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Efficacy of Single Prick Needling Under Ultrasound Guide for The Treatment of Primary Myofascial Pain Syndrome for Iraqi People

Dr. Samer Fadhel Hassan Al-Wazni

M.B.Ch.B., D.M.R.D., C.A.B.M.S.-R.D., F.I.C.M.S.-P.M.

Lecturer, Department of Radiology, College of Medicine, University of Wasit, Wasit, Iraq.

* Correspondence: salwazni@uowasit.edu.iq

Abstract: Primary syndrome of myofascial pain was a persistent pain issue which affects the muscles and adjacent connective tissue (fascia). This condition may result through causes include muscular overuse, inadequate posture, stress, and injury. The aim of the current study is to conduct a general reviewing of all previous related to prick's efficacy in the treatment of primary myofascial pain syndrome by using under ultrasound guide technique. A prospective study of 150 patients suffering from primary myofascial pain syndrome, mostly neck pain (sternocleidomastoid and trapezius muscles), at the Medical City at Baghdad (Gazzy Alhariery for Surgical Specialists and Bagdad Teaching Hospital) and Samer Alwazni pain medicine clinic at AL-Kut City, from 2019 to 2023, undergo acupuncture needling under ultrasound guide for the destruction of taut bands, with follow of pain for three month interval period, the results was: 50% of patient got pain free from 1st session, 20% of patients got relieving of pain from 2nd session while 30% had recurrent pain. In the context of under ultrasound guide imaging, all literatures found that prick has been regarded as an effective tool in the management of primary myofascial pain syndrome. Under ultrasound guide helps prick locating trigger points with precision as well as inserting the needles accurately, which is likely to yield better results in terms of pain relief and muscle relaxation. As a result, combining acupuncture and under ultrasound guide are likely to be effective in the treatment of primary myofascial pain syndrome devoid of any invasive practices. Prick needling under ultrasound guide guidance among patients suffering from myofascial pain syndrome shows greater effectiveness both in terms of pain relief and enhancement of quality of life and in overall MPS management.

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1. Introduction

Myofascial pain syndrome (MPS) is a frequent type of discomfort that affects muscles and their associated fascia [1 – 5]. In the literature on pain, especially in clinical practice, MPS has been referred to as quite a frequent phenomenon (especially concerning musculoskeletal pain). The reported rates of MPS among individuals with regional pain complaints range between 21 - 85%. [6 – 8]

The care of myofascial trigger points includes physical therapy, exercise, ischemia compression, heat application, stretching and spray techniques, acupuncture, local injections, and medicine therapies. Among these, trigger point injection constitutes one of the most effective techniques. [9 – 11]

The technique involves the direct insertion in a needle into a myofascial trigger point (MTrP), regardless of the use of saline, local anesthetic, corticosteroid, or botulinum toxin [12 - 15].

2. THE MEDICAL PRACTICE IN TERMS OF PAIN

Myofascial pain (MFP) is one of the musculoskeletal disorders commonly encountered in a primary care setting. It is a well-known fact that musculoskeletal pain is prevalent and is more common in older patients. It is the primary complaint of patients who come to a medical office with a pain-related issue. Increasing numbers of people in our population are affected by musculoskeletal pain that hampers their daily activities and functioning [16]. It greatly reduces the quality of life. The incidence of MFP among patients visiting pain management centers is extremely high. In a large pain centre study involving 283 consecutive patients, two physicians independently assigned MFP as the principal diagnosis in 239 (85%) of the cases. A further review looked at 96 subjects from the survey of a different pain centre and concluded that in 74% of the cases, MFP was the dominant source of pain, while 93% of the cases presented some degree of pain contributed by MFP [17]. Nevertheless, both medical doctors and physiotherapists tend to overlook the diagnosis of musculoskeletal pain, which tends to result in chronicity. [18]

2. Materials and Methods

3. MECHANISMS OF PRIMARY MYOFASCIAL PAIN SYNDROME

Myofascial pain syndrome is a regional pain disorder characterized by the existence of a trigger point (TrP) inside a tight band of skeletal muscle, accompanied with referred pain [19]. Painful sensation is commonly described as the pressure in a painful trace shaped as a band in the body's skeletal muscle tissue, and pressing on a band-shaped area often evokes specific pains corresponding with each trigger point location. The phrase Trigger Point or TrP was introduced for the first time by Travell et al. in 1983 in relation to the tender spot within muscle fibers [20]. The sensitive TrPs make them significantly painful and debilitating in terms of muscle movement. The scientific explanation for the taut bands and TrPs' foci that are experienced in hypertonic muscle has not been clear until the last few decades. Recent studies have shown, however, that it is the altered activity of the motor endplate – the neuromuscular junction [21]. Trigger points (TrPs) can be developed due to many factors, including acute overload, chronic repetitive strain, poor static posture, sleeping in non-ideal positions, and bad ergonomic practices. Muscle ischemic exercise, as well as eccentric muscle exercise, can lead to muscle pain, which can be enduring. The women with trapezius myalgia in relation to employment have low cytochrome C oxidase activity, which indicates an energy crisis in the afflicted muscle [22]. It is a common observation that mental and social distress have a tendency to increase the intensity of MFP, which gives an indication of the underlying psychophysiological mechanisms contributing to the onset and persistence of states of chronic pain. Since the 1970s, dry needling therapy has been practiced and even promoted by Dr. Gunn, who proposed that MFP syndrome is a clinical manifestation of segmental nerve dysfunction or radiculopathy, which he termed as also due to the peripheral nerve serving the muscle being functionally disturbed. Because of the effects of unrelieved myofascial pain, it can develop into an irritative focus and transmit persistent pain signals to the spinal cord through sensory nerve cells [23,24]. The spinal reflex loop, which is persistently stimulated through inflammation in the periphery, may accommodate enhanced responses such as central sensitization in the spinal cord, which has motor, sensory, and autonomic involvement within hyperactive and hyperexcitable segments of the spine [25]. On the other hand, fibromyalgia is understood as a condition with a pre-existing central predisposition to sensitization. This is often activated by peripheral injury, yet its pathology resides within the central

nervous system; hence, it is mostly managed from that level. Peripheral tissue manipulation more gently alleviates some of the fibromyalgic discomfort but does not reverse the predominant pain, which is diffused, patterned, and associated with objective functional complaints. [26]

4. TREATMENT OF MYOFASCIAL PAIN

Prick needling is a historical approach to the treatment of myofascial pain from as early as the 1820s [27]. The work of Kellgren, who defined the pain patterns of painful muscles by using hypertonic saline injections, provides the scientific foundation. This work was extended by Travell and Rinzler, and *Managing Myofascial Pain* remains the benchmark thanks to the *Trigger Point Manual* by Travell and Simons [28]. It has also become the method of choice for neck, shoulder, knee, leg, and lower back pain without the use of drugs in dry needling. Muscles that have isolated peripheral pain can be needled, as well as other muscles that are served by the same spinal segment. Prick needling is a technique that aims to relieve Trigger Points (TrPs) within the cervical and shoulder regions [29]. This involves several needles inserted perpendicularly into the TrPs and taut bands in order to evoke a muscle twitch response and, subsequently, a muscle reflex relaxation. Prick needling, however, does not involve Asian ideas of meridians or energy lines. For the past 20 years, there have been few academic and, above all, empirical research on prick needling techniques, but the amount of new publications is growing fast. It has been proved that IMS is superior to treatment with lidocaine injection for the management of myofascial disorders of the neck and shoulder, and it is equally effective as physiotherapy in addressing upper Trapezius pain [30,31]. Moreover, prick needling has been effective in managing post-operative pain in patients undergoing total knee arthroplasty. Dry needling is also included in some of the up-to-date systematic reviews. [32]

5. IMAGING OF MYOFASCIAL TRIGGER POINTS.

The incorporation of Trigger Points (TrPs) has been a challenge for the medical field, primarily because there are no imaging techniques that can objectively visualize muscle tenderness in the form of painful nodes [33]. An under-ultrasound guide technique of sonoelastography has been developed by Sikdar and associates in order to deep look into the muscular tissues containing TrPs. This research is aimed at the use of the first reliable device, which helps in an objective diagnosis of muscle TrPs which in turn allows for an enhancement in the research work in the area [34]. On the other hand, it is suggested that such imaging methods may not be beneficial in normal clinical practice because therapy is already based on a targeted clinical assessment, a search of the affected muscles along with the accompanying autonomic manifestations in the same segment of the spinal cord, and a short, low-cost treatment. [35,36]

3. Results

TABLE 1. DEMOGRAPHIC DATA OF PARTICIPANTS.

Variables	Number of cases: 150	Percentage, %
Age		
40 – 53	84	56%
54 – 65	66	44%
Sex		
Males	60	40%
Females	90	60%
BMI		
Underweight	12	8%
Normal weight	27	18%
Overweight	45	30%
Obesity	66	44%

Symptoms		
Localized muscle pain	75	50%
Muscle stiffness	24	16%
Pain that worsens with activity or stress	21	14%
Tender trigger points in muscles	15	10%
Limited range of motion	6	4%
Potential referral pain to other areas of the body	9	6%
Comorbidities		
Hypertension	120	80%
Diabetes	99	66%
Anemia	12	8%
Cardiovascular disease	24	16%
Osteoporosis	105	70%
Smoking status		
Yes	54	36%
No	96	64%
ASA		
I	59	39.33%
II	60	40.0%
III	20	13.33%
IV	11	7.33%
Education status		
Primary	45	30.0%
Secondary	67	44.67%
University/post-graduated	38	25.33%
Economic status, \$		
< 500	88	58.67%
500 – 800	40	26.67%
> 800	22	14.67%

TABLE 2. ENROLLING OF PAIN DATA IN PATIENTS WITH PRIMARY MYOFASCIAL PAIN SYNDROME AFTER SINGLE PRICK NEEDLING UNDER ULTRASOUND GUIDE DURING FOLLOW-UP WITHIN 3 MONTHS.

<i>Degree of pain</i>	<i>N [%]</i>
<i>1st session</i>	
<i>Free pain</i>	75 [50%]
<i>2nd session</i>	
<i>Relieving of pain</i>	30 [20%]
<i>Recurrent pain</i>	45 [30%]

TABLE 3. ASSESSMENT OF GENERAL HEALTH QUALITY – LIFE OF PATIENTS THROUGH SHORT FORM-36 HEALTH SURVEY (SF-36).

Items	Health Survey (SF – 36) Scores
Physical functioning	75.20 ± 4.93
Psychological functioning	72.10 ± 2.78
Emotional well-being	78.94 ± 3.82
Social functioning	70.68 ± 4.92

TABLE 4. IDENTIFY RISK FACTORS' EFFECT ON PATIENTS WITH PRIMARY MYOFASCIAL PAIN SYNDROME.

<i>Risk factors</i>	<i>Mean ± SD</i>
<i>Age</i>	2.64 [0.91 – 4.74]
<i>Muscle overuse</i>	3.20 [1.08 – 6.55]
<i>Localized muscle pain</i>	4.83 [2.93 – 6.88]
<i>Sleep habits</i>	2.13 [1.03 – 5.66]
<i>Anxiety</i>	3.85 [1.77 – 6.58]
<i>Nutritional deficiencies</i>	3.44 [2.93 – 6.53]
<i>Smoking</i>	4.11 [1.91 – 5.87]
<i>Hormonal imbalances</i>	2.68 [2.35 – 7.54]
<i>Comorbidities</i>	1.89 [0.76 – 2.97]

4. Discussion

Although pricks have been known and accepted by many, they have been used sparingly and neglected by the mainstream medicine field for a number of years; effective evidence-based use has been focused on the complete treatment of myofascial pain syndromes. As a treatment method, it takes little time to learn and can be used in daily practice as part of physical therapy [37]. This technique is usually implemented without the need for further tests or imaging studies due to the fact that the Potential physical Treatment is relatively inexpensive, poses no significant risks and is non-invasive. Among several other treatment options for chronic musculoskeletal pain, where the tethering muscles are deep and accessible by few other techniques, Prick has the added advantage of being easily integrated with other modalities. [38 – 40]

The level of evidence available to demonstrate the effectiveness of prick has been above reproach until recently, lest even the most hard-nosed skeptics are ready to entertain. Most of the studies included in these reviews were criticized for lack of precision and high risk of bias [41]. These reservations are being cast off with more up-to-date research and primary data analyses of the research findings. Multicenter, randomized controlled trials shall be conducted to determine clinical benefit beyond short- and long-term pain relief with the effective management of functional outcomes. [42 – 46]

5. Conclusion

In summary, under ultrasound, guide-guided needling of myofascial trigger points seems to be more beneficial for pain control and quality of life for the management of myofascial pain syndrome. More study with bigger sample sizes is highly anticipated, especially to elucidate the pertinent physiological underpinnings of this treatment approach.

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