

PRE AND POST-OPERATIVE TOTAL ANTIOXIDANT CAPACITY AND DEVELOPMENT OF POST-OPERATIVE INFECTIONS IN CORONARY ARTERY BYPASS GRAFT PATIENTS

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Amplified inflammatory response is a major pathophysiological challenge in sepsis. Systemic inflammatory conditions increase both endothelial cells and neutrophil activity which in turn increase oxygen derived free radicals. These oxyradicals play a role in propagation of the systemic inflammatory response syndrome and this imbalance in redox state indicates oxidative stress and tissue damage. It is reported that serum total antioxidant capacity is increased in critically ill surgical patients with septic shock. Objective of the study was to investigate the association between pre and postoperative total antioxidant capacity (TAC) and susceptibility to develop postoperative infections in patients following coronary artery bypass graft (n=102) warded at the Cardiothoracic unit of Sri Jayewardenepura General Hospital. The sample consisted of 67 males and 35 females with no preoperative clinical signs of infection. Total antioxidant capacities were determined using Trolox equivalent antioxidant capacity assay. Infections in surgical site (sternal and graft leg) and other infections (urinary tract, pneumonia and positive cultures from catheter tips) were recorded. From the total study sample, 27.3% patients developed postoperative infections. Infections were significantly (p=0.003) high among females (40%). The pre and post TAC of patients who developed postoperative infections were 7.0 ± 1.5 TEAC $\mu\text{g}/100\text{g}$ and 6.7 ± 1.2 TEAC $\mu\text{g}/100\text{g}$ respectively and of those who did not develop infections were 6.3 ± 1.1 TEAC $\mu\text{g}/100\text{g}$ and 6.0 ± 1.2 TEAC $\mu\text{g}/100\text{g}$. Significantly high concentrations of pre (p=0.02) and postoperative (p=0.01) TAC were observed in patients who developed postoperative infections. Contribution of TAC in development of infections was studied by Receiver Operative Characteristic curve to study a cut off TAC for development of postoperative infections. Area under the curve for preoperative TAC was 0.64 (p=0.027, 95% CI 0.518 – 0.770) and for postoperative incidence of infection with TAC after surgery was 0.65 (p=0.024, 95% CI 0.528-0.766) respectively. Preoperative TAC of 5.9 TEAC $\mu\text{g}/100\text{g}$ and postoperative TAC of 6.6 TEAC $\mu\text{g}/100\text{g}$ can be considered as cut-off values to predict incidence of postoperative infections.

Keywords: Total Antioxidant Capacity, Infection