

UDC 615.837

**EFFICIENCY METHODS OF PHYSICAL
REHABILITATION
OF OSTEOCHONDROSIS OF THE LUMBAR
SPINE**

Kyreev I.V., Zhabotyńska N.V., Kazarinova M.V.

**National university of pharmacy of Ukraine
http://nuph.edu.ua/, e-mail: farmacoter@nuph.edu.ua**

Introduction. Osteochondrosis is degenerative and dystrophic lesions of connective tissue that provide movement between the vertebrae. This disease of the spine, accompanied by a gradual and steady destruction of the spinal structures, which reduces the joint space between the vertebrae, the growth of bone in the form outgrowths (osteophytes), resistant to pain, muscle spasm and prolonged dysfunction of the spine [1, 2, 3]. Osteochondrosis – the most common disease of the spine, which affects more than 70% of the population. Osteochondrosis is not a disease of older people, the number of a workable young patient is increasing every year [4]. Important is the social significance of osteochondrosis, in the structure of diseases of the musculoskeletal system as a whole the average primary disability of adult consequence of osteochondrosis – 1,7 to 10 000 [5, 6]. Numerous statistics show not only the great frequency of disease osteochondrosis, but also the lack of a downward trend. In this connection important is finding the most effective methods of complex treatment, and most importantly rehabilitation and recovery of patients with osteochondrosis [7, 8].

The clinical picture in patients with osteochondrosis is largely determined by the presence of their neuro-vascular disorders. The mechanism of these disorders associated with simultaneous mechanical action on the spine disc herniation and accompanying vessels or the formation of muscle-tonic reflex reaction in response to muscle ischemia followed by compression of blood vessels and nerves near spasmodic muscle [9, 10]. Spasmodic muscle is a source of additional pain impulses in cells posterior horns of the spinal cord, resulting in increased activity of the anterior horn of the spinal cord, leading to greater muscle spasm. It closes the vicious circle of pain – spasm – pain [11]. To eliminate these violations during rehabilitation should affect both dystrophic tissues of the spine and the nerve elements (the roots of the spinal cord, ganglia, and peripheral nerves). Over formed in the last decade tradition of doctors outlook was formed in line with the pre-emptive use of mediation (pharmacotherapy). Meanwhile, the drug arsenal is a means of not less powerful potential – therapeutic physical factors. Physical factors are adequate for the body and external stimuli has long been widely used as an effective means of treating and preventing disease, hardening of the body. The use of physical agents in the treatment, prevention and rehabilitation of patients with different clinical profile available, cost-effective and clinically effective [12, 13].

The goal of physical rehabilitation of patients with low back pain - the restoration of physical performance,

achieved in developing an individual program with the severity of the pathological process and individual characteristics of the patient during rehabilitation.

Material & methods. We selected 16 patients with diagnosis: Osteochondrosis of the lumbar spine, men aged 29 to 42 years (average age $35,9 \pm 7,03$ years) with disease duration from 2 to 9 years. During the recent exacerbation of the disease, all patients were treated in hospital vertebrologic department and were discharged with improvement. Even in remission in patients kept aching pain in the lumbar region, limiting movement in lower thoracic and lumbar regions of spine, paravertebral muscle tension. In connection with this, all the patients were admitted to the rehabilitation clinic to the medical-rehabilitational center of the school of the sportsmanship of Kharkov, in ten days' time, from the moment of the discharge from vertebrologic department. To determine the effectiveness of the methods of physical rehabilitation of patients with lumbar osteochondrosis outside the period of exacerbation assessed the dynamics of three indicators: vertebral syndrome, extravertebral syndrome, subjective assessment of the general condition of patients by psychological testing.

The degree of vertebral syndrome intensity was determined by visual analogue scale (VAS) [14]. This scale is a line length of 100 mm, the ends of which correspond to the extreme severity of pain ("no pain" at one end "intolerable pain" – on the other). Patients made a mark on the line at the point that reflects the intensity of his pain. The result was measured in centimeters, marked invisible on the patient side of the scale. Each centimeter on your answer 1 point.

Extravertebral periodic syndrome manifested by pain in the leg muscles of the overwhelming interest of the femur and tibia, which were provoked temperature changes, physical activity. Characteristic were phenomena of mild hypotension gluteal muscles. These effects combined with neuro-vascular disorders as "marbling" skin, hyperhidrosis of lower extremities.

To assess the psychological status of patients we used the method of psychological testing "HAM" – health, activity, mood [15]. This method has been widely spread in assessing the mental state of ill persons, psycho-emotional reactions to stress, to identify individual characteristics and biological rhythms of physiological functions. Each patient was given a card that contains 30 pairs of words that reflect the studied features emotional state. Relative to each pair of statements patient has the choice, noting the required value scale "3 2 1 0 1 2 3". The figure "0" consistent with the average being of that person examinee can not be attributed to bad nor good. The unit, located to the left of "0" reflects being – above average, and the number three - meets a beautiful being. Those figures in this row, standing to the right of the digit "0", similarly characterize being investigated if it is below average. The resulting amount for each scale can detect the functional status of the individual at a given time on the basis of 1-3 points – low grade (prevailing bad mood); 3,5-4,5 points – average grade (dominated by changeable mood); 5-7 points – high grade (often dominates spirits).

After the examination, the patients divided into two groups of 8 people. The distribution by age and clinical

manifestations of the disease was the same. Patients of the first group received physical therapy (ultrasound therapy apparatus "UZT-1.07F" in continuous mode ultrasonic waves of medium intensity (0,6-0,8 W/cm²), treated two paravertebral areas in the lumbar region area on 150 cm², exposure time 8 minutes in each field, the course of 10 procedures daily). In addition, all patients had a course of massage therapy – 10 procedures daily and physiotherapy of 30 minutes over 30 days. Pharmacotherapy is not done. Patients of the second group received medications according to the recommendations received after discharge from hospital (artron tryaktyv on 1 tab. twice a day during 2 months; diacerein 1 tablet once a day during 2 months; neyrobion 1 tablet once a day during 1 month).

Results & discussion. The data of the vertebro-neurological examination showed that in both groups of patients the vertebral syndrome corresponded to a moderate degree of expression (2±0,75 points out of 5). After the rehabilitation treatment severity of vertebral syndrome significantly decreased to 1,1±0,23 points ($p < 0,05$) in first group and to 1,0±0,33 points in second group ($p < 0,05$) with no significant difference between groups of patients. These figures suggest that all patients there was a reduction in pain to a weak pain, but some patients even before its termination.

Dynamics extravertebral syndrome evaluated in terms of pain. Prior to the rehabilitation of patients in both groups was responsible terms of pain average was 1,8±0,5 out of 3 points. After rehabilitation terms of pain rate in the first group significantly decreased to 1,1±0,03 ($p < 0,05$) points; in the second group, the figure dropped significantly to 1,2±0,08 ($p < 0,05$) points.

Psychological testing at the beginning of the study showed that patients with vertebral lumbar pain even without exacerbation were in the psycho-emotional stress (Table 1).

Table 1. Results of psychological tests on scale "HAM".

| | Before rehabilitation | First group | Second group |
|----------|----------------------------|----------------------------|----------------------------|
| Health | 3,0±0,15 ($p < 0,05$) | 4,5±0,2 ($p < 0,05$) | 4,5±0,18 ($p < 0,05$) |
| Activity | 3,5±0,1 ($p < 0,05$) | 4,8±0,25 ($p < 0,05$) | 4,5±0,17 ($p < 0,05$) |
| Mood | 3,5±0,12 ($p < 0,05$) | 5,0±0,14 ($p < 0,05$) | 4,0±0,2 ($p < 0,05$) |

According to the "HAM" in both groups noted a significant increase in scale of "Health" (+1,3 ±0,2 and +1,4 ±0,1 ($p < 0,01$)), and several more pronounced improvement on scales "Activity", "(+1,5 ±0,10 and +1,4 ±0,09 ($p < 0,01$)) and "Mood" (+1,7 ±0,11 and +1,6 ±0,2 ($p < 0,01$)) points respectively in groups first and second. Importantly, in patients who did not receive pharmacotherapy, improvement in psychological testing "HAM" was slightly higher, reflecting the more positive assessment by patients of their condition by the end of the course of rehabilitation; reduce fatigue, increase stamina, optimism, activity and energy. In the group first patients, unlike the second groups, correlation dynamics of a scale "HAM" indicators of change in VAS ($r = +0,37$, $p < 0,05$),

that is, reducing the intensity of pain occurred against the background of physiotherapy simultaneously with a reduction in anxiety.

Conclusions. Thus, even an isolated application of physical rehabilitation of patients with spinal osteochondrosis is effective and does not always require pharmacological support. At the same efficiency, physical rehabilitation reduces patient's psycho-emotional stress that takes medications. The isolated use of exercise therapy, massage and physical therapy with the use of ultrasound in patients with osteochondrosis of the lumbar spine with prolonged pain leads to significantly higher compared with the group of patients receiving only drug therapy, reducing the severity of pain and improve psychological status of patients. By the end of the course of physical rehabilitation revealed reduce anxiety, tension increased activity, mood, optimism and stress patients. This fact allows us to better understanding the mechanisms of physical rehabilitation, underlying the analgesic effect of physical therapy in spinal osteochondrosis. These facts show high efficacy of physiotherapy techniques for physical rehabilitation of patients with osteochondrosis of the lumbar spine.

References

1. Epifanov, V. A. Spinal osteochondrosis (diagnosis, treatment, prevention) / V. A. Epifanov – M. : Higher School, 2004. – 272 p.
2. Dubchuk, O. V. Problems of development, treatment and rehabilitation of osteochondrosis at present / O. V. Dubchuk, O. V. Usova // Youth Science Journal. – 2008. – № 2. – P. 30-33
3. Vorobei, V. V. Osteochondrosis of the spine: etiology, clinic, treatment by physical methods / V. V. Vorobei, I. V. Roy // Journal of the Practitioner. – 2001. – No. 6. – P. 39-44
4. Lyaskovskiy, A. V. Problems Prevention and rehabilitation of osteochondrosis cervical spine in adolescence / A. V. Lyaskovskiy, A. V. Usova // Youth Science Journal. – 2010. – P. 81-84
5. Kovalenko, V. M. Rheumatic diseases in Ukraine: state problems and solutions / V. M. Kovalenko // Ukrainian Journal of Rheumatology. – 2012. – № 3. – P.84-86.
6. Kornatsky, V. M. Diseases of the musculoskeletal system: the state of the problem in Ukraine and Europe / V. M. Kornatsky // Ukr. Med. Journal. – 2001. – № 4. – P. 139-143.
7. Polyakova, T. D. Preventive maintenance and rehabilitation of osteochondrosis of the cervical spine / T. D. Polyakova et al. // Modern Problems of Physical Rehabilitation: coll. of scient. art. / Ed. T. D. Polyakova, M. D. Pankova. – Minsk, 2002. – P. 9-13.
8. Kruk, B. R. Physical rehabilitation of people with neck and pain in spinal osteochondrosis / B. R. Kruk, D. O. Pavlovsky // Pedagogy, psychology and biology-med. problems. nat. education and sport. – 2006. – № 7. – P. 63-66.
9. Epifanov, V. A. Therapeutic physical training as a method of restorative therapy for diseases and injuries of the nervous system / V. A. Epifanov // Questions of balneology, physiotherapy and exercise therapy. – 2003. – No. 3. – P. 31-37.

10. Nikiforov, A. S. Degenerative diseases of the spine, their complications and treatment / A. S. Nikiforov, O. S. Mendel // Health Ukraine. – 2006. – No. 20 (153). – P. 54-55.
11. Yurik, O. Y. Neurological manifestations of osteoarthritis – pathogenesis, clinical manifestations, treatment / O. Y. Yurik – Kyiv: Health, 2001. – 255 p.
12. Mukhin, V. M. Physical rehabilitation / V. M. Mukhin - K., Publisher NUFVSU "Olympic literature", 2005. – 472 p.
13. Malakhov, G.P. Prevention and treatment of diseases of the spine / G. P. Malakhov –DONETSK: Stalker, Henesha, 2007. – 239 p.
14. Kuzmenko, V. V. Psychological methods quantify the pain / V. V. Kuzmenko, V. A. Fokin, E. R. Mattis and others. // Sov. medicine. – 1986. – № 10. – P. 44-48.
15. Doskin, V. A. Test differentiated functional state of self / V. A. Doskin, N. A. Lavrentiev, N. P. Miroshnikov, V. B. Sharai // Quest. of psychology. – 1973. – № 6. – P.141-144.

UDC 615.837

EFFICIENCY METHODS OF PHYSICAL REHABILITATION OF OSTEOCHONDROSIS OF THE LUMBAR SPINE

Kyreev I.V., Zhabotynska N.V., Kazarinova M.V.

Introduction. Osteochondrosis – the most common disease of the spine, which affects more than 70% of the population. Important is the social significance of osteochondrosis, in the structure of diseases of the musculoskeletal system as a whole the average primary disability of adult consequence of osteochondrosis – 1,7 to 10 000. It is important finding the most effective methods of complex treatment, and most importantly rehabilitation and recovery of patients with osteochondrosis. **Material & methods.** We selected 16 patients with osteochondrosis of the lumbar spine, men aged 29-42 years with disease duration from 2 to 9 years. To determine the effectiveness of the methods of physical rehabilitation of patients with lumbar osteochondrosis outside the period of exacerbation assessed the dynamics of three indicators: vertebral syndrome, extravertebral syndrome, subjective assessment of the general condition of patients by psychological testing. After the examination, the patients divided into two groups of 8 people. Patients of the first group received physical therapy (ultrasound therapy and massage therapy). Pharmacotherapy is not done. Patients of the second group received medications according to the recommendations received after discharge from hospital. **Results & discussion.** After the rehabilitation treatment severity of vertebral syndrome significantly decreased to $1,1 \pm 0,23$ points ($p < 0,05$) in first group and to $1,0 \pm 0,33$ points in second group ($p < 0,05$) with no significant difference between groups of patients. These figures suggest that all patients there was a reduction in pain to a weak pain, but some patients even before its termination. After rehabilitation terms of pain rate in the first group significantly decreased to $1,1 \pm 0,03$ ($p < 0,05$) points; in the second group, the figure dropped significantly to $1,2 \pm 0,08$ ($p < 0,05$) points. In patients who did not receive pharmacotherapy, improvement in

psychological testing "HAM" was slightly higher; reflecting the more positive assessment by patients of their condition by the end of the course of rehabilitation, reduce fatigue, increase stamina, optimism, activity and energy. In the group first patients, unlike the second groups reducing the intensity of pain occurred against the background of physiotherapy simultaneously with a reduction in anxiety. **Conclusions.** Thus, even an isolated application of physical rehabilitation of patients with spinal osteochondrosis is effective and does not always require pharmacological support.

Keywords: osteochondrosis rehabilitation, conventional methods, efficiency