



Original article

The effectiveness of Long's manipulation on patients with chronic mechanical neck pain: A randomized controlled trial



Jian Hua Lin^{a,b}, Tong Shen^c, Raymond Chi Keung Chung^a, Thomas Tai Wing Chiu^{a,*}

^a Department of Rehabilitation Sciences, The Hong Kong Polytechnic University, Hung Hom, Hong Kong

^b Department of Physical Therapy, Shanghai Sunshine Rehabilitation Center, Shanghai, PR China

^c Department of Rehabilitation Medicine, The First Affiliated Hospital of Guangzhou Medical College, Guangzhou, PR China

ARTICLE INFO

Article history:

Received 30 July 2012

Received in revised form

24 October 2012

Accepted 19 November 2012

Keywords:

Spinal manipulation

Neck pain

Cervical spine

Randomized controlled trial

ABSTRACT

Long's manipulation (LM) is a representative Chinese manipulation approach incorporating both spinal manipulation and traditional Chinese massage (TCM) techniques. This randomized controlled trial (RCT) aimed to compare the immediate and short-term relative effectiveness of LM to TCM on patients with chronic neck pain. Patients were randomly assigned to either LM group or TCM group. LM group was treated with Long's manipulation, while the TCM group received TCM therapy. Patients attended 8 sessions of treatment (one session every three days). Outcome measures included neck disability (Northwick Park Neck Pain Questionnaire; NPQ), pain intensity (Numeric Pain Rating Scale; NPRS), patient perceived satisfaction of care (PPS) (11-point scale), craniocervical angle (CV angle) and cervical range of motion (ROM). A blinded assessor performed assessment at baseline, immediate after treatment and 3 months post treatment. LM group achieved significantly greater improvement than TCM group in pain intensity ($p < 0.001$), neck disability ($p = 0.049$) and satisfaction ($p < 0.001$) up to 3-month follow-up. There was no significant difference in improvements in CV angle and most of cervical ROM between groups ($p = 0.169 \sim 0.888$) with an exception of flexion at 3-month follow-up ($p = 0.005$). This study shows that LM could produce better effects than TCM in relieving pain and improving disability in the management of patients with chronic mechanical neck pain.

© 2013 Published by Elsevier Ltd.

1. Introduction

Neck pain is a common health problem recognized as a significant source of disability in the general population (Picavet and Schouten, 2003; Hogg-Johnson et al., 2009; Linaker et al., 2011). It was reported that the age and gender standardized annual incidence of neck pain was 14.6% in general population (Côté et al., 2004). In Hong Kong, an investigation carried out by Chiu et al. (2010) found that the one-year prevalence of neck pain was 53.67%. Surveys of neck pain in Chinese Mainland demonstrated that the prevalence at any given time ranged from 13.3% to 64.5% (Wang et al., 2004; Wu et al., 2006; Ye et al., 2007; Zhong et al., 2010).

Although little is known about the causes and mechanism of chronic mechanical neck pain (Borghouts et al., 1998), occipital cervical manipulation is commonly used to treat these patients (Gross et al., 2010). A great deal of research has investigated the effect of cervical manipulation in the management of neck pain (Bronfort et al., 2001; Muller and Giles, 2005; Martínez-Segura et al., 2006). The results indicate that cervical manipulation could

relieve pain, increase cervical mobility and improve disability for patient suffering neck pain (Martínez-Segura et al., 2006; Dunning et al., 2012; Grayson et al., 2012). There is also evidence showing that cervical manipulation could influence the muscle strength (Cleland et al., 2004), somatomotor reflex (Pickar, 2002) and the sympathetic nervous system (Schmid et al., 2008; Sillevius et al., 2010). In the latest Cochrane review, researchers concluded that cervical manipulation was superior to control in short-term pain relief with low quality evidence (Gross et al., 2010).

Massage is another traditional intervention for the pain-related conditions, especially for the musculoskeletal disorders (Lewis and Johnson, 2006). Despite the type of massage, the various techniques are believed to improve the compliance of soft tissue by mobilizing and elongating the connective and shorten soft tissue (Irnich et al., 2001; Cen et al., 2003; Sefton et al., 2011). There is evidence showing that massage could increase the blood flow in the massaged region as well as the adjacent region (Ouchi et al., 2006; Sefton et al., 2010). In the management of patient with neck pain, sufficient studies have demonstrated that massage can reduce muscle soreness and tension (Danneskiold-Samsoe et al., 1983; Weerapong et al., 2005; Buttagat et al., 2012), raise the pain threshold (Frey Law et al., 2008) and reduce the pain (Cen et al., 2003; Mitchinson et al., 2007; Jane et al.,

* Corresponding author. Tel.: +852 27666709; fax: +852 23308656.

E-mail address: Thomas.Chiu@inet.polyu.edu.hk (T.T.W. Chiu).

2011). Systematic reviews have demonstrated that the effectiveness of massage for neck pain remains inconclusive due to the limitations of the existing research (Haraldsson et al., 2006; Lewis and Johnson, 2006; Ezzo et al., 2007; Plastaras et al., 2011).

Chinese manipulation is a common intervention used to treat neck pain in China. There are several differences in theoretical and practical aspects between Chinese manipulation and occidental manipulation. For example, Chinese manipulation is based on the channels and collaterals theory in which the symptoms of neck pain patient are believed to result from channel blockage and joint displacement (Lin et al., 2012). Consequently, the Chinese manipulation approach uses traditional Chinese massage (TCM) to clear the channels and utilize joint manipulation to restore joint alignment. The Chinese manipulation techniques for cervical spine can be performed with patient in side-lying, supine lying or in sitting. Some special Chinese manipulation techniques are specifically developed for patient with positive response in vertebrobasilar insufficiency test which is considered as a contraindication for cervical manipulation (Wei and Yang, 1995). Although a number of studies reported that Chinese manipulation could provide pain relief for patient with neck pain, the effects of Chinese manipulation on mobility and disability are still not well examined due to the methodological weakness of existing studies (Lin et al., 2012).

Long's manipulation (LM) is one of the commonly used Chinese manipulation approaches for neck pain in Chinese Mainland. Despite its popularity, little research has investigated the effectiveness of LM in the management of chronic mechanical neck pain. In a randomized controlled trial on cervical spondylotic radiculopathy, Fan et al. (2010) demonstrated that the combination of LM and abdominal acupuncture had achieved statistically higher effective rate than LM and abdominal acupuncture, at the end of intervention and at one month follow up. Another randomized controlled trial compared the effectiveness of LM to that of multi-physiotherapy protocol for patients with cervical spondylotic radiculopathy (Huang and Pan, 2008). The results indicated that the LM could significantly relieve the symptoms for patient with cervical spondylotic radiculopathy. However, previous trials were not specific for chronic neck pain patients and the outcome measures were not validated which made their results questionable.

Sufficient research with reasonable quality has evaluated the clinical effectiveness and neurophysiological effects of occidental manipulation on patients with neck pain (Gross et al., 2010). However, no study has examined the effectiveness of the LM in treating chronic mechanical neck pain. It remains unclear that whether such a combination of soft tissue massage and joint manipulation approach could produce changes to health status for this population, as determined with comprehensive outcome measures. Given the high prevalence and economical cost of neck pain, it is necessary to evaluate the effectiveness of LM in management of patients with chronic mechanical neck pain.

This perspective randomized controlled trial intended to compare the immediate and short-term relative effectiveness of LM to TCM on pain, disability and mobility for patients with chronic mechanical neck pain. It was hypothesized that the Long's manipulation could decrease pain intensity, improve the disability and increase the craniovertebral angle and cervical range of motion when compared to traditional Chinese massage.

2. Methods

2.1. Participants

This randomized controlled trial was approved by the ethic review board of the Hong Kong Polytechnic University. Patients were recruited in outpatient clinic of the first affiliated Hospital of

the Guangzhou Medical College from February 2011 to March 2012. Explanation of the trial was given to each patient. After informed consent was obtained, the patient was assessed and then randomly allocated to either the LM group (experimental group) or the TCM group (control group).

Individual was diagnosed as mechanical neck pain by a clinical doctor according to the following criteria as recommended by van Schalkwyk and Parkin-Smith (2000): (1) neck pain without neurologic or vascular deficit, (2) restriction of movement of a motion segment(s) identified by static or motion palpation, (3) possible discomfort with joint challenge/pressure, (4) abnormal changes of cervical curve and alignment in radiological test, (5) neck pain referred from peripheral joints or viscera, rheumatic fibromyalgia and neurasthenia were excluded.

Patients who satisfied the following inclusion criteria: a diagnosis of mechanical neck pain, more than three month history of neck pain, age between eighteen and sixty-five and being able to read Chinese were recruited. The exclusion criteria included: (1) contraindications to manipulation (e.g., infection, malignancy, osteoporosis, spinal fracture, inflammatory conditions, nerve root involvement, etc.), (2) history of whiplash or surgery to the neck, (3) congenital abnormality of the cervical spine, (4) diagnosis of cervical radiculopathy or myelopathy, (5) cardiac disease requiring medical treatment, (6) having received LM or other bone-setting treatment in the past 3 months.

2.2. Outcome measures

The Chinese version Northwick Park Neck Pain Questionnaire (NPQ), which has been proven to be a valid (Spearman correlation coefficient with generic 42-item Chinese health questionnaire, $r = 0.59$) and reliable tool (Intraclass correlation coefficient, $ICC = 0.95$) in measuring disability in individuals with neck pain (Chiu et al., 2001), was employed as the primary outcome measures. In the study by Chiu et al. (2001), the standard deviation and ICC of test–retest reliability of NPQ are 21.62% and 0.95, respectively. The minimal detectable change (MDC) with 95% confidence interval (CI) of NPQ is estimated to be 13.40% according to Steffen and Seney (2008). The minimal clinically important difference (MCID) of NPQ was demonstrated to be 25% change, which means changes larger or equal to 25% in NPQ could be considered as clinically significant (Sim et al., 2006). Patients were asked to complete the questionnaire at baseline, immediately and 3 months after treatment. The total score of the questions was converted to percentage scored (Leak et al., 1994).

Secondary outcomes measures included pain intensity, craniovertebral (CV) angle and cervical range of motion (CROM).

Pain intensity was rated by patients on the 11-point Numerical Pain Rating Scale (NPRS), for which 0 score means no pain while 10 score means the worst pain (Jensen et al., 1986). The NPRS is a reliable ($ICC = 0.76$, 95% CI, 0.51–0.87) and valid (Pearson $r = 0.57$, $p = 0.01$) measurement tool for measuring pain intensity on patient with mechanical neck pain (Cleland et al., 2008). Cleland et al. (2008) demonstrated that the MCID and MDC of NPRS were 1.3 and 2.1, respectively.

The CV angle was assessed by using an electronic head Posture Instrument (EHPI), which has been demonstrated to be valid and reliable (Validity, Pearson's $r = 1.000$; Intra-rater reliability: ICC ranged from 0.86 to 0.94) in measuring CV angle for patient with chronic neck pain with a MDC of 3.31° (Lau et al., 2009).

The cervical range of motion (CROM) device was employed to measure the active cervical range of motion (Youdas et al., 1992). This device has good validity (Pearson's r value of six movement ranged from 0.93 to 0.98) and test–retest reliability (ICC of six movement ranged from 0.89 to 0.98), and the MDC of this device for the movements ranged from 3.6° to 6.5° (Audette et al., 2010).

Download English Version:

<https://daneshyari.com/en/article/2625234>

Download Persian Version:

<https://daneshyari.com/article/2625234>

[Daneshyari.com](https://daneshyari.com)