

The Beneficial Effects of α -Lipoic Acid in Critically Ill Patients: A Prospective, Randomized, Double-Blind, Placebo-Controlled Trial.

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Abstract

BACKGROUND: Critical illness is associated with oxidative stress and insulin resistance. These conditions affect the clinical outcomes in intensive care unit (ICU). The aim of this study was to determine whether intervention with α -lipoic acid (ALA) influences the oxidative stress, insulin resistance, and clinical outcomes in critically ill patients.

METHOD: In this randomized double-blind placebo-controlled trial, 80 critically ill patients who were expected to stay at least seven days in the ICU and required enteral feeding were randomly allocated to two equal groups to receive either ALA (900 mg) or placebo daily for 10 days. Serum levels of total antioxidant capacity (TAC), malondialdehyde (MDA), insulin, glucose (GLC), C-reactive protein (CRP), albumin (Alb), prealbumin (preAlb), total protein (total-pr) and total lymphocyte count (TLC) as well as homeostasis model assessment-estimated insulin resistance (HOMA-IR) were measured at baseline and at the end of ALA supplement phase. Clinical outcomes (length of ICU/hospital stay, ICU/hospital mortality, and 28-day mortality and ventilator free days) were also recorded.

RESULTS: TAC increased significantly in the ALA supplemented group compared to the placebo group ($p < 0.001$). Moreover, serum levels of GLC decreased significantly in the ALA group compared to lack of changes in the placebo group ($p = 0.011$). ALA supplementation also hindered an increase in HOMA-IR ($p = 0.015$). There were no significant differences in other biochemical markers and clinical outcomes between the two groups.

CONCLUSION: ALA may be an effective supplement to improve antioxidant defense and insulin resistance in critically ill patients.

KEYWORDS: antioxidant; critical illness; insulin resistance; oxidative stress; α -lipoic acid