

ESTIMATION OF EFFECTIVENESS PHYSIOTHERAPY IN LOW BACK PAIN USING HEALING MASSAGE AND IONTOPHORESIS

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ABSTRACT

Introduction. Pain in lumbo-sacral spine appears more often than in cervical or thoracic spine. In the modern world associated with the social facilitation and hard daily work, lack of physical activity, stress and haste, this pain adversely affects the locomotor system. This leads to acceleration of the degeneration in spinal elements and, consequently, to the overloading disease and the related degenerative changes. Treatment depends on the advancement and duration of the disease, age, coexisting diseases and it is usually a complex process. The most frequently are used the non-invasive treatments like physiotherapy, kinesiotherapy, massage and manual therapy.

Aim. The aim of the study is to evaluate the efficacy of iontophoresis and therapeutic massage as a pain treatment methods used for patients with back pain in the lumbar-sacral spine.

Materials and methods. The study included 30 patients aged from 21 to 74 years, treated because of lumbar back pain in Non-public Health Care "Spondylus" in Szczecin, Poland. The number of women was 19 and for men 11. On the basis of research and medical opinion, patients were divided into two groups. Group A included 21 people patients with chronic back pain, and a population of 9 patients from group B was treated because of acute back pain.

Results. Taking into account the results of the study it should be noted that iontophoresis and therapeutic massage showed an analgesic effect in patients with pain in the lumbo-sacral spine.

Conclusion. The subjective evaluation of the pain was performed with Visual Analogue Scale (VAS) and its intensity scale was reduced in patients. The results suggested

that patients with chronic pain from group A more often apply the prophylactic therapy than patients with acute pain (group B).

Key words: lumbo-sacral back pain, massage, iontophoresis

Introduction

Most of the literature says that 80% of the population suffers from back pain. As a rule, these pain are located mostly in the lumbar and lumbo-sacral spine or in sacro-iliac joint (Stodolny 1999; Marciniak and Szulc 2003; Kiwerski 2006).

Conservative treatment in patients with chronic pain in the lumbar region allows performing their daily activities. However, they must be aware of how to prevent the recurrence of the disease and they need to understand the mechanism responsible for the pain existence, because summation of lumbo-sacral spine overloading led to the gradual degenerative changes (Stodolny 1999; Marciniak and Szulc 2003; Kiwerski 2006).

According to the definition of the International Association for the Study of Pain, the symptom of pain is defined as unpleasant sensory and emotional experience associated with actual or impending tissue damage. Pain is felt differently by each individual patient, it is a subjective sensation, and therefore for its measurement different scales and indicators are used (Dobrogowski and Wordliczka 1999; Dobrogowski and Wordliczka 2002).

The etiology of the spine lumbar pain is usually different, but developing of pathology often evokes ac-

tivation the subsequent degenerative changes. In addition there are other overloading factors, also important for back pains, such as cancer, inflammation of spine soft tissues, spinal cord diseases, spine contusions or fractures caused by traffic accidents, falls from heights, crushing. The other sources can be Bechterew's disease, osteoporosis, rheumatic diseases, visceral pains with urogenital or digestive dysfunctions, pains associated with the spine malformations (Stodolny 2000; Kiwerski 2006; Rakowska-Muskat 2011).

Treatment of back pain is a complex process which depends on the duration of the disease, pain origins, comorbidities, and age of the patient. The therapy during the acute period starts from a specific orientation of the patient. The idea is to loosen tense muscles pathologically to bring relief. After retreatment of acute pain, if possible, it should be searched for restoring the efficiency of the locomotor system and returning to everyday life, normal functioning, and to prevent the recurrence of the disease. If, however, despite treatment, in the next few weeks there is no improvement of symptoms, we meet with the chronic pain. In this case, the basic treatment consists of applying the kinesiotherapy, physiotherapy, therapeutic massage, and manual therapy. When in spite of therapy we do not record the expected results, and the patient's condition deteriorates, then the patient after appropriate diagnostic tests can be directed to surgery (Stodolny 2000; Rakowski and Słobodzian 2001; Zembaty 2002; Kiwerski 2006).

Therapeutic massage – the method used to treat back pain – uses mechanical stimuli consisting of alternating release and compression of the tissue system. The main objective is to obtain a reduction of increased muscle tone in paraspinal muscles, analgesic treatment, relaxation treatment, improvement of blood flow, increasing of joint mobility, as well as the influence on the locomotor system (joint capsule, tendon, periosteum, and muscle), skin, cutaneous receptors, and on the lymphatic and venous systems. The impact and effect of the therapeutic massage depends on how and how vigorously it is executed. Stroking, rubbing, gentle vibration has a calming effect on the nervous system, while kneading, percussion and vibration have the excitatory effect (Kasperczyk et al 2006; Magiera 2006; Marshal 2006).

One of the treatments used in the lumbar spine pain from the field of electrotherapy is iontophoresis. It is a procedure which involves the introduction into the tissues ions which exert therapeutic effect. This treatment is anti-inflammatory, improves the blood circulation, has the analgesic and relaxing effects (Mika and Kasprzak 2001; Kasperczyk et al 2006).

Aim

The main goal of this work is to evaluate the effectiveness of iontophoresis and therapeutic massage as a pain treatment for patients with back pain in the lumbo-sacral spine.

Materials and method

The study was conducted in a group of 30 people aged from 21 to 74 years (mean age 50 years), including 19 women, aged from 21 to 74 years (mean age 51 years) and 11 men, aged from 33 to 63 (mean the age of 48 years).

Patients were treated because of pain in lumbar spine in Non-Public Health Care "SPONDYLUS" in Szczecin.

Patients diagnosed by neurologist and rehabilitation doctor towards abnormalities in the locomotor system with acute or chronic pain in the lumbo-sacral spine of the degenerative and/or overloading etiology participated in this study. Patients were involved in analgesic therapy suggested by a doctor. The survey was conducted in patients who have agreed to complete it and gave the consent to use the final results.

Based on the research and medical opinion, patients were divided into two groups:

A – patients with chronic pain

B – patients with acute pain.

Group A consisted of 21 patients (16 women, 5 men), group B of 9 patients (3 women and 6 men). The mean age of group A was 51 years, while in group B it was 47 years. Each of the subjects was included in the treatment consisted of iontophoresis and the therapeutic massage. Treatments recommended by a doctor were performed every second day in five series.

Pain was ascertained with 10-grade Visual Analogue Scale (VAS) while the pain radiation was described to the subsequent part of the body.

Results

The onset of pain was verified in all patients. Back pain in the lumbo-sacral area in respondents from Group A occurred once for several months in 8 patients, another 5 patients complained of existing pain in the same areas of spine. Eight patients indicated the presence of pain once every few weeks. In group B it was demonstrated that back pain in

the lumbo-sacral area appeared in two patients once the several weeks, in four patients the pain appeared once every several years, in one patient the discomfort returned twice a year, while two patients complained of pain occurring once every several weeks.

The radiation of pain was verified and it was shown, that in group A patients (with chronic pain) it existed in the lumbo-sacral area the most in 11 respondents, 5 patients reported its location along the entire lower extremity, in 4 patients the pain radiated in the area of whole lower extremity and hip, while in one respondent in area of buttock and thigh. Seven patients from group B with acute pain indicated the pain radiating to the entire lower extremity, in one subject the pain radiated around the hip and lower limb, while one of patients complained of pain radiated in the buttock and thigh.

The intensity of pain was verified by means of the VAS scale in both groups before and after the treatments carried out. It was demonstrated that before treatment the average value for patients from both research groups (A and B) it was 7, after treatment this value decreased to 5. There was performed analysis of VAS mean values changes before and after treatment in patients from A and B groups. It has been shown that prior treatments its average value in patients from group A was 5, after treatment this value decreased to 4. Average value of pain intensity in patients from group B according to VAS was scored at 9, after treatment this value decreased to 6.

In addition it was verified, how the treated patients from both research groups used the analgesic prevention. Comparison performed in both groups of patients showed that 5 of patients from both groups A and B did not use any prevention, two patients in Group A and 1 in Group B were swimming, 4 patients from Group A and two from Group B exercised, two patients from Group A and 1 patient from group B used a sanatorium, while 8 patients in Group A used wellness.

Discussion

Pains in the lumbo-sacral spine are a major economical and medical problem, because of the increasing number of people suffering from this disease. According to many authors, main causes of changes in the intervertebral discs are the unilateral spine loading, sedentary work, passive leisure and

particularly the weak muscular corset that is the result of minor physical activity. The above-mentioned loads lead to the progressive deficits first in function and then the damages in structure of the spine (Dziak 1990; Stodolny 1999, Kempf-Hans 2002; Nowakowski 2003,2004; Kiwerski 2006).

More than half of the patients can be treated conservatively, allowing them to perform every day activities, taking however into account that the patients themselves are aware of the mechanisms of pain and how to deal against a possible relapse. According to Nowakowski about 1-10% of the patients require the surgical treatment (Nowakowski 2003,2004).

Stodolny and Nowakowski state that back pain often occurs in active people and young people, also middle-aged (age range 20-45 years) (Stodolny 2000; Nowakowski 2003,2004).

In our study, there participated 37% of women and 63% of men aged from 21 to 74 years, what indicates that pain affects both younger and older patients.

Therapies that can be used to reduce or eliminate pain in the lumbo-sacral area of the spine may be different. According to Dyszkiewicz, the iontophoresis is a physical treatment known for decades in medicine. This is a method of transdermal drug delivery used in the various diseases. By using a direct current for about 20 minutes to the certain area of the spine, the improvement can be achieved acting by the analgesic component, antiinflammatory component, and antioedemic component (Dyszkiewicz 2006). In contrast, the therapeutic massage according to Stodolny, Woszek and Mizgiera is the most common form of therapy in health care. It allows to obtain the therapeutic effects such as reducing the increased muscle tension, improving blood circulation, improving joint mobility, soft tissue mobilization, and others. Moreover, it is well accepted by most of the patients (Stodolny 2000; Woszek 2011; Mizgier 2009). In this study, prior to the first treatment of applying the massage and iontophoresis, the intensity of pain according to VAS was scored at 7 in two groups of patients (A- chronic pain, B - acute pain), but after finishing those series, the pain level increased to 5 in both patients groups, whereby it seems that the use of such combination is successful.

Abbott et al indicate, on the basis of an electronic database that in 21% of patients after 3 months from doctor visits there remained a slight pain, while in 60% of patients the pain survived as well as difficulties in the normal functioning after

12 months from the onset of the first disease symptoms (Abbott et al 2002).

Based on the analysis of own research results, it was found that the majority of respondents in the group with chronic pain, 38% of them reported the pain occurrence once every few months. The problem of back pain everyday occurrence was reported by 24% of respondents, it was detected once every few weeks in 38% of subjects. Moreover, in patients with pain episodes, the acute pain occurred every few months and it was reported by 22% of patients. In 45% of respondents, this problem occurred every several years. Eleven percent of the people signalled the pain symptoms two times a year, and 22% once every several weeks.

According to Stodolny, Kempf-Hans as well as Nowakowski, the primary purpose of prevention to prevent the pain recurrence and diminish the necessity of surgical intervention. In the therapeutic treatment of chronic low back pain when pharmacotherapy and physical therapy are applied, there should be included the health care prophylaxis (Stodolny 2000; Kempf-Hans 2002; Nowakowski 2003).

In presented studies of patients with the chronic pain it has been confirmed the thesis that the majority of patients take benefits mainly from the wellness and massage or the other forms of prevention. One of the elements of the effective prophylactic care are the appropriately chosen exercises, which aim not only an analgesic effect, but also helps in restoring the correct pattern of locomotion and posture.

Conclusions:

1. Iontophoresis and therapeutic massage were proven to be an effective analgesic treatment in patients with symptoms of pain in the lumbo-sacral spine.
2. Reduction of pain intensity verified by VAS after treatment in the group of patients with chronic pain (group A) was observed in 9 out of 21 patients, in patients with acute pain (group B) in 4 out of 9 subjects.
3. The use of prophylaxis improves the physical fitness and the mental well-being of people suffering from back pain in the lumbo-sacral spine.

References

- Dobrogowski J.**, Wordliczek J., Bromboszcz J., Klasyfikacja bólu przewlekłego. Wydawnictwo Rehabilitacja Medyczna, Kraków, 1999;31-42:355-374.
- Dobrogowski J.**, Wordliczka J., Ból przewlekły, Wydawnictwo MCKP UJ, Kraków, 2002;189, 253-261.
- Dyszkiewicz A.**, Środki farmakologiczne do jonoforezy cz.I. Rehabilitacja w praktyce, 2006;1:40-42.
- Dziak A.**, Bóle krzyża, PZWL, Warszawa, 1990;41-59,67-71.
- Kasprczyk T.**, Magiera L., Mucha D., Walaszek R., Masaż z elementami rehabilitacji, I Reumed, Kraków, 2006;15:221-252.
- Kempf Hans-D.**, Szkoła pleców, Sic, 2002.
- Kiwerski J.**, Rehabilitacja medyczna, Wydawnictwo Lekarskie PZWL, Warszawa, 2006;118-136:551-559.
- Magiera L.**, Klasyczny masaż leczniczy, Wydawnictwo BIO- STYL, Kraków, 2006;11- 16.
- Marciniak W.**, Szulc A., Wiktora Degi Ortopedia i Rehabilitacja tom 2, Wydawnictwo lekarskie PZWL, Warszawa, 2003, 2004:302-306.
- Marszałek A.**, Masaż klasyczny w terapii kręgosłupa, Med Man 2006;10,4:26-41.
- Mika T.**, Kasprzak W., Fizykoterapia, PZWL, wydanie IV, Warszawa, 2001;165-178,215-216, 227-236.
- Mizgier P.**, Kassolik K., Andrzejewski W., Skuteczność serii 10 zabiegów masażu klasycznego w zespole bólowym dolnego odcinka, Rehabilitacja w praktyce 2009;3:44- 46.
- Nowakowski A.** Bole krzyża, W: Wiktora Degi Ortopedia i Rehabilitacja Tom 2. PZWL, Warszawa, 2003, 2004;302-306.
- Rakowski A.**, Słobodzian J., Terapia manualna w zespołach bólowych kręgosłupa lędźwiowo-krzyżowego. Wydawnictwo Centrum Terapii Manualnej dr Andrzeja Rakowskiego, Poznań 2001;16-34.
- Rakowska-Muskat M.**, Codziennosc bez bólu – autoterapia dysfunkcji narządu ruchu, Skuteczny program radzenia sobie z bólem ostrym i przewlekłym. Centrum autoterapii Humanus, Zakopane, 2011;13-17.
- Stodolny J.**, Choroba przeciążeniowa kręgosłupa – epidemia naszych czasów, Wydawnictwo ZL NATURA, Kielce, 1999;17-60.
- Stodolny J.** Jak chronić swój kręgosłup, Wydawnictwo ZL NATURA, Kielce, 2000;9-21:149-171.
- Woszek W.**, Andrzejewski W., Kassolik W., Ocena efektywności masażu leczniczego u osób ze zmianami przeciążeniowymi odcinka lędźwiowego kręgosłupa, Rehabilitacja w praktyce, 2011;1:52- 56.
- Zembaty A.**, Kinezyterapia, Wydawnictwo "Kasper" Sp. z o o., Kraków, 2002;152-158.

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