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Influence of rehabilitation on the blood serum BDNF concentration in multiple sclerotic patients

Katarzyna Gniadek-Olejniczak
Military Institute of Medicine, Poland

Study assumptions: BDNF is a neurotrophin with a neuroprotective and PNS plasticity intensifying role. In MS patients, the blood serum BDNF concentration is reported to be lower than in healthy people. A 24-week training with increasing intensity of exertion results in an increased blood serum BDNF concentration in this group of patients. Hydrogen sulphide (H S) – a gasotransmitter of signalling and cytoprotective role, easily penetrating the skin and mucous membranes is a recognized PNS neuromodulator. The functions of the H S as an immune response moderator are applied in connective tissue diseases in the form of sulphide and hydrosulphuric baths.

Aims of the Study: The aim of the study was to compare the blood serum BDNF concentration in MS patients before and after a standard three-week rehabilitation offered by the NHF. The study compared the expected growth of the BDNF concentration in a group of patients rehabilitated with the help of standard kinesiotherapy and a group of patients rehabilitated with kinesiotherapy plus sulphide and hydrosulphuric baths as well as the results of the assessment of the cognitive and executive functions of MS patients in the two groups.

Methodology: Participants in the study were divided into 3 groups of 20 people each. Group 1 has MS patients rehabilitated for three weeks – standard kinesiotherapy; Group 2 has MS patients rehabilitated for three weeks of kinesiotherapy with sulphide baths; Group 3 has healthy volunteers – occasional BDNF determination. In the group of MS patients the BDNF concentration was determined prior to and after the rehabilitation. Group 3 was monitored for BDNF levels initially lower than in MS patients.

Results and Conclusions: Rehabilitation of MS patients with kinesiotherapy and sulfide baths causes a statistically higher growth of BDNF concentration than rehabilitation alone in this group of patients ($p<0.001$). Results of neuropsychological tests of MS patients rehabilitated with kinesiotherapy and balneotherapy elements are statistically better than of patients rehabilitated with kinesiotherapy ($p<0.033$). Research findings show that sulfide and hydrosulphuric baths seem to be a valuable supplement to MS patients' rehabilitation.

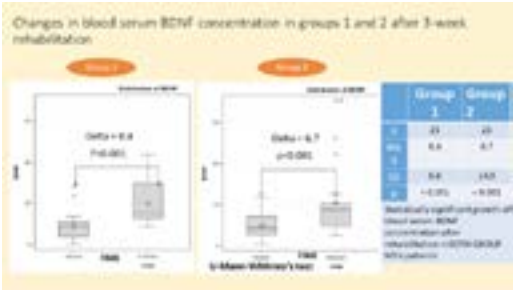

Figure: Changes in blood serum BDNF concentration in groups 1 and 2 after 3-week rehabilitation.

Recent Publications

1. Gniadek-Olejniczak K1, Makowski K2, Olszewski A3, Tomczykiewicz K4, Krawczyk A5, Mróz J3 (2018) State-of-the-art approach towards magnetic resonance imaging of the nervous system structures in patients with cardiac implantable electronic devicesNeurol Neurochir Pol. 2018 Nov - Dec;52(6):652-656.

Biography

Katarzyna Gniadek-Olejniczak is a physician full of passion and energy, seeking ever new challenges in gaining professional knowledge and experience. He approaches his patients with commitment and empathy which make him derive great satisfaction from his work. Having passed his specialty examination in neurology in April 2015 he began a new specialization line in rehabilitation. He commenced PhD studies designing a project with the aim of which is to assess the impact of different forms of rehabilitation on the level of neutrophins in patients with multiple sclerosis. In June 2017 he received a research grant for the project from the Military Institute of Medicine. The information about the enrollment was passed to him by a colleague who deems him competent, challenge- and travel-loving enough to be interested.

kgniadek-olejniczak@wim.mil.pl