ALBUMIN ADMINISTRATION FOR FLUID RESUSCITATION IN BURN PATIENTS: SYSTEMATIC REVIEW AND META-ANALYSIS

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Introduction: The role of albumin containing solutions in the resuscitation of patients with acute burn injury remains controversial. Two previous meta-analysis (Cochrane group and Wilkes et al. have compared albumin vs. non-albumin solutions in the management of critically ill patients. They provided opposite results in burn patients in subgroup analyses (RR 2.93; 95% CI, 1.28 to 6.72 in Cochrane and RR 1.76; 95% CI, 0.97 to 3.17 in Wilkes).

Objectives: Systematically review the literature summarizing the effect on mortality of albumin compared to non-albumin solutions during the fluid resuscitation phase of burn injured patients.

Methods: Data Sources: MEDLINE, EMBASE and CENTRAL and the content of two leading journals in burn care, Burns and Journal of Burn Care and Research. Study Selection: Two reviewers independently selected randomized controlled trials comparing albumin vs. non-albumin solutions for the acute resuscitation of patients with burn injuries greater than > 20% body surface area. Studies using albumin solution for correction of hypoalbuminemia were excluded. Data Extraction and statistical analysis of included trials: Reviewers abstracted data independently and assessed methodological quality using predefined criteria. The primary outcome was all cause mortality. Secondary outcomes of interest were the total volume of resuscitation fluid infusion, length of stay (LOS) and organ dysfunction. We used a fixed-effect model to pool the results. We reported the relative risk (RR) for binary outcomes and weighted mean difference (WMD) for continuous outcomes with their associated 95% CI. We assessed heterogeneity using the Cochran Q statistic and I2 statistic.

Results: We identified 164 trials of which, 4 trials involving 140 patients met our inclusion criteria. Overall, the methodological quality of the included trials was fair. We did not found a significant benefit of albumin solutions as resuscitation fluid on mortality in burn patients (RR 1.74; 95% CI, 0.93 to 3.25). Total volume of fluid infusion during the phase of resuscitation was lower in patients receiving albumin containing solution -1.00 ml/kg/%TBSA (total body surface area) (95%CI -1.42 to -0.58)

Conclusion: Our meta-analysis did not demonstrate a benefit of albumin solutions on mortality even if burn patients treated with albumin required significantly less fluid during resuscitation. Trial selection and data extraction may explain the differences between our results and those of the two previous meta-analyses. We excluded the study conducted by Greenhalgh et al. which was included in both meta-analysis, because it used albumin solutions to correct hypoalbuninemia and not as resuscitation fluid. Data abstraction are also different between the 3 meta-analyses. According to us, the two previous meta-analysis committed several mistakes in data extraction in studies conducted by Jelenko et al. and Goodwin et al. Our meta-analysis did not support early use of albumin for resuscitation of burn injured patients but it was not
associated with higher mortality as shown in previous work. Difference in study selection and data extraction might explain this discrepancy.