

# Changes in Plasma L-Arginine/Asymmetric Dimethyl Arginine (ADMA) Ratio Levels and Six-Minute Walking Test and Correlation with Clinical Scale in Patients with Generalized Osteoarthritis Receiving Spa Cure Treatment in Bolu Physical Therapy and Rehabilitation Hospital. Non-randomized controlled study

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**Objective.** Our aim is to investigate the effect of balneotherapy on clinical symptoms of osteoarthritis and vascular endothelium.

**Material and Methods.** Forty GOA patients who were referred to Physical Medicine and Rehabilitation Hospital in Bolu for spa treatment, were chosen as study group. Forty GOA patients who were followed on I.U. Istanbul Faculty of Medicine Medical Ecology and Hydroclimatology department locomotor system diseases ambulatory clinics were included as control group. Study group had received their daily spa treatment during 15 days, 15 session. Daily treatment included 20 minutes, thermal water baths + physical therapy modalities and exercises. Control group were followed with home exercises and the both group were used NSAII/paracetamol drugs if it is necessary. Both groups were evaluated at the beginning, after treatment and one month after treatment with VAS-pain, patient and physician global assessment, Health Assessment Questionnaire (HAQ), WOMAC (Western Ontario and McMaster Universities Osteoarthritis Index) pain, stiffness, physical function and total parameters. For plasma ADMA, L-arginine, L-

arginine/ADMA ratio measurements and routine blood analyses (blood count, hsCRP, lipid profile etc.), blood samples were taken at the beginning of study and after treatment. Walking distance at the beginning and after treatment were evaluated by six minutes walking test, as like as finger tip O<sub>2</sub> saturation and systolic/diastolic blood pressure and pulse rate were measured.

**Results.** Study group, were displayed statistically significant improvements after treatment in all of the clinical parameters. In control group, only VAS-pain, patient and physician global assessment parameters were improved statistically significant. Intergroup comparison study group showed statistically significant improvements in all parameters after treatment. First month evaluations showed statistically significant improvement on only VAS-pain scale in the study group. Measurements of L-arginine and L-arginine/ADMA ratio showed statistically significant higher levels after treatment. There is no significant difference in intergroup comparison.

**Conclusion.** Balneotherapy provides meaningful improvements on clinical parameters of GOA. Significant increase in plasma L-arginine and L-arginine/ADMA ratio suggest that balneotherapy may play a preventive role on cardiovascular diseases.

**Key Words:** Generalized osteoarthritis, Balneotherapy, ADMA, L-arginine, Pain.