EFFECTS OF TRADITIONAL THAI SELF-MASSAGE USING A MASSAGE STICK VERSUS IBUPROFEN ON UPPER BACK PAIN ASSOCIATED WITH MYOFASCIAL TRIGGER POINTS: A PILOT STUDY

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ABSTRACT:

Background: This study aimed to preliminarily verify the effects of traditional Thai self-massage using Wilai massage stick™ versus Ibuprofen on upper back pain associated with myofacial trigger points (MTrP).

Methods: Ten participants who had been diagnosed with MTrP in the upper back muscles were randomly allocated in a self-massage group and a medication group. Five patients of the self-massage group were taught to use a Wilai massage stick™ and performed a daily 10-minute session of self-massage on the upper back. The medication group had 400 mg of ibuprofen three times daily after meals. Both groups received the treatments for 5 days. The visual analog scale of pain perception (VAS), and the active range of motion (AROM) of neck were measured before the first day and after the fifth day treatment sessions.

Results: The results showed that after 5 days of treatment, the self-massage group experienced less VAS pain than the medication group (1.80 ± 0.40 versus 4.20 ± 1.64, respectively). The pain score between the two groups was significantly different (2.40 with 95% confidence interval 4.15 to 0.64, p= 0.01). Additionally, the AROM was significantly increased after the treatment with the self-massage stick in flexion (1.40 ± 0.41, 2.00 ± 0.00, p =0.01), lateral flex to Left (8.60 ± 0.89, 10.20 ± 1.09, p= 0.03), lateral flex to the right (9.00 ±0.00 versus 10.20 ± 0.44, p = 0.01).

Conclusions: In conclusion, self-massage using Wilai massage stick™ may provide effective treatment for patients with MTrPs.

Keywords: Thai massage, Massage stick, Trigger points, Back pain, Ibuprofen

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INTRODUCTION

Myofascial pain trigger points (MTrP) are common problem among those in their working age that may cause chronic pain to certain muscle groups. Patients usually experience pain without being able to identify its location. Severity differs in each individual, ranging from occasional mild pain healing over time to severe pain disabling motion [1]. Upper back pain resulting from MTrP is often found in general practice clinics where patients seek medical care. It is believed that this type of pain is caused by shortening sarcomere with such physical signs as regional pain, which may be acute in case of overload stress or chromic [2]. Specific characteristics of upper back pain include TrPs, resulting in referred pain. TrPs refer to hyperirritable points with abnormally lower pressure pain thresholds (PPTs). TrPs fall into two types: active TrPs and latent TrPs. Active TrPs are those characterized by pain in normal conditions even without exerting force, whereas latent TrPs are defined as those expressing referred pain only with stimulation or exerting force. TrPs take the form of that bands inside muscle tissues from which 3-6 mm nodules can be felt [2, 3]. MTrPs can be treated in several ways, including pharmacological approaches, such as taking paracetamal, and non-steroidal anti-inflammatory drugs (NSAIDs). The use of medication for myofascial pain syndrome is

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somewhat debatable. NSAIDs are beneficial as analgesics and reduce inflammation, especially to make the patient more comfortable while exercising and returning to activities of daily living. There is no evidence, however, for an anti-inflammatory effect for NSAIDs in myofascial pain syndrome [4]. In primary health care the therapy is frequently initiated with the prescription of NSAIDs as well as non-pharmacological approaches, such as ischemic compression [5, 6] needling, [5, 7], vapo-coolant spray and stretch, [8] electrical stimulation, [9], laser therapy, [10] ultrasound, [11, 12], and massage [5, 13, 14]. Among the non-pharmacological approaches, massage is an effective alternative treatment that is becoming more popular. Traditional Thai massage was found to relieve pain as well as increase skin temperature and body flexibility in patients with muscle pain [15]. A comparison of the effectiveness of Swedish massage and traditional Thai massage showed that both could reduce pain and TrPs [16]. Despite its proven benefits, massage is done mainly by a 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 was introduced. From a study done by Hanten, the author found the effects of a home program of self-applied ischemic compression followed stretching reduction in pain [6]. Another study revealed that ischemic pressure using a Backnobber II device on discomfort associate with myofascial trigger points could reduce MTrP irritability [17]. This can in fact be an effective procedure since a patient can determine locations of pain, and duration, frequency, and force of massage on his own. In addition, a self-massage is generally use for people but there are some limitations of use for upper back region. Self-massage requires the use of a Wilai massage stick™. So far, research has not been reported on the effect of traditional Thai massage self-massage using a Wilai massage stick™. Therefore, the aim of this study was preliminarily verify the effects of traditional Thai self-massage using a Wilai massage stick™ versus ibuprofen in patients with upper back pain associated myofascial trigger points.

MATERIALS AND METHODS

The present study was approved by Ethics Review Committee for Research Involving Human Research Subjects of Chulalongkorn University (COA No.082/2552).

Participants

The study was conducted in the Department of traditional Thai medicine, Lat Lum Kaoe Hospital Pathum Thani Province. The participants with upper back pain associated with myofascial trigger points were screen by interviewing the history and physical examination by physical medicine. They were males and females who age between 18-60 years old participate in the study and underwent screening with the following criteria.

Inclusion criteria

1. Had suffered from upper back pain for longer than 12 weeks and at least one trigger point in the upper back area. Are diagnosed with and have the following physical signs: spot tenderness in the taut bands and with recognition [5]
2. Had stopped painkillers or anti-inflammatory medications at least two days prior to participating in the research.
3. Had ability to follow instructions
4. Contra-indications to NSAIDs: active peptic ulcer or allergy to NSAIDs

Exclusion criteria

Had spinal trauma or underwent spinal surgery or suffered from arthritis, herniated disc, or acute myositis.

After signing a consent form, the participants fulfilling the inclusion criteria were randomized into the treatment group and the control group. Patients in treatment group received Wilai massage stick™ while control group received Ibuprofen.

Study intervention

The period of investigation was five days for both groups. Before and after the treatment, their pain intensity was measured using the visual analog scale (VAS), and their active range of motion (AROM) was assess a measuring tape.

Control group

The participants in the control group were received instruction on self-care as usual and were prescribed 400 mg Ibuprofen tablets three times a day for 5 days.

Wilai massage stick™

The participants were trained by applied Thai traditional medicine who one researcher assistant be permitted from expert. They were instructed how to hold the Wilai massage stick™ (Figure 1) about 60 minutes for skill and stop two day before receiving the first treatment and how to carry out massage, including the procedures, force, massage lines and points. In this research, the points of reference were the spinous processes of thoracic and lumbar spines. As shown in (Figure 2) the areas on the left and right of the spinous processes were both comprised of two massage lines: Line 1 and Line 2. According to the



Figure 1: Holding a Wilai massage stick™ for back massage

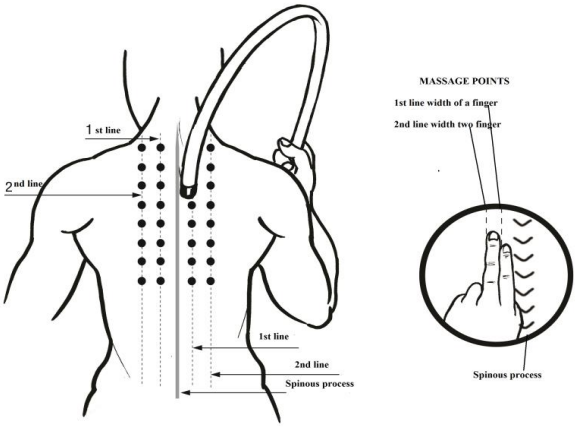


Figure 2: The meridian massage lines of TTM on the upper back [18]

theory of traditional Thai massage, line 1 and 2 were back meridian lines which were located about one-finger width and two-finger width from the spinous processes, respectively. Each line was further made up of eight massage points. Finally, a massage manual and a Wilai massage stick™ are given to each participants, who were then do a ten-minute self-massage every day for a period of 5 days. The subjects were asked using only upper back and only one per day.

Once the training was complete, the participants began massaging with a Wilai massage stick™. After pushing the handle forward and identifying location of pain by themselves, the subjects began from the first massage line on the left of the spine. They were advised to exert sufficient force for each press until they felt dull or mild pain, maintain the press for five seconds, and then release. The same step was repeated five times for eight massage points along the line. Next, the participants changed to the second massage line on the left and the remaining two massage lines on the right of the spines.

The present study used a checklist form for monitoring the subject compliance a Wilai massage stick™ or taken Ibuprofen.

Outcome measures

Pain intensity by visual analog scale (VAS): patents were asked to indicate the average intensity of pain by pointing to a point along a 10-cm line (visual analogue scale); 0 cm indicating no pain and 10 cm severe pain.

The active range of motion was used for tape measured with in degree of motion. A range of cervical spine movement for flexion, extension and lateral flexion right/left were assessed. Each movement was measured three times and the average value used for the statistical analysis.

DATA ANALYSIS

Demographic data were presented as mean ± standard deviation (SD) and percentage. An unpaired t-test was used to compare differences of traditional Thai self-massage using a Wilai massage stick™ versus ibuprofen in patients with upper back pain associated myofascial trigger points. The significance was set at an alpha level of 0.05.

Table 1 Demographic data

Characteristics	Wilai massage stick™ N=5	Ibuprofen N=5	Total
Gender: (%)			
Female	1(20)	3(60)	4(40)
Male	4(80)	2(40)	6(60)
Age (years);Mean ± SD	49.60±8.20	50.80 ± 2.86	50.20 ± 3.77
Weight; Mean ± SD	58.80 ± 8.11	60.80 ± 14. 22	59.80 ± 17.33
Height; Mean ± SD	164.20 ± 4.92	157.40 ± 5.73	160.80 ± 0.57
BMI; Mean ± SD	21.83± 3.23	25.89 ± 5.16	23.86 ± 1.36
Occupation (%)			
Sales and office worker	1(10)	-	1(10)
Farmer and labor	3(60)	3(60)	6(60)
House hold	1(20)	2(40)	3(30)

Table 2 Comparison of outcome measures between the massage stick and Ibuprofen at pretest-posttest

Characteristics	Group	Pre-test (Mean ± SD)	Post-test (Mean ± SD)	Difference (95% CI)	*P-value*	Different between Two group (95%CI)	*P-value*
Pain(VAS)	Wilai	4.20 ± 1.30	1.80 ± 0.44	2.40 (0.73 to 4.06)	0.016	-2.40 (-4.15 to -0.64)	0.014
	Ibuprofen	5.20 ± 1.30	4.20 ± 1.64	1.00 (-0.75 to 2.75)	0.189		
Neck flexion	Wilai	2.59 ± 0.43	1.40 ± 0.41	1.19 (0.73 to 1.64)	0.002	-0.60 (-1.03 to -0.16)	0.012
	Ibuprofen	2.66 ± 0.32	2.00 ± 0.00	0.66 (0.26 to 1.05)	0.010		
Neck	Wilai	17.80 ± 2.77	19.20 ± 2.94	-1.40 (-2.08 to -0.71)	0.005	0.20 (-3.40 to 3.80)	0.901
extension	Ibuprofen	17.76 ± 1.40	19.00 ± 1.87	-1.24 (-2.59 to 0.11)	0.064		
Left lateral	Wilai	10.80 ± 0.83	8.60 ± 0.89	2.20 (1.64 to 2.75)	0.001	-1.60 (-3.05 to -0.14)	0.035
flexion	Ibuprofen	11.20 ± 0.83	10.20 ± 1.09	1.00 (0.12 to 1.87)	0.034		
Right lateral	Wilai	11.20 ± 0.83	9.00 ± 0.00	2.20 (1.16 to 3.23)	0.004	-1.20 (-1.66 to -0.73)	0.004
flexion	Ibuprofen	12.00 ± 1.58	10.20 ± 0.44	1.80 (0.18 to 3.41)	0.037		

$P < 0.05$

RESULTS

Out of the ten participants, six were males and four were females aged 50.20 ± 3.77 with an average weight of 59.80 ± 17.33 kg, an average height of 160.80 ± 0.57 cm, and an average BMI of 23.86 ± 1.36 kg/m., 60% of them were laborers, while the rest were housewives and sales and office worker. The baseline characteristics were differed little between two groups (Table 1) Normal distribution of the statistical data at the baseline in the present study, despite a small sample size, may be due to highly selective inclusion and exclusion criteria.

The pain (VAS) was significantly decreased from baseline value. The pain of patients in treatment group reduced from 4.20±1.30 to 1.80±0.44 after treatment. The difference between baseline and after treatment was 2.40 (95%CI 0.73 to 4.06). For the control group, the pain reduced from 5.20±1.30 to 4.20±1.64 after treatment. The difference between baseline and after treatment was 1.00 (95%CI -0.75 to 2.75). However, when comparing the two groups, it was found that, the pain of the treatment group was lower than the control group. The difference between both groups was -2.40 (95%CI -4.15 to -0.64) (Table 2).

DISCUSSION

This pilot study aimed to compare the effectiveness of self- massage using a Wilai massage stick™ and ibuprofen on relieving upper back pain in patients with myofascial trigger points. The finding of this study suggest that Wilai massage

stick™ on the upper back area is effective in decreasing pain (VAS) with MTrPs can reduced after 5 days of treatment with either Wilai massage stick™ or Ibuprofen. These results demonstrate the effects of both groups, consistent with the results of a previous study which found that the use of a self-massage tool called "Thera cane" in conjunction with muscle stretch for five days could alleviate pain in MTrP patients [6]. In addition, the present finding support the findings of Gulick et al which revealed that six times of a second massage per day every other day for one week would be effective in pain alleviation [17].

This study evaluated the effects of Wilai massage stick™ in patients with MTrPs. After treatment with Wilai massage stick™ on upper back area there was a direct increase in active range of motion (AROM) in all direction except extension in control group. The result of comparison between the two groups showed that Wilai massage stick™ increased the AROM in comparison with control group after treatment, indicating that treatment of restricted AROM by Wilai massage stick™ among patients upper back pain with MTrPs was superior to treatment by control group except extension. It is possible that applying self-massage could affect muscle relaxation of the upper back muscles including trapezius, erector spinae, multifidii, and rhomboids where the massage points cover. In addition, applying self-massage could increase pressure pain threshold of those muscles just like the effects of manually massage. The effectiveness of ischemic compression may be attributed to the role of pressure plays in promoting the blood circulation to and the flexibility of taut bands and tense muscles [15].Thus this type of massage affects both muscle pain and range of motion in this patient population.

The present study was limited by small sample size. Further study, the larger sample size, and long term effect may obtain more reliable results.

CONCLUSION

Based on the findings of this research, it may be concluded that a Wilai massage stick™ is a tool applying the principles of ischemic compression and traditional Thai massage that one can use to press along massage points in order to reduce pain. Due to its convenience of use, effectiveness, and adjustability for the right force, a Wilai massage stick™ may be another alternative treatment for MTrP patients, especially those who are allergic to or wish to avoid the undesirable effects of some medications such as anti-inflammatory drugs.

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