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Evaluation of the effectiveness of one cycle of rehabilitation procedures in patients diagnosed with cervical spine discopathy

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Abstract

Aim of the study: The aim of the study was to evaluate the effectiveness of one cycle of rehabilitation procedures in patients diagnosed with cervical spine discopathy.

Material and methods: The study included 100 patients (47 women and 53 men) aged 50 to 65 years ($x = 57.5 \pm 4.2$) with diagnosed discopathy in the lumbar spine. Patients were qualified to be examined by a physician based on the results of imaging tests and information

provided in the interview. Patients were randomly divided into two groups of 50, in which two different ways of rehabilitation were applied in a 10-day ambulatory cycle. The average daily duration of therapy lasted 60 minutes. In the first group, patients underwent a series of treatments using kinesitherapy, laser therapy and magnetic field, while in the second group patients were subjected to a series of treatments using kinesitherapy, electrotherapy and TENS currents. The initial and final examination included the subjective scale of VAS pain, the ODI Oswestry questionnaire and the original scale of the assessment of the effectiveness of laser therapy, magnetic field or TENS currents.

Results: Significantly less ailments were experienced by patients in a sitting position treated with laser therapy and magnetic field ($M = 2.06$) than with electrotherapy ($M = 2.64$) ($p = 0.001$). Less pain also caused them to travel ($M = 1.78$, $M = 2.12$) and these differences were statistically significant at $p = 0.005$. In patients treated with laser therapy and magnetic field, there was lower pain in a standing position ($M = 2.46$) than in patients treated with electrotherapy with TENS ($M = 2.80$) ($p = 0.033$). In addition, patients treated with laser therapy and magnetic field also experienced less discomfort in the conduct of social life ($M = 1.86$) than patients undergoing treatment with TENS ($M = 2.32$) ($p = 0.001$). Also in patients treated with laser therapy and magnetic field, significant changes in the intensity of pain were observed ($M = 1.76$) than in the second group ($M = 2.30$) - $p = 0.000$. In addition, patients treated with laser therapy and magnetic field showed a decrease in the level of disability ($M = 20.82$), while in patients treated with electrotherapy with TENS this change was lower ($M = 23.22$) - $p = 0.000$. The analysis of data on the subjective assessment of the effectiveness of rehabilitation therapy results shows that no statistically significant differences were observed due to the type of rehabilitation procedure applied.

Conclusion: Kinezytherapy supported by physical procedures is an effective method of treatment of cervical spine discopathy.

Key words: rehabilitation; cervical spine discopathy.

Introduction

Injury to the intervertebral disc, i.e. discopathy, is one of the most common causes of back pain in the lumbar, thoracic and cervical spine [1]. This is in many cases the first sign of a degenerative disease. Degenerative changes of the spine are one of the most common disease syndromes of the last decades [2]. The main reason for the frequent occurrence of this syndrome is probably the progressive change in lifestyle, reduction of physical and physical activity, and facilitation of living conditions as a result of technical progress. Over time, due to the incorrect lifestyle, taking a long and unfavorable position for the spine, under the influence of individual predispositions, the disk undergoes degenerative changes that lead to the formation of an intervertebral disc hernia, compression of the spinal cord and spinal roots that cause pain [3,4].

In cervical discopathy, there are movement restrictions within the cervical spine, and in addition to "stiffening" (hardening) of the neck and shoulder muscles. Cervical syndromes can be treated pharmacologically with many analgesic and anti-rheumatic drugs. The use of these drugs reduces both pain and muscle tone. Physical therapy in cervical pain syndromes includes a number of treatments to improve blood supply to the neck muscles. These treatments include massage, kinesitherapy, phototherapy, laser therapy, magnetotherapy, cryotherapy or current therapy. In some cases, you can use Glisson loops. Orthopedic equipment in the form of a Schan collar may also be an ad hoc and sometimes long-term remedy against pain and paresis caused by the abovementioned cervical spine injuries. As a last resort, surgical procedures are used [5].

The number of rehabilitation methods that can be used is large [5-17]. Therefore, it was undertaken to check whether the effects of rehabilitation are different in the form of reducing patient pain and improving the quality of life after various types of treatments.

Aim of the study

The aim of the study was to evaluate the effectiveness of one cycle of rehabilitation procedures in patients diagnosed with cervical spine discopathy.

Material and methods

The study included 100 outpatient patients with medically diagnosed cervical

discopathy aged 50 to 65 years old. The tests took place in January 2017 at the Sanatorium Spa No. 1 in Ciechocinek. Patients were randomly divided into two, 50-person groups in which different treatment methods were performed in a 10-day outpatient cycle. In the first group, patients underwent treatment using: laser, magnetic field and kinesitherapy; in the other, using: TENS electrotherapy and kinesitherapy.

The study was conducted using three questionnaires. The intensity of neck and upper limb pain was assessed by patients on the VAS visual analogue pain scale. To assess the quality of life of patients, the Polish version of the Oswestry Low Back Pain Disability Scale Scale - Polish Version (OLBPDS-PL) was used.

The last of the questionnaires used was a subjective assessment of the effectiveness of magnetic field or TENS laser therapy by patients.

Statistical analysis

The research material contained in the questionnaires completed by patients was collected in the IBM SPSS spreadsheet.

The obtained data was subjected to quantitative analysis, the following were determined in the scope of statistics: minimum and maximum values, arithmetic mean, standard deviation. In addition, percentages were also used.

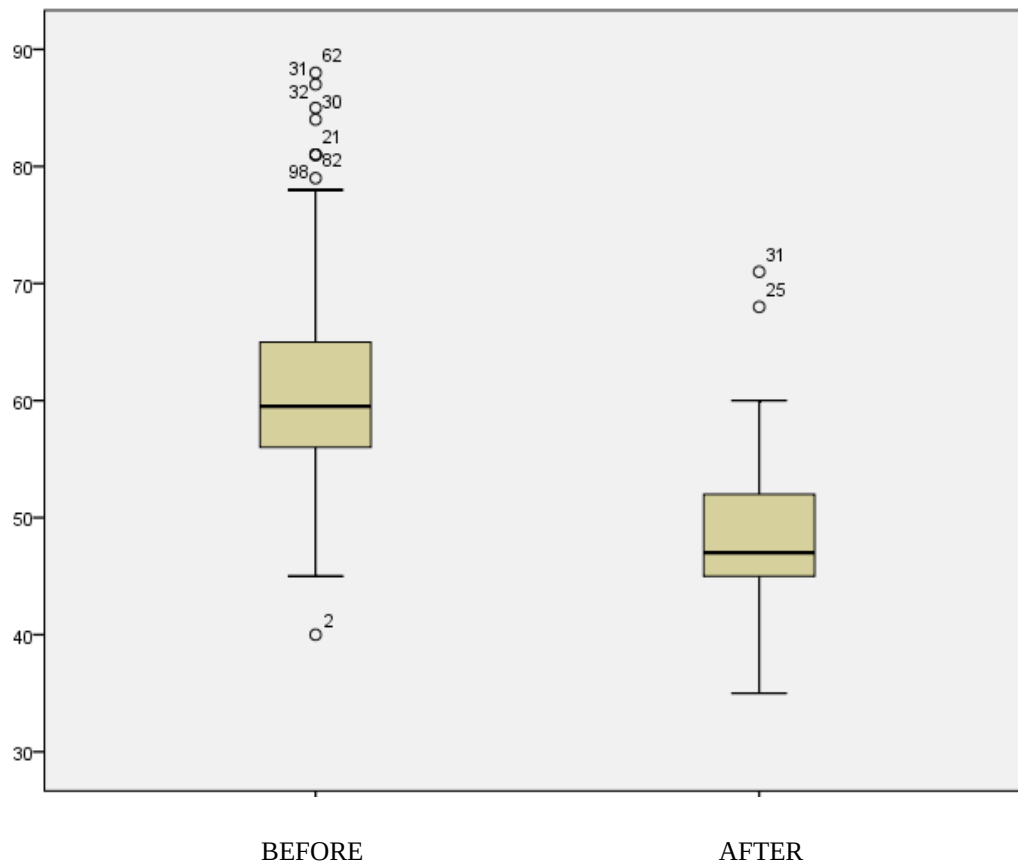
In order to verify hypotheses and examine differences between groups and the achieved rehabilitation effects, Student's t-tests for dependent and independent trials and Anova one-way tests were carried out.

Results

Patients surveyed indicated that their average pain level prior to rehabilitation was 61.74 mm. So it was a strong pain. 84% of patients complained of severe pain, 6% had moderate pain and 10% had maximum pain.

After rehabilitation, the average pain level was 48.06 mm with a standard deviation of 6.532. Table 6 shows that 66% of patients complained of moderate pain and 33% of severe pain. Only one patient had maximum pain.

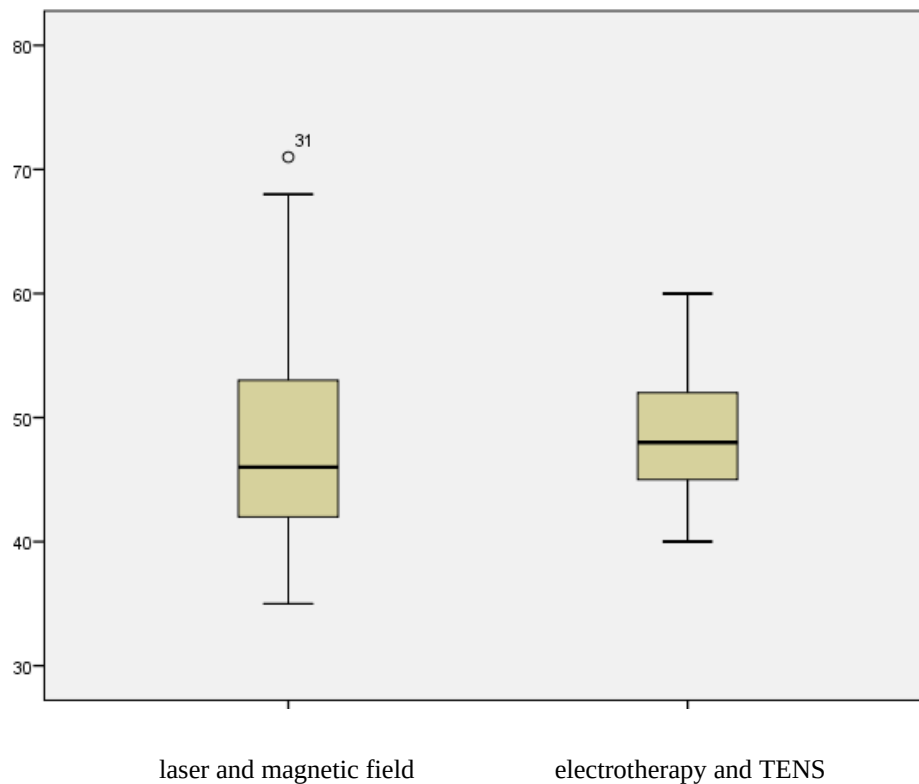
Figure 1: The pain intensity before and after rehabilitation (VAS scale).



Significantly less ailments were experienced by patients in a sitting position treated with laser therapy and magnetic field ($M = 2.06$) than with electrotherapy ($M = 2.64$) ($p = 0.001$). Less pain also caused them to travel ($M = 1.78$, $M = 2.12$) and these differences were statistically significant at $p = 0.005$. In patients treated with laser therapy and magnetic field, there was lower pain in a standing position ($M = 2.46$) than in patients treated with electrotherapy with TENS ($M = 2.80$) ($p = 0.033$). In addition, patients treated with laser therapy and magnetic field also experienced less discomfort in the conduct of social life ($M = 1.86$) than patients undergoing treatment with TENS ($M = 2.32$) ($p = 0.001$). Also in patients treated with laser therapy and magnetic field, significant changes in the intensity of pain were observed ($M = 1.76$) than in the second group ($M = 2.30$) - $p = 0.000$. In addition, patients treated with laser therapy and magnetic field showed a decrease in the level of disability ($M = 20.82$), while in patients treated with electrotherapy with TENS this change was lower ($M =$

23.22) - $p = 0.000$. The analysis of data on the subjective assessment of the effectiveness of rehabilitation therapy results shows that no statistically significant differences were observed due to the type of rehabilitation procedure applied.

Figure 2: The intensity of pain in patients with cervical discopathy due to treatments performed after rehabilitation



Discussion

There can be many causes of back pain: it can be changes that arise in the spine itself, as well as in its osteoarticular components and ligaments [18]. However, the most common reason for their occurrence are overload and degenerative changes within the intervertebral discs. It is the result of performing incorrect movements, injuries, lifting weights, and overloads causing structural damage [19]. Civilization changes, including physical inactivity, have contributed to the development of back pain, including cervical discopathy, and the number of people experiencing these conditions is constantly increasing [2]. This problem is

so large that it is even believed that modern society has failed to prevent and treat these ailments [18].

The literature on the subject indicates that physiotherapists and physiotherapists sometimes feel helpless against resistant back pain syndromes. The multitude of therapeutic techniques that can be used makes it difficult to choose the ones that potentially help the patient best [7,8,11,14,15,20,21]. For example, cervical discopathy can be treated using massages, physical therapy, including TENS currents, magnetotherapy [22,23].

It has also been confirmed that electric therapy, laser therapy, inferential currents, and diadynamic currents bring positive effects [9,15].

The selection and proper performance of physiotherapeutic procedures is crucial in the final effect of rehabilitation. As the literature on the subject shows, the most important element of spine therapy is movement, or kinesitherapy, which can be supported by physical procedures [24].

Own research shows that the average level of pain before undertaking rehabilitation was 61.74 mm. So it was a strong pain that 84% of patients complained about. After rehabilitation, the pain level decreased to 48.06 mm and 66% complained about it; severe pain continued to be felt by 33% of patients ($p = 0.000$). Our own research shows that there were differences in the level of pain experienced in patients before therapy due to groups. Patients randomly assigned to the group that underwent laser and magnetic field treatment experienced a higher level of pain - 63.78 mm than patients undergoing electrotherapy treatment with TENS - 59.70 mm ($t = 2.305$; $p = 0.023$). In patients treated with laser and magnetic field (47.60 mm) there was a greater change in the level of pain felt (before treatment they had a higher rate) than in patients treated with electrotherapy using TENS (48.52 mm) ($p = 0.484$).

Own research shows that the level of disability in patients with cervical discopathy was quite high. 61% of patients indicated severe disability (33.48 points), and 39% of patients indicated extreme suffering. After the rehabilitation, the quality of life of the respondents improved significantly, the vast majority of them - 87% of the respondents - disability decreased to moderate (22.02 points). There was a significant improvement in all aspects of quality of life ($p < 0.05$). Intergroup analysis showed that there were differences in the degree of disability of patients, it was significantly higher in people undergoing laser and magnetic field treatment ($M = 34.52$) than in those undergoing electrotherapy treatment with TENS ($M = 32.44$) ($p = 0.001$). After rehabilitation in 6 of 10 daily activities and in the general level of

disability, there were differences after rehabilitation in patients due to the treatment methods used ($p > 0.05$). Laser and magnetic field treatment brought better results than electrotherapy and TENS treatment in such areas of life as sitting, traveling, sleeping, socializing, changes in pain intensity and general degree of disability ($p < 0.05$).

Conclusion

Kinezytherapy supported by physical procedures is an effective method of treatment of cervical spine discopathy.

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