.

In the Wilai massage stick^{TM} group, provided with instructions regarding self-massage according to TTM principles. The back was to be divided into the left side and the right side using the spinal processes as the points of reference [Fig.1] For each side, there are two massage lines. The first one was about the width of a finger from the spinous processes, and the second line was about the width of three fingers from the spinous processes. Each line is further comprised of eight on the back region. Then self-massage was done in a self-massage was done in a sitting or standing posture, starting from the first point along the massage line on the left side of the back. The pressure was gradually increased until mild pain was felt, maintained for 5 seconds, and then releases. This was performed for all the eight points and then repeated 5 times. The procedures were performed for all the massage lines of both sides, lasting approximately 10 minutes. Medication group took a 400 mg. Ibuprofen tablet three times a day after each meal. For the both group did muscle stretching 2 minutes every day for 5 days

3. RESULTS

Details of demographic data and health characteristics were shown in (Table 1). The average age of TTMW were 42.85±10.06 and 41.67±11.72 years, respectively. The data demographic data were equally balanced between two groups. Clinical characteristics of patients upper trapezius pain shown that no significant differences were found between the groups on any of these measures.

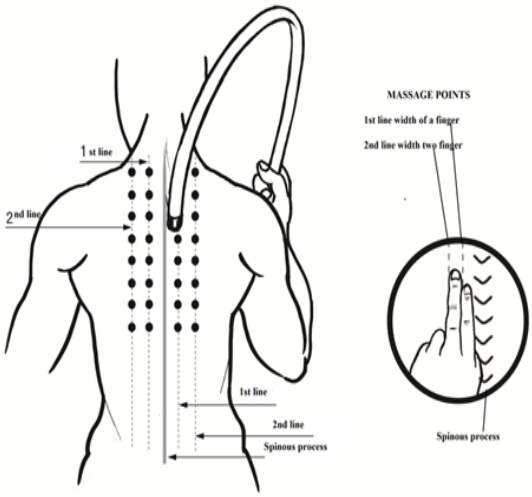

Fig. 1 The massage of TTM [8]

Table 1 Demographic and characteristic

	Massage group (N=30)		Control group (N=30)	
	Mean	SD	Mean	SD
Age (years)	42.85	10.06	41.67	11.72
Weight (kg)	59.73	14.77	62.46	11.37
Height (cm)	159.79	7.90	159.30	7.44
VAS	5.43	1.45	5.20	1.51
PPT	1.96	0.58	1.77	0.52
Tissue hardness	47.74	6.78	46.09	6.36

Table 2 Comparison of the outcome measure between pre-test and post-test assessments in the TTMW and control group (paired t-test) (Mean±SD)

Outcome	Group	Pretest	Post-test	P-value
Pain intensity (VAS)	TTMW	5.4±1.4	0.8 ±0.5	0.5
	Control	5.2±1.5	1.87 ±1.3	0.5
Pressure pain threshold (kg/cm2)	TTMW	1.9 ±0.5	3.96 ±0.6	0.5
	Control	1.7±0.5	2.5±0.4	0.5
Tissue Hardness	TTMW	47.7±6.7	38.1±7.6	0.5
	Control	46.0±6.3	44.5±6.5	0.5

Note: TTMW = Wilai massage stick^{TM}, Control= Ibuprofen. P < 0.05 statistically differences from pretest

Table 3 Comparison of the adjusted mean and 95% CI outcome measures

Outcome	Post-test (Mean±SD)			
	TTMW	Control	Difference (95%CI)	P-value
Pain intensity (VAS)	0.8±0.8	1.8±1.3	-1.1(-1.6 to 0.6)	<0.05
Pressure pain threshold (kg/cm2)	3.9±0.6	2.5±0.4	1.3 (1.1 to 1.5)	<0.05
Tissue hardness (%)	38.13± 7.67	44.5±6.5	-7.9(-9.7 to -6.1)	<0.05

Note: TTMW = Wilai massage stick^{TM}, Control= Ibuprofen. P < 0.05 statistically differences from pretest

4. DISCUSSION

This results of this study provide evidence that TTMW is effectiveness treatment reducing pain and improving upper trapezuis muscle pain in patients with MTrPs. The finding of this study suggest that TTMW on the trapezius area was effective in decreasing pain intensity with MTrPs can reduce after 5 days of treatment with either TTMW or control group. This finding consistent with previous studies ischemic pressure using Thera cane and stretching exercise found comparable results. They used the combination of ischemic pressure followed by sustained stretching to treat neck and upper back pain. The author reported reducing in pain intensity after 5 days of treatment [9]. In addition the study of Buttagate used the TTM and stretch exercise to treat upper back pain, and reported a reduction in present pain of treatment. After the patients received treatment with TTMW on the upper trapezius area, PPT was significantly increased at the end of 5 days of treatment. This results similarity from the study of Hantan who applied ischemic pressure localized at the MTrPs and found an improvement in the PPT at the end of a 5 days home program for patients with neck and upper back [10]. Moreover, the present finding support the study of Gulick used ischemic pressure with Backnobber II device on discomfort with MTrPs. at which revealed PPT from 31.74±12.8 at baseline to 44.20±13.33 at the end of a week [43]. The present study demonstrated that tissue hardness was reduced after treatment compare baseline. This indicated that the treatment by TTMW was effective in decreasing tissue hardness, consistent with the results of a previous study which found that use of deep massage on low back pain. The authors reported reduction in tissue hardness after treatment.

5. CONCLUSION

The results of this study indicated that a traditional Thai self-massage using a Wilai massage stick^{TM} to the upper trapezius area for the effective in reducing pain, tissue hardness increasing PPT in patients associated with myofascial trigger point. This treatment technique is a non-pharmacological management with no side effects. A Wilai massage stick^{TM} can therefore, be promoted as an alternative treatment in cases of limited number of therapists and those patients who have risk effects from medication.

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