

REVIEWS

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Massage Therapy in Myofascial TMD Pain Management*

Masaż w terapii bólu mięśniowo-powięziowego w zaburzeniach czynnościowych układu stomatognatycznego

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Abstract

Myofascial pain located in the area of the head is a very common disease of the stomatognathic system. The fact that the mechanism of its development is very complex may cause a variety of problems in diagnosis and therapy. Patients diagnosed with this type of affliction usually need a variety of different therapies. Massage therapy can be a significant method of treatment of myofascial pain. That kind of therapy is clinically useful as it improves the subjective and objective health status of the patient and is easy to follow. The aim of this paper is to show the physiological effect and different massage techniques applied in myofascial pain treatment. The authors would also like to present the protocol for dealing with patients who demand that kind of therapy for masseter and temporal muscles (*Adv Clin Exp Med* 2012, 21, 5, 681–685).

Key words: massage therapy, myofascial pain, temporomandibular disorders.

Streszczenie

Ból mięśniowo-powięziowy umiejscowiony w okolicy głowy jest często występującą jednostką chorobową układu stomatognatycznego. Ze względu na jego złożony mechanizm powstawania stwarza wiele trudności diagnostycznych i terapeutycznych. Pacjenci, u których rozpoznano się tego typu schorzenie często wymagają terapii wielospecjalistycznej. Jedną ze stosowanych metod leczenia bólu mięśniowo-powięziowego jest masaż. Terapia ta poprawia subiektywny i obiektywny stan zdrowia pacjenta. Celem pracy jest przedstawienie fizjologicznego efektu oraz technik masażu stosowanych w leczeniu bólu mięśniowo-powięziowego. Autorzy chcieliby również zaprezentować protokół postępowania w przypadku pacjentów wymagających tego rodzaju terapii dla mięśni żwaczy oraz skroniowych (*Adv Clin Exp Med* 2012, 21, 5, 681–685).

Słowa kluczowe: masaż, ból mięśniowo-powięziowy, zaburzenia czynnościowe układu stomatognatycznego.

Myofascial pain (MFP) is a noninflammatory illness of the muscular system. It is a disease of muscles that produces local and referred pain. The pain is usually associated with fatigue of the affected muscles and with their stiffness as well as with tension. So-called trigger-points (muscle knots) are very characteristic for this kind of disease and

they appear in taut bands of muscle fibres. They are very sensitive even to gentle pressure (palpation) [1–3]. Myofascial Pain is classified as a dysfunction of the stomatognathic system, group I Axis I, according to Research Diagnostic Criteria for Temporomandibular Disorders. Myofascial pain has multifactorial etiology. There are many factors

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that may cause this kind of disease, for example: injuries (including micro-injuries associated with repetitive or occupational muscles injuries, excessive strain), poor posture as well as degenerative factors [3]. Myofascial pain symptoms in masticatory organ are basically associated with parafunctions such as teeth clenching, teeth grinding and with emotional states such as stress [4, 5]. Research shows that parafunctional actions during the day as well as sleep bruxism or nocturnal bruxism are characterized by the intensification of muscle tension and bound to Myofascial Pain [6–8]. There is a gender predominance in myofascial pain with women affected more often than men [9].

Dysfunctions of the stomatognathic system associated with muscles affects 31% of the inhabitants in Asia [10] and even 76% among Swedish and Americans [11]. In both cases the percentage of patients with masticatory organ disease associated with muscles disorders was much higher than among patients classified to groups II and III Axis I, according to Research Diagnostic Criteria for Temporomandibular Disorders (RDC/TMD). In this case, therapy itself seems to be the most important aspect of all due to the simple fact that the disease is very common.

There are a few methods of therapy for patients affected by myofascial pain syndrome, for example: splint therapy [12] pharmacotherapy [13, 14] and physical therapy [15, 16]. One of the most common methods of physical therapy is massage [1], manual therapy oriented to improve the patient's comfort and health (according to American Massage Therapy Association).

Massage as a Part of Treatment in Myofascial Pain of the Face

The main goal of treatment is to reduce pain as well as to re-establish the proper length and flexibility of muscles. In this case few basic forms of manual therapy may be used: effleurage, kneading, friction and petrissage [17].

Effleurage, Kneading

Effleurage is a massage based on soothing, stroking movements used at the beginning or at the end of a therapeutic session. It warms up the muscles and helps to make both blood and lymph flow better. Kneading is a massage technique by which the skin and its underlying tissues are moved in a circular, rotating motion. It is used to increase the blood level in particular parts of the body [17].

It is very important to remember that the power and pressure we use during the massage should be moderate – too strong may increase muscle tension [18]. Therapeutic effects of that kind of massage are connected to many factors, such as local blood and lymph flow, muscles activity and the nervous system. The most important thing during manual therapy is that the blood flow increases in small vessels due to the fact that muscle tension decreases and that leads to better and faster recovery around the muscle tissue and improves the range of motion [19, 20]. Massage lessens post-exertional sensitivity as well as reducing tissue swelling [20, 21]. Moreover, massage has pain-reducing properties. Short-term analgesic effect is caused by the activation of a pain-gate mechanism that disables pain signals travelling to central nervous system through larger and faster conductive nerve fibres that were activated. Descending pain suppression mechanism makes it possible to achieve long-term analgesic effects by releasing endogenous opiates [19]. Moreover, massage produces good psychological effects, reduces stress and anxiety and improves the patient's mood [21, 22].

Manual therapy is an effective form of treatment in the case of myofascial pain syndrome around muscles of stomatognathic system [23]. Massage reduces tension headaches [24], pain of masseter muscles and temporal muscles [25] and helps to restore muscle equilibrium between right and left masseter muscle [26]. There is also an improvement in functional movements of organ of mastication [16].

Friction

Friction movements are defined as fingertips pressure in trigger points therapy. This technique is based on local tissue remodelling that may lead to congestion and local inflammatory response. Consequently, it leads to the reconstruction of muscle's microstructure and restores proper tissue architecture. Another asset of pressing trigger points is that it may be effective in short-term pain relief because it activates pain-gate mechanism. It is very important to increase the pressure in one particular, sensitive point, until the patient feels no pain [17].

Stretching

One of the forms of "petrissage" is skin and muscles "rolling" which basically works as stretching of muscular tissues [17]. The main effects of stretching are: improvement in range of motion, short-term pain relief, viscoelastic changes in tendon muscle unit as well as decrease of muscle contraction (4.5% to 28%) [27, 28].

The range of motions achieved by stretching persists even after manual therapy, which indicates permanent adaptation of muscles [29]. Research results have revealed that those adaptive changes occur already on Messenger RNA level [30]. Lower level of muscle tautness was revealed by electromyography (EMG) record, which leads to the conclusion that stretching is a very effective muscle relaxation technique, including masseter muscles [31, 32].

Therapeutic Protocol

In order to carry out a manual therapy session effectively, which means to reduce or even eliminate the myofascial pain of stomatognathic system permanently, good and precise therapeutic protocol must be followed. It takes approximately 30 minutes to perform a typical massage of a mastication organ. It is recommended to perform this mas-

sage twice a week with at least a 48h break between sessions [23, 24]. The total number of therapeutic meetings is usually eight but it may be adjusted for individual needs of the particular patient [23, 24]. The massage is usually used in the treatment of masseter muscles and temporal muscles due to its easy accessibility [25, 33]. During one session all of the mentioned kinds of massages should be applied and last for a long or short time, but when short they need to be cyclically repeated [24, 25].

The first step is to prepare muscles for deep tissue work by using “effleurage” (which is commonly used at the beginning and the end of every massage) and its soothing, stroking movement along the fibres of masseter muscles and temporal muscles. The next phase is “kneading” – the skin and its underlying tissues are moved in a circular, rotating motion. It is worth remembering that we should increase the pressure while working on the tissue. In the case of masseter muscles we just use fingertips of three fingers – index finger, middle finger



Fig. 1. Kneading of masseter muscle applying circular motions and intensified pressure. Three fingers are used to perform the massage

Ryc. 1. Ugniatanie mięśnia żwacza z zastosowaniem okrężnych ruchów o wzmożonej sile nacisku z użyciem trzech palców



Fig. 3. Friction – gradually increased pressure to trigger points around muscle pass of mandible muscle by using the tip of index finger

Ryc. 3. Tarcie przez ucisk – stopniowo zwiększający się ucisk na punkt spustowy w przebiegu mięśnia żwacza z użyciem opuszki palca wskazującego



Fig. 2. Kneading of temporal muscle applying circular motions and intensified pressure is carried out with whole palm of the hand and fingers

Ryc. 2. Ugniatanie mięśnia skroniowego z zastosowaniem okrężnych ruchów o wzmożonej sile nacisku z użyciem całej dłoni



Fig. 4. Stretching of mandibular muscle by using thumbs, moving from upper insertion of this muscle to its lower insertion

Ryc. 4. Rozciąganie mięśnia żwacza z zastosowaniem kciuków przesuwających się od górnego do dolnego przyczepu tego mięśnia



Fig. 5. Cross stretching of mandibular muscle applying bilateral pressure by index and middle fingers of both hands

Ryc. 5. Krzyżowe rozciąganie mięśnia żwacza z zastosowaniem obustronnego ucisku mięśnia z użyciem palców wskazujących i środkowych obu dłoni

and ring finger – to press the muscular tissue, using a circular motion in several points (Fig. 1). The temporal muscle, on the other hand, requires that the physiotherapist use the whole hand to perform the massage. The physiotherapist should apply his hands onto the patient's head with the thumbs resting on the patient's forehead while at the same time his index and middle fingers should be located around the temples. Ring fingers should be placed behind the ears. While making small circular movements with our hands we apply gentle pressure to perform the massage in the proper way (Fig. 2).

The next step is friction massage, therapy of trigger points. When we find a trigger point on the course of the muscle, especially masseter muscle, we should press it with a fingertip and gradually increase the pressure until the patient feels no pain. This procedure takes approximately 5 to 15 minutes (Fig. 3) [17, 24].

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After trigger point therapy, it is time to stretch the masseter muscles. There are two methods for doing this. First of them involves pulling the muscle along the pass of its fibres. Having very good stabilization for his hands under the bottom edge of the patient's mandible, the physiotherapist is in a perfect and proper position to start stretching. His thumbs should slide from the upper insertion of masseter muscle downward, in the direction of its lower insertion (Fig. 4). The second method of stretching is called cross stretching, where the bilateral pressure is applied to the muscle. Pressure, being applied to the muscle from the cheek side, around the lower insertion of the muscle, runs into the dorsal direction. Pressure applied around the upper insertion of the muscle runs towards the abdominal area. During the process, the muscle itself takes the shape of letter "S" (Fig. 5). It is very important to remember that stretching is the most effective if it is extended or prolonged or when the breaks between stretching are short and muscle-tendon unit has no time to return to its original shape. With the extended duration of stretching (prolonged to at least 30 seconds) the muscle's ability to deform increases [27]. Manual therapy session of stomatognathic muscular system should be ended by previously described effleurage and kneading.

Massage is an effective method in treating temporomandibular disorders. Due to the manual therapy significant improvement may be seen in the subjective and objective health status of the patient. A positive change in the patient's mental health is associated with frequent contact between patient and the doctor. The described therapeutic protocol is clinically useful as it leads to a significant reduction in myofascial pain. It is also very easy to apply in everyday medical practice.

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