Rehabilitation

EFFECT OF PHYSICAL ACTIVITY ON CHRONIC FATIGUE IN RHEUMATOID ARTHRITIS PATIENTS

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Objectives: To evaluate the dynamics of fatigue indices in RA patients depending on the intensity of physical activity (aerobic exercise) in the short term.

Methods: The study included 111 women with RA (mean age 54.4±11.03 years old, mean disease duration 11.9±9.3 years, DAS28-ESR score 2.84 [2.32;3.05]; mean VAS fatigue score 71.6±8.93). All patients underwent a 3-week post-hospital rehabilitation program (PHRP), and aerobic exercise was the main component of this program (dosed walking, daily, up to 1 hour) and outdoor walks up to 3-3.5 hours per day [1]. The level of fatigue was estimated using the British Rheumatoid Arthritis Fatigue Scale - Numerical Rating Scale (BRAF-NRS V2). The 50-meter walking test was used to assess the functional state of patients in dynamics, the 6-minute walking distance test (6MWTD) - to assess patients’ tolerance to physical activity. The intensity and duration of exercise were compared with serum levels of free fatty acids (FFA), triglycerides (TG), and angiopoietin-like protein type 4 (ANGPTL4), an inhibitor of lipoprotein lipase, which plays an important role in the regulation of lipid metabolism and energy balance.

Results: After completion of PHRP, RA patients showed a significant decrease in fatigue aspects of the NRS severity scale (6.83 ± 1.21 vs. 6.51 ± 1.18 points, p<0.003), NRS-effect (6.24 ± 1.07 vs. 5.95 ± 1.08 points, p=0.037); a decrease in time taken to complete the 50 m. walk test was noted (79.3 ± 8.64 vs. 78.91 ± 8.15, p=0.01) [2]. Increased concentration of ANGPTL4 (p<0.02), FFA (p<0.01) and decreased TG level (p<0.05) were also determined in serum of RA patients. There was a significant correlation between ANGPTL4 and FFA (r=0.54, p<0.02), but not with TG (r=-0.18, p>0.05). The increase in serum ANGPTL4 during exercise may be mediated by increased serum FFA content and increased lipid oxidation processes. Previously, it was shown that muscle tissue, along with liver and adipose tissue, significantly affect to the increase in circulating ANGPTL4 during exercise [3, 4].

Based on the results of the first phase of the study, patients (n=102) were retrospectively divided into two groups: Group I (n=53) included patients with < 5-6 thousand steps/day (sedentary lifestyle); Group II (n=49) included patients with ≥ 7-8 thousand steps/day (mobile lifestyle). Group II of RA patients significantly improved their physical parameters - reduction of walking time (p<0.001) and number of steps in the 50-meter test (p=0.013) at the end of PHRP. There was a reduction in fatigue severity on all scales: VAS (p<0.001), NRS severity (p<0.001), NRS effect (p<0.001), and NRS-overcoming (p=0.001). In group I, there was an increase in VAS fatigue (p=0.008) and NRS effect (p=0.01). No intergroup differences were found among lipid metabolism indices before and after PHRP (p>0.05).

Conclusion: Aerobic exercise (walking) is an effective method of increasing physical activity and reducing fatigue in patients with RA during the post-hospital rehabilitation phase. Increased physical activity during walking (≥7-8 thousand steps/day) has a positive effect on physical indices and fatigue components in the short term. Lipid metabolism markers can be used in determining the degree of activity, optimization of the duration and intensity of exercise in RA patients.

REFERENCES:

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INTERVAL HYPOXIC-HYPEROXIC TRAINING IN REHABILITATION OF PATIENTS WITH OSTEOARTHRITIS AND POST-COVID SYNDROME

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Background: Intermittent hypoxia conditioning reduces the levels of inflammatory parameters and cytokines (C-reactive protein, TNF-α, IL-4, IL-6, IL-8), increases the tolerance to acute hypoxia, the functional capacity and improves parameters of respiratory and cardiovascular systems [1-4].

Objectives: To evaluate the efficiency of the interval hypoxic-hyperoxic training (Reoxy therapy) in the rehabilitation of patients with osteoarthritis (OA) and post-COVID syndrome.

Methods: 36 patients with OA (78% females, age of 43 to 68 years, generalized OA, OA of the knee or hip joints) where included in the randomized placebo-controlled study. Coronavirus infection COVID-19 were diagnosed from 12 to 26 weeks before the study. The main symptoms of post-COVID syndrome were dry cough, smell loss, breathlessness, weakness, fatigue, sleep disorders, cognitive symptoms, memory problems, anxiety, depression, headache, dizziness, joint and muscle pain. All patients were randomized into 3 groups. 13 study group patients received 10 Reoxy therapy procedures, 9 placebo group patients – 10 placebo procedures of Reoxy therapy, 14 control group patients – only standard rehabilitation. The patients of all groups underwent 2-week standard rehabilitation program: 10 procedures of electrostatic massage for muscles and periarticular tissues, 10 sessions of general magnetic therapy, 10 group sessions of physical exercises with elements of breathing exercises. All patients received NSAIDs and SYSADOA at standard dosages. Intra-articular corticosteroids was not used. The study group patients were breathing hypoxic (FI02 13–15%) and hyperoxic (FI02 up to 40%) gas mixture through the mask in the interval mode with biofeedback using device «ReOxy» (AI Medig S.A., Luxembourg). 10-min hypoxic test (FI02 12–13%) was performed before the first and fourth procedures. The duration of 1–4 procedures was 30min, 5–10 procedures – 40min. The placebo procedures were performed using the mask with the atmospheric air hole. Joint pain and general health on 100-mm VAS, Lequesne and WOMAC indexes, Spielberger-Khanin anxiety test, Beck depression inventory and breathlessness on Modified Borg scale were evaluated at baseline and at 2 weeks.

Results: After 2 weeks in the study group pain on VAS decreased by 49,6% (p<0.05), Lequesne index – by 39,3% (p<0.05), WOMAC – by 1,4 times (p<0.01), anxiety level on Spielberger-Khanin test – by 40,9% (p<0,05), depression level on Beck depression inventory – by 64,1% (p<0.01), general health on VAS improved by 69,3% (p<0,01). The level of breathlessness on Modified Borg scale in the study group initially was 2,5±0,9 score (moderate – slight breathlessness). After rehabilitation in the study group the level of breathlessness decreased to 0,3±0,4 score (extremely slight – no breathlessness). In the study group there were statistically significant differences from the placebo group (p<0,05) and the control group (p<0,05) in all parameters.

Conclusion: 2-week complex rehabilitation program, including interval hypoxic-hyperoxic training (Reoxy therapy), reduces pain, breathlessness, depression and anxiety, improves functional status and general health in patients with OA and post-COVID syndrome.

REFERENCES:

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NEUROPLASTICITY STIMULATION-BASED REHABILITATION IMPROVES PAIN AND HAND FUNCTIONALITY IN PATIENTS DIAGNOSED WITH CARPAL TUNNEL SYNDROME: A PILOT STUDY

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Background: Carpal tunnel syndrome (CTS) is the most commonly diagnosed entrapment neuropathy, characterized by sensory and motor disorders. Physiotherapy interventions based on neuroplasticity stimulation, such as mirror therapy (MT) and cross-education (CE) effects have not been widely studied in those therapies, mirror neurons that are activated when engaging brain plasticity. However, MT and CE effects have not been widely studied and impaired function. In those therapies, mirror neurons that are activated when creating organized new pathways between two cerebral hemispheres and enabling brain plasticity. However, MT and CE effects have not been widely studied on unilateral CTS.

Objectives: To analyze the effectiveness of MT and CE rehabilitation protocols in a sample of patients with CTS on pain intensity and functionality.

Methods: A randomized-controlled trial was conducted. Subjects diagnosed with unilateral CTS were enrolled in this study. MT group (MTG) (N=9)