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Is There a Correlation between Vitamin C Status and Catecholamines Concentrations in Hemodialysis Patients?

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It is well established that there is a high incidence of cardiovascular diseases in hemodialysis patients, and involvement of oxidative stress has been hypothesised in these phenomena. Plasma norepinephrine is an independent predictor of many causes of mortality in general, and high norepinephrine levels predict cardiovascular complications in end stage renal disease. The aim of our study was to evaluate the potential link between vitamin C status, a marker of oxidative stress, and catecholamine concentrations before and after hemodialysis sessions. In a prospective study of 16 chronic hemodialysis patients, ascorbyl free radical levels were directly measured using electron spin resonance spectroscopy. These values were expressed with respect to vitamin C concentrations to obtain a direct index of oxidative stress. Vitamin C, epinephrine and norepinephrine were measured by high performance liquid chromatography. The data were examined for correlations between these compounds and clinical parameters including blood pressure and heart rates. In hemodialysis patients, ascorbyl free radical/vitamin C ratios increased significantly after dialysis. No differences were observed for catecholamine concentrations during hemodialysis sessions. In multivariate analysis, the ascorbyl free radical/vitamin C ratios were not related among patients with end-stage renal disease. From these findings, we conclude that although these two factors are likely to be involved in the same causal pathway leading to cardiovascular events, it is likely that they seem to be independent.

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