Determination of Some Oxidative Stress Parameters in the Blood of Multitransfused Individuals

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In view of the fact that the undesirable toxicity associated with blood transfusion may be related to excessive iron overload and, consequently to excessive ROS production, the objective of this study was to look for further evidence of oxidative stress in multitransfused individuals in order to determine whether oxidative stress indices could be used as the endpoint of toxicity associated with blood transfusion. In this study it was used samples of 50 multitransfused individuals and 20 controls (healthy subjects). The patients and controls were divided into 4 groups: 1) control; 2) up to five transfusions; 3) from five to ten transfusions; and 4) more than ten transfusions. Both ROS determination, protein carbonylation (index of protein damage) and thiobarbituric acid-reactive substances (TBARS; index of lipid peroxidation) were performed according to previously described. Statistical analysis was performed using one-way ANOVA followed by Tukey Kramer post test to compare the difference among the groups and Pearson correlation to analyze correlations between biochemical estimations and the number of transfusions. It was found that multitransfused individuals, regardless the number of transfusions, presented higher levels of ROS, protein carbonylation and TBARS than controls (p<0.001). Additionally, it was found a positive (r=0.7) and significant (p<0.0001) correlation among protein carbonyl and the number of transfusions. The presented results suggest that blood transfusions are directly related to the increase in ROS generation (oxidative stress) which could be due to the iron overload. Thus, we believed that the health of these patients could be improved by therapy with antioxidant.

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