Dry Needling versus Ultrasonic in Treatment of Cervical Myofascial Pain

Thesis

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Heba Agamy

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Abb.	Full term
ACR	*American College of Rheumatology*
ANS	*Autonomic Nervous System*
ATrP	*Attachment Trigger Point*
CTrP	*Central Trigger Point*
EMG	*Electromyographic*
HPA	*Hypothalamic-Pituitary-Adrenal*
LTR	*Local Twitch Response*
MP	*Myofascial Pain*
MPS	*Myofascial Pain Syndrome*
MRE	*Magnetic Resonance Elastography*
MTrP	*Myofascial Trigger Point*
NO	*Nitric Oxide*
QOL	*Quality of Life*
ROM	*Range of Motion*
SS	*Symptom Severity*
TCM	*Traditional Chinese Medicine*
TrP	*trigger point*
VAS	*Visual Analogue Scale*
WPI	*Widespread Pain Index*

Abstract

The numbers of trigger points significantly decreased (P<0.001) after treatment in both groups and re increased after stoppage of treatment.

The nature of trigger points changed from active to latent or even disappeared in both groups after treatment, but after the break many of them reappeared again and the latent become active.

The cervical ROM significantly increased (P<0.001) immediately after the 3 weeks treatment duration in both groups and showed limitation again after stoppage of treatment (after another 3 weeks break duration).

The VAS-10 also significantly decreased (P<0.001) immediately after the 3 weeks treatment duration in both groups and increased again after the 3 weeks break.

Keywords: Magnetic Resonance Elastography - Myofascial Pain - Local Twitch Response

INTRODUCTION

Myofascial pain (MP) is the pain attributed to muscle and its surrounding fascia. This can be caused by repetitive motions used in jobs or hobbies or by stress-related muscle tension such as chronic overload of the posture maintaining muscles as with poor sitting, working or sleeping habits ***(Bernard, 2012).***

This pain is characterized by: focal point tenderness, reproduction of pain upon this focal point palpation, hardening of the muscle upon focal point palpation, pseudo-weakness of the involved muscle and limited range of motion following approximately 5 seconds of sustained focal point pressure ***(Robert, 2007).***

It is a common problem with high rate of recurrence and a non-satisfactory treatment. In USA 21% of the patients in general orthopedic clinics and 85% of the patients in pain management clinics are complaining of cervical myofascial pain which is not a fatal condition, but it can cause significant reduction in quality of life (QOL) ***(Douglas et al., 2016).***

There is no racial differences in the incidence of myofascial pain have been described and it is distributed equally between men and women. It can be found in persons of all ages especially sedentary individuals; they are more prone to develop it than individuals who exercise vigorously on a daily basis ***(Jennifer, 2015).***

This pain is characterized by the presence of one or more myofascial trigger point (MTrP) in the bulk of the muscle, which is hyperirritable spot in the fascia surrounding the skeletal muscle. They are associated with palpable nodules in taut bands of muscle fibers ***(David and Pamella, 2002).***

The term "trigger point" (TrP) describes a clinical finding with the following characteristics:

- Pain related to a discrete, irritable point in skeletal muscle or fascia, not caused by acute local trauma, inflammation, degeneration, neoplasm or infection.
- The painful point can be felt as a nodule or band in the muscle and a local twitch response (LTR) can be elicited on stimulation of the trigger point.
- Palpation of the trigger point reproduces the patient's complaint of pain, and the pain radiates in a distribution typical of the specific muscle harboring the trigger point ***(Erik, 2008)***.

The trigger point has an abnormal biochemical composition with elevated concentrations of acetylcholine, nor adrenaline, serotonin and a lower pH. By needle electromyography (EMG) it shows high-voltage spike activity and spontaneous, low-voltage endplate noise, which is considered characteristic but not pathognomonic ***(Jennifer, 2015).***

The trigger points cause pain due to what is called "metabolic crisis cycle" which means that the isometric tightly contracted tiny patch of muscle fibers causes cut off her own blood supply which makes a form of ischemia with also accumulation of metabolites and both cause muscle irritation leading to pain which leads to more spasm and more cut off blood supply and so on ***(Paul and Taylor, 2016).***

Myofascial pain syndrome (MPS) usually involves muscle in body areas that are asymmetric or focal (peripheral muscular origin), whereas fibromyalgia is typically a diffuse and symmetric muscle pain syndrome that involves both sides of the body (central nervous system origin) ***(William and Sheil, 2015).***

Diagnosis of MPS requires a detailed history of the pain problem, the patient's personal and family history, a general physical examination and a systemic search for the myofascial trigger points, then the patient can be advised to do one or more of this modalities:

- First, **medications** for muscle relaxation, pain control and/or sleep control can be given.
- Second, **physiotherapy sessions** in the form of ultrasonic, hot packs, infra-red application followed by deep friction massage and stretching exercises.
- Third, **injection of trigger points** with a local anesthetic, a weak steroid solution, or saline alone.

- Fourth, **dry needling of trigger points** in affected muscles, which is a new technique for treating cervical myofascial pain, it means pushing a very thin needle through the skin, fascia and muscle till reaching the trigger point.

In 2013 David et al. and in 2015 Gerber et al. reported successful treatment of cervical myofascial pain by dry needling to trigger points in trapezius muscle. There was significant relief of pain and improvement of function and the results were comparable, and even superior to other modalities of treatment.

Aim of the Work

In the proposed study we compared between the effect of dry needling and the effect of ultrasonic waves as an example of the conventional physiotherapy modalities in the treatment of cervical myofascial pain.

Chapter 1
MYOFASCIAL PAIN SYNDROME

Cervical and upper back pain can occur as a result of trauma or sudden injury, or it can occur through strain or poor posture over time. In recent years, it has become a familiar complaint from people who work at computers most of the day ***(Hoyle et al., 2011).***

The vast majority of cases of upper back pain are due to one (or both) of the following causes:

- Joint dysfunction (cervical or thoracic vertebrae dysfunction such as: spondylosis and or deformities)
- Muscular Irritation (myofascial pain)

Often, muscular irritation (myofascial pain) is due to either: de-conditioning (lack of strength) or overuse injuries (such as repetitive motions in jobs and hobbies). Deconditioning occur in chronic overload of the posture maintaining muscles as with poor sitting, working or sleeping habits. In the cervical region, the myofascial pain is due to overuse or inappropriate use of the muscles of the neck and shoulder girdle such as trapezius, rhomboids, and supraspinatus and infraspinatus muscles. This pain is relieved mainly by rest and reoccurs with activity ***(Bernard, 2012).***