Abstract

Introduction: Chronic kidney disease promotes changes in the zinc nutritional status and in the antioxidant defense system. This study assessed the relationship between the parameters of the zinc nutritional status and the activity of superoxide dismutase in patients with chronic renal failure who are receiving hemodialysis. Methods: 134 individuals, aged between 18 and 85 years, were divided into two groups: case group (hemodialyzed patients, n = 63) and control group (n = 71). Zinc concentrations in plasma and erythrocytes were determined using the flame atomic absorption spectrophotometry technique. The activity of superoxide dismutase enzyme was determined according to Ransod kit. Results: The mean values of plasma zinc were 62.02 ± 13.59 g/dL and 65.58 ± 8.88 g/dL, and for erythrocytary zinc the values were 54.52 ± 22.82 gZn/gHb and 48.01 ± 15.08 gZn/gHb for the chronic renal patients and the control group, respectively. The activity of superoxide dismutase was significantly lower in patients when compared with the control group (p < 0.05). Conclusion: The activity of superoxide dismutase in patients with chronic renal failure undergoing hemodialysis, which is influenced by zinc concentrations, was significantly lower. There was an inadequate response of this enzyme to oxidative stress in patients undergoing hemodialysis.

Keywords

Chronic kidney disease, Hemodialysis, Zinc, Superoxide dismutase.