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Study of Elements, Antioxidants and Lipid Peroxidation in Hemodialysis Patients

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Abstract: Background: During hemodialysis, most of the elements must be kept in a rather narrow physiological range, otherwise life-threatening events may occur. Furthermore, lipid peroxidation in patients may be partly due to the trace element disturbances. It has been mentioned that there are relations between deficiency in trace elements and antioxidant levels. The present study aimed to determine whether there were differences between hemodialysis patients and a healthy group according to selenium, aluminium, malondialdehyde (MDA), reduced form of glutathione (GSH) and superoxide dismutase (SOD) levels. Methods: The study included 47 hemodialysis patients (hemodialysis group). Blood samples were taken before (pre-hemodialysis) and after (post-hemodialysis) hemodialysis session. The control group included 23 healthy volunteers. Results: The aluminium, MDA, and SOD levels were lower and reduced form of GSH levels were higher in the control group when compared with the pre-hemodialysis group. MDA and SOD levels were higher in the post-hemodialysis group than in the control group. GSH levels were lower and aluminium levels higher in the pre- versus the post-hemodialysis group. Conclusions: In order to evaluate the data of antioxidant and oxidant levels, hemodialysis patients are subjected to oxidative stress. Moreover, the study shows that analyzing levels of aluminium may be useful in hemodialysis patients in evaluating elements status.

Key Words: Hemodialysis, antioxidants, oxidants, selenium, aluminium

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