

Indicators of daily blood pressure monitoring in patients with osteoarthritis with cardiovascular disorders in case of metabolic syndrome

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Abstract: The article presents the results of the use of combined laser therapy in patients with osteoarthritis with cardiovascular disorders in metabolic syndrome. The data of daily monitoring of blood pressure in 310 patients with osteoarthritis are presented. The patients of the main group received combined laser therapy according to the proposed method and traditional drug treatment.

Keywords: osteoarthritis, laser therapy, cardiovascular disorders, metabolic syndrome

INTRODUCTION

Osteoarthritis is a chronic progressive non-inflammatory disease of the synovial joints of various etiologies, characterized by degeneration of articular cartilage, structural changes in the subchondral bone and overt or covert synovitis.

In recent years, medical publications have increasingly shown that people suffering from osteoarthritis have a higher risk of developing metabolic disorders, and consequently cardiovascular diseases, as well as a higher overall mortality rate compared to the population. The main risk factors for osteoarthritis and cardiovascular diseases are: age, overweight, hereditary predisposition, metabolic disorders (elevated cholesterol levels, impaired glucose tolerance, diabetes mellitus). It was found that not only increased weight is associated with an increased risk of osteoarthritis, but weight loss is also associated with a reduced risk of osteoarthritis. An increased mass of adipose tissue increases the load on the skeleton and leads to damage to the musculoskeletal tissue. However, the fact that osteoarthritis often develops in joints that are not related to increased weight suggests that there are some other mechanisms associated with obesity that can change the metabolism of cartilage and bone tissue and lead to the development of the disease. The new data allowed us to hypothesize that osteoarthritis is a systemic disease in which dysregulation of lipid metabolism may be one of the leading pathophysiological mechanisms leading to the development of osteoarthritis. According to a number of researchers, the association of osteoarthritis with cardiovascular diseases may be due to both common pathogenetic mechanisms and other external factors. Nonspecific inflammation plays

a significant role in the pathogenesis of atherosclerosis and osteoarthritis, as well as in the pathogenesis of metabolic syndrome. The relationship between overweight and osteoarthritis can be explained by an increase in the load on the joints, which causes mechanical "breakdown" of cartilage, which then leads to the development of osteoarthritis. Thus, from the point of view of life prognosis, it is important that the combination of metabolic disorders significantly accelerates the progression of atherosclerosis, i.e. increases the cardiovascular risk and the development of osteoarthritis in this category of patients.

The aim of the study was to study the effect of combined laser therapy on daily blood pressure monitoring in patients with osteoarthritis with cardiovascular disorders in metabolic syndrome.

MATERIALS AND METHODS OF RESEARCH

In total, 310 patients suffering from grade 2 osteoarthritis with knee and hip joint damage in combination with metabolic and cardiovascular disorders, aged 40-70 years, participated in the study. The duration of the disease is 5-15 years.

The study did not include patients with signs of severe atherosclerotic vascular damage, with myocardial infarction, with severe cardiac, respiratory, renal insufficiency, chronic infectious diseases, tuberculosis, oncopathology, and blood diseases.

All analyzed clinical and laboratory parameters were recorded on day 1-3 and day 13-14 of treatment.

A total of 310 people were examined:

group 1 - 64 patients with osteoarthritis of the 2nd degree with damage to the knee and hip joints in combination with metabolic and cardiovascular disorders, who received traditional therapy in combination with contact joint irradiation and intravenous blood irradiation.

Group 2 consisted of 62 patients with osteoarthritis who received traditional therapy in combination with intravenous blood irradiation.

Group 3 consisted of 61 patients with osteoarthritis who received traditional therapy in combination with contact surgery on the knee and hip joints.

Group 4 (control) consisted of 61 patients who received only traditional therapy.

Group 5 - 62 people, healthy volunteers who do not have somatic diseases, who were not registered at the dispensary, no acute pathology was registered in their anamnesis over the past 3 months.

The effect of laser therapy is carried out in a combined mode. First, they carry out intravenous irradiation of blood with a wavelength of 405 nm, a power at the end of the light guide of 1.5 MW, the total duration of the procedure is 5 minutes, ALT "Matrix-VLOK", a radiating head was used for exposure KL-VLOK-405. The above-mentioned effect is carried out on the projection of the cubital vein.

Then, contact irradiation of the joints is immediately carried out: with a wavelength of 630 nm, a pulse power of 10 W, a frequency of 80 Hz, ALT Matrix, a laser head CLO-3 was used for exposure).

The duration of exposure to the joints is:

- knee joints: the total duration of the procedure is 10 min.: 2 min. from 4 sides and labile technique, scanning with a beam along the articular gap for 2 min.);

- hip joints: the total duration of the procedure is 10 min.: irradiation through the projection zone of the umbilical ligament, the large trochanter of the sciatic tubercle for 2 min. and labile technique, scanning beam along the articular gap for 4 minutes.

There are 10 daily sessions per course. Laser therapy procedures are performed at the same time of day (± 1 hour).

THE RESULTS AND THEIR DISCUSSION

According to daily monitoring of blood pressure in patients with osteoarthritis, an increase in blood pressure was observed both during wakefulness and during sleep. In the studied groups, a higher level of average SBP ($p < 0.05$) was noted during daytime hours.

The daily values of the average DBP did not differ between the groups. DBP in the groups did not decrease sufficiently at night, but no significant differences were found.

Thus, patients in the study groups had a stable type of hypertensive syndrome (Both in SBP during the day and at night $> 50\%$), with an insufficient decrease in blood pressure at night.

The average daily values of SBP and DBP in the studied patients are statistically significantly higher than in healthy ones. The average daily and liver-mediated indicators of SBP were also significantly ($p < 0.01$) higher among patients with osteoarthritis, and liver-mediated indicators of DBP were also significantly higher ($p < 0.01$) in patients with osteoarthritis.

CONCLUSIONS

The average daily indicators of SBP decreased significantly under the influence of complex treatment, i.e. in group 1. The average daily and mean-level indicators of SBP also turned out to be significantly ($p < 0.01$) lower in group 1, as well as average-level indicators of DBP compared with other groups. Treatment of patients with osteoarthritis using combined low-intensity laser radiation (a combination of contact irradiation of joints and supravarital irradiation of blood) allows to achieve long-term remission, i.e. it has a prolonged effect. The use of combined laser therapy contributes to a significant reduction, and in some cases, the cancellation of the drug load, which avoids the side effects associated with taking them.

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