

STATUS OF LIPID PEROXIDATION IN PATIENTS WITH OSTEOARTHRITIS UNDERWENT A TAMMEF SYSTEM

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Osteoarthritis is the most common rheumatic disease and is characterized by pain and stiffness of one or more joints, particularly those of the limbs and spine. Lipid peroxidation mediated by free radicals is considered to be the major mechanism of cell membrane destruction and cell damage. In several studies were observed alteration in antioxidant systems that supported the role of oxidative stress in osteoarthritis. Recently a number of papers have appeared suggesting pulsed electromagnetic fields as a technique for treatment of osteoarthritis. This work was undertaken to assess lipid peroxidation, ascorbic acid (AA) and glutathione (GSH) levels in patients with osteoarthritis of spine underwent a new electromagnetic system: TAMMEF (Therapeutic Application of a Musically Modulated Electromagnetic Field). In TAMMEF the extremely low frequencies electromagnetic field is piloted by a musical signal and its parameters (frequency, intensity, waveform) are modified in time, randomly varying within the respective ranges, so that all possible codes can occur during a single application. Ten patients affected by osteoarthritis of spine and 10 healthy subjects were enrolled in this study. Plasma levels of AA, GSH and MDA (as index of lipid peroxidation) were determined in healthy subjects and in patients before the beginning of treatment and at the end of cycle. All patients were underwent a cycle of 10 daily sessions of 30 minutes each, with application of the magnets in contact with the spine. The levels of MDA, AA and GSH were assayed using HPLC methods. The results of our study showed a significant increase of MDA (1.7 ± 1.40 nmol/ml) level and a significant decrease of AA (22.9 ± 4.21 nmol/ml) and GSH (1.4 ± 0.45 nmol/ml) levels in patients with osteoarthritis compared to control group (1.13 ± 0.27 , 38.5 ± 3.21 and 1.9 ± 0.15 nmol/ml respectively) and supported the role of oxidative stress in this pathology. Within group with osteoarthritis analysis revealed a significant decrease in plasma MDA (1.3 ± 1.04 nmol/ml) and AA (19.24 ± 1.99 nmol/ml) levels ($p < 0.05$ and $p < 0.01$ respectively) but there were no significant differences in GSH (1.3 ± 0.48 nmol/ml) levels after treatment with TAMMEF. Reduction in MDA level could be due to decreased generation of reactive oxygen species and decrease in AA level could be due to the increase turnover for preventing oxidative stress in patients after TAMMEF treatment. Furthermore a beneficial symptomatic effect was observed in all patients.

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