

Influence of antioxidant therapy with high dose of vitamin C on mortality rates in critically ill poly-trauma patients

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Study objectives: The management of the critically ill polytrauma patient is complex and is often a challenge for the intensive care team. The objectives of this study are to analyze the oxidative stress expression in polytrauma cases as well as to evaluate the impact of antioxidant therapy on outcomes.

Materials and methods: This prospective study was carried out in the Clinic for Anaesthesia and Intensive Care “Casa Austria”, from the “Pius Brînzeu” Emergency County Hospital, Timisoara, Romania, with the approval of the hospital’s Ethics Committee. ClinicalTrials.gov identifier NCT03095430. The patients’ selection criteria included an Injury Severity Score (ISS) of 16 or higher and age of 18 or higher. 67 patients were eligible for the study. They were divided into two groups, group A (antioxidant free, control, N=32), and group B (antioxidant therapy, study group, N=35). The antioxidant therapy consisted of continuous IV administration of 7500 mg/24 h of vitamin C until discharge from ICU.

Results: The patients included in the study presented with similar characteristics, and no statistically significant differences were shown between group A and B regarding age ($p > 0.05$), sex ($p > 0.05$), ISS upon admission ($p > 0.05$), percentage of patients admitted in the ICU more than 24 hour post-trauma ($p > 0.05$), and associated trauma ($p > 0.05$). Among patients in group B statistically significant differences were identified regarding the incidence of sepsis ($p < 0.05$), multiple organ dysfunction syndrome ($p < 0.05$), mechanical ventilation time ($p < 0.05$), and mortality ($p < 0.05$). No statistically significant differences were shown regarding the time spent in the ICU ($p > 0.05$).

Conclusion: Following this study we can state that the administration of substances with a strong antioxidant character has positive influences on the outcome of critically ill patients, decreasing the incidence of secondary pathologies as well as mortality rates.