Protein carbonylation and vitamin C content in serum of patients with prostate cancer

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Prostate cancer is the most frequently diagnosed neoplasm and the second leading cause of cancer-related mortality in men. Studies have implicated oxidative stress in the development and progression of prostate cancer. Moreover, both alterations of antioxidants and increases in the production of oxygen reactive species have been reported. Thus, the objective of this study was to determine the protein carbonylation and vitamin C content in serum of patients with prostate cancer. Twenty patients at the Hospital of the Federal University of Santa Maria and twenty disease-free patients were involved in this study. The carbonylation of serum proteins was determined by a modified Levine's method (1990). Vitamin C analysis was made by the method described by Jacques-Silva et al. (2001). The results demonstrated that protein carbonyl content was significantly increased (1.03 ± 0.05) in the patients compared to the controls (0.88 ± 0.03). The results were expressed as nmol/mL. On the other hand, serum vitamin C content was significantly reduced (377.89 ± 35.37) in patients when compared with the healthy group (485.50 ± 35.39). The results were expressed as μmol/mL. In conclusion, an increase of oxidative stress in prostate cancer patients occurred as a result of an imbalance between the oxidants and the antioxidants. This work provides evidence for the increased levels of oxidative damage and decreased levels of the antioxidant system in prostate cancer patients, suggesting a possible link between these two important parameters in this type of cancer.

Keywords: Prostatic cancer; Oxidative stress.