DRY NEEDLING IN THE THERAPY OF MUSCULO-FASCIAL TRIGGER POINTS

СУХІ ГОЛКИ В ТЕРАПІЇ МЯЗОВО-ФАСЦІЙНИХ ТРИГГЕРНИХ ТОЧОК

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https://doi.org/10.5281/zenodo.5510502

Abstract

Myofascial pain is a common complaint reported by patients. A characteristic feature of this pain is the presence of trigger points, which are defined as hyperactive nodules. Trigger points can be active or latent. Active trigger points cause pain at rest as well as during movement, while latent trigger points only cause pain when the area is touched. The pain associated with trigger points is described as deep, distant and dull. It is often accompanied by a tingling or burning sensation. Patients often report, in addition to pain, changes in superficial and deep sensation, as well as the appearance of vegetative symptoms.

The correct diagnosis is based on an accurate history and physical examination.

The therapeutic methods used by physiotherapists to treat musculoskeletal pain include manual techniques, physical therapy, and other methods such as dry needling. Dry needling therapy has become increasingly popular in recent years. This therapy consists of pricking the affected areas with dry needles. This procedure leads to contraction of the muscle, causing the whole muscle to relax. Before starting the therapy, the patient should be made aware of the possible side effects. The most common include pain at the puncture site and haemorrhage, as well as syncopal reactions.

Dry needling as a therapy for musculo-fascial trigger points was first applied by Karel Lewit in 1979. This marked the beginning of research into the effectiveness of dry needling therapy for trigger points.

The following article discusses research on the effectiveness of dry needling in the therapy of musculo-fascial trigger points. It also focuses on comparing dry needling therapy with other therapies used by physiotherapists. Studies examining the effectiveness of short-term and long-term effects of dry needling were analysed. An attempt was made to check the incidence of side effects during the therapy.

Key words: trigger points, dry needling, myofascial pain.

Міофасціальний біль – поширена скарга, про яку повідомляють пацієнти. Характерною ознакою цього болю є наявність тригерних точок, які визначаються як гіперактивні вузлики. Тригерні точки можуть бути активними або латентними. Активні тригерні точки викликають біль у спокої, а також під час руху, тоді як латентні тригерні точки викликають біль лише при дотику до цієї зони. Біль, пов'язаний з тригерними точками, описується як глибокий, далекий і тупий. Часто це супроводжується поколюванням або печінням. Пацієнти часто повідомляють, крім болю, про зміни поверхневих і глибоких відчуттів, а також про появу вегетативних симптомів.

Правильний діагноз ґрунтується на точному анамнезі та фізикальному огляді.

Терапевтичні методи, які використовуються фізіотерапевтами для лікування опорно-рухового болю, включають мануальні методики, фізіотерапію та інші методи, такі як суха голка. Терапія сухими голками набуває все більшої популярності в останні роки. Ця терапія полягає в наколюванні уражених ділянок сухими голками. Ця процедура призводить до скорочення м’язів, змушуючи весь м’яз розслабитися. Перед початком терапії пацієнта слід ознайомити з можливими побічними ефектами. Найчастіше зустрічаються біль у місці проколу та крововилив, а також синкопальні реакції.

Суха голка. як терапія м'язово-фасціальних тригерних точок, була вперше застосована Карелом Льюїтом у 1979 році. Це поклало початок дослідження ефективності сухої голкової терапії для тригерних точок.

У даній статті обговорюються дослідження ефективності сухої голки в терапії м'язово-фасціальних тригерних точок. Воно також зосереджене на порівнянні сухої голкотерапії з іншими видами терапії, які використовуються фізіотерапевтами. Були проаналізовані дослідження, які вивчали ефективність короткострокових та довгострокових ефектів сухої голки. Була зроблена спроба перевірити частоту побічних ефектів під час терапії.

Ключові слова: тригерні точки, суха голка, міофасціальний біль.

Introduction. Musculo-fascial trigger points are a major clinical feature of musculoskeletal pain [1, 2, 24].

According to the International Association for the Study of Pain, myofascial pain is a common problem among all reported cases of musculoskeletal pain [9]. Myofascial pain is characterised by trigger points that cause sensory, autonomic and motor complaints [1, 5, 9].

A trigger point is a site characterised by hyperactivity and pain during pressure, overload, stretching or contraction [2, 6, 9]. A characteristic nodule can be felt at the site of the tightened muscle [1, 6, 24].

The pain caused by trigger points usually does not occur directly in the area of the point, but at some distance from it. The discomfort associated with trigger points can change. In addition to the sensation of pain, superficial and deep sensation may also be altered and vegetative symptoms may occur [6, 23].

Trigger points are not only found in muscles. They can also be found in fatty tissue, skin, tendons or ligaments, among others. In contrast to these trigger points located in muscles, they do not produce radiating pain [23].

Trigger points include active and latent trigger points. An active trigger point is one that causes pain at rest and when the muscle is active [6, 9, 21, 23]. Increased tenderness and weakness of the muscle can be observed, as well as an inability to extend the band. A latent trigger point is characterised by soreness only when the affected area is touched. Trigger points cause pain that can be described as deep, distant, dull. Discomfort such as tingling or burning may also occur [6, 9, 21, 24].

Trigger points can change their activity. Active trigger points can change to inactive trigger points when, among other things, the muscle they occupy is subjected to regular stretching. Hidden trigger points can become active when dysfunction related to muscle overload occurs [23].

Trigger points can occur as a result of direct trauma, muscle overload from sustained or regularly occurring muscle contractions and from positions that cause pathological muscle strain [21].

There are a number of situations in which the formation of trigger points may be more frequent. These include, but are not limited to: degenerative changes in the joints, acute muscle overload, other trigger points, internal organ conditions [10].

The correct history taking and physical examination are the most important factors to confidently establish the diagnosis of myofascial trigger points [1, 2, 24].

In order to confirm the diagnosis of myofascial trigger points, a physical examination should be used [1, 24]. The therapist's palpation skills and experience in performing the diagnosis correctly are also important [24].

In order to diagnose the patient it will be useful at the beginning to conduct a thorough interview. During the interview we can find out, among other things, in which situation the pain appears, whether it was caused by trauma or other factors [1, 6, 23]. For a complete diagnosis, the muscle should also be examined passively, as well as actively. It should be checked in which positions the pain occurs and also in which phase of movement [23].

Symptoms that appear during the examination suggesting the presence of a trigger point include: decreased muscle strength, pain during eccentric or isometric work, limited muscle extension. Radiating pain may occur during active and passive stretching [23].

In order to accurately locate the trigger point in the muscle, the examination should be performed in a neutral position for the muscle. For the diagnosis of superficial muscles, flat palpation is used, whereas for deeper muscles pressure palpation is used [6, 23].

There are several physiotherapeutic methods used in the treatment of trigger points with positive results. It must be remembered, however, that if the factors that promote trigger points are not eliminated, they may reactivate after the therapy has been completed. It is important to inform the patient about situations that are conducive to the formation of trigger points. Educate them on what movements and positions to avoid and present exercises to help with this ailment [23].

Among the physical therapeutic methods used in trigger point therapy are:

Physical therapy methods:

- ✓ Laser therapies
- ✓ Magnetotherapies
- ✓ Electrostimulation
- ✓ Ultrasound
- ✓ Shock waves

Manual therapy:

- ✓ Compression

✓ Cooling techniques combined with stretching

✓ Positional relaxation

✓ Muscle energy techniques

✓ Musculo-fascial release

✓ Massage

Other:

✓ Needle techniques

✓ Kinesiotaping [14, 21].

Dry needling. Among the physiotherapeutic methods performed to treat trigger points are techniques using a needle. One such technique is dry needling, which involves pricking at different angles leading to contraction of the muscle. Dry needling is designed to cause local muscle tremor which results in relaxation of the entire muscle [14].

Dry needling therapy is also associated with undesirable effects. These include post-puncture pain, haemorrhage at the puncture site and syncopal reactions [15].

The occurrence of soreness is noted as a frequent complication after dry needling therapy. It occurs most frequently after deep dry needling and lasts for about 72 hours. It is concluded that this is caused by neuromuscular damage, as well as haemorrhagic and inflammatory reactions. For patients who do not experience much pain related to trigger points, this side effect can be particularly severe and noticeable [19].

A study involving 420 physiotherapists was recently conducted to determine the incidence of adverse effects associated with dry needling. They shared their experiences of adverse effects of dry needling therapy based on 20,464 dry needling therapies they performed. They found that 36.7% of treatments had minor adverse effects such as bleeding (16% of treatments), bruising (7.7% of treatments) and pain during treatment (5.9% of treatments). More serious effects such as pneumothorax, more severe haemorrhage or general deterioration were reported in 20 treatments. Less serious side effects were quite frequent, but they did not depend on the experience of the physiotherapist or their education [3].

In their study, Gattie et al. investigated how many physiotherapists choose dry needling as a therapeutic method and how often adverse reactions occur. 865 physiotherapists took part in the study. It was found that 55% of them perform dry needling. It was also found that non-serious adverse reactions occurred in 39.6% of the sessions. More serious events were very rare [10].

In dry needling methods one can distinguish between deep needling and superficial needling. According to Kalichman et al. the deep dry needling method has shown to be more effective in dealing with musculo-fascial pain compared to the superficial method. However, it should be borne in mind that it still shows its effectiveness and should be performed in areas such as the lungs or large blood vessels, i.e. potentially risky areas [15].

One of the first medics who used the method of dry needling in the therapy of musculo-fascial trigger points was Karel Lewit in 1979. He conducted a study in the same year to evaluate the effectiveness of dry needling against trigger points. The study involved 241 people with musculoskeletal pain located in various parts of the body. Levit noted that in 87% of cases, this technique produced a satisfactory result and resulted in the elimination of pain. A total of 312 different areas were treated. In the case of 92 points, the pain was eliminated permanently, in 58 for several months and in 32 only for a few days. It was also found that the effect of the therapy depended on the strength of pain at the site of the trigger point, as well as the precision of needle insertion in the most sensitive area [16].

In recent years, more and more research has been conducted on the effectiveness of dry needling in ridding the body of musculoskeletal pain. Gerber and colleagues undertook a prospective non-randomised controlled clinical trial to determine the effectiveness of this therapy. The study involved 52 volunteers reporting neck or shoulder girdle pain that had been present for more than 3 months. The trigger points were located in the quadriceps muscle. The trigger point was treated with dry needling therapy for three weeks. After this time, 41 patients showed improvement, the trigger point that manifested as active was either healed or latent, 11 patients showed no change [12].

Dry needling can be used for ailments involving different areas of the body. In 2015, a

systematic review of studies covering the years 2000-2014 evaluating trigger point therapies was published. Based on this review, it was concluded that dry needling has a wide range of applications and can be used on different areas of the body [4].

An attempt to determine how long the effects of dry needling last and what they depend on was undertaken by Gerber and colleagues in their study. The study involved 45 people with an active trigger point in the quadriceps muscle. Dry needling therapy was applied three times and its effect was evaluated after 6 weeks. It was found that after this time there was a sustained reduction in the pain reported before the therapy [13].

Martin et al. tested the effectiveness of dry needling applied directly to an active trigger point and also applied only to the muscle where the trigger point was identified. The study included 72 participants with unilateral neck pain lasting longer than 3 months and active trigger points in the quadriceps. Patients were randomly assigned to two groups. The effects were checked one week and one month after the end of the therapy. It was observed that inserting the needle directly into an active trigger point reduced neck pain and pressure pain threshold. Less satisfactory results were obtained with dry needling by inserting the needle only into the involved muscle [22].

A systematic review published by Espejo-Antúnez et al. including randomised controlled trials conducted between 2000 and 2015 aimed to evaluate the efficacy of dry needling as a therapy for musculo-fascial trigger points. Based on 15 studies from this period, it sought to determine pain intensity, range of motion and quality of life for those receiving this therapy. It was concluded that dry needling showed a positive effect on the complaints studied. It was considered a good choice and it was noted that it produced visible effects in the short term [8].

In recent years, studies have been published comparing the dry needling method with other therapies used to treat myofascial trigger points.

Dry needling was compared with manual pressure techniques in the treatment of myofascial pain. A randomised study conducted by Meulemeester et al. involved 42 volunteers with musculo-fascial pain in the neck or shoulder. The participants were divided into two groups. A total of 4 treatments were given. Dry needling was used in one and trigger point compression techniques in the other. After 4 series of therapies, no differences were found between the effects of one therapy and the other. After 4 weeks of therapy, pain was reduced and muscle flexibility improved. Dry needling and compression therapy were found to be equally effective in short-term and long-term follow-up [20].

Ziaefar et al. in their study tested the long-term effect of dry needling in subjects with musculo-fascial trigger points in the quadriceps muscle. For this purpose, they performed a randomised controlled trial repeated after two weeks and then after three months. 33 volunteers took part in the study. Some of the subjects received therapy based on dry needling, while the rest received trigger point compression. Prior to treatment, patients were examined for the amount of pain, disability of the hand, shoulder, arm, and neck. After two weeks and then after 3 months the measurements were repeated. It was found that after such a period of time the subjects improved, the pain decreased, but no method was found to be more effective [25].

Doğan et al. compared the effectiveness of dry needling with kinesio taping in the treatment of myofascial pain. For this purpose, 42 patients with a known painful trigger point in the quadriceps muscle were divided into two groups. One of them was subjected to the kinesiotaping method and the other to dry needling. After the performed therapy, improvements were noticed in the patients; however, the effects in both methods were comparable [7].

In 2019, Luan et al. compared the effectiveness of shockwave and dry needling on musculo-fascial trigger points. The study involved 65 participants divided into two groups. 32 subjects received shockwave therapy and 33 received dry needling therapy. The patients were treated three times at weekly intervals. The effect of both therapies was checked immediately after the application, as well as one month and three months afterwards. In both cases there was an alleviation of pain [17].

Another study comparing shock wave with dry needling by Manafnezhad et al. Was

performed in the same year. It included 70 subjects with active trigger points in the upper quadriceps muscle. It was noted that both shockwave and dry needling were effective methods for this condition. There was no significant difference in the end result between the two therapies [18].

In 2017, Gattie et al. conducted a meta-analysis to evaluate the efficacy of dry needling of the trigger point. A total of 13 studies were qualified. Dry needling was shown to have positive effects and reduced pain up to 12 weeks after therapy. Compared with other physiotherapeutic methods, there are no differences in functional outcomes [11].

Conclusion. Studies conducted to demonstrate the effectiveness of dry needling in the treatment of myofascial trigger points show that it is an effective method for this type of ailment. However, it should be borne in mind that it may be associated with certain undesirable reactions. The most common include bleeding at the puncture site, bruising and pain during therapy. Many studies compare dry needling with other therapies that can be used by physiotherapists. It has been concluded that dry needling is as effective as shockwave, kinesiotaping or compression methods. Studies conducted on different areas of the body have proven that dry needling therapy can be applied to different parts of the body.

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