INPLASY PROTOCOL

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None declared.

The Effect of High-Dose Ascorbic Acid on Fluid Resuscitation in Burn Patients: A Systematic Review and Meta-Analysis

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Review question / Objective: **P: Patients with burns. I:High-dose ascorbic acid on on fluid resuscitation. C: Routine fluid Resuscitation without ascorbic acid. O: In-hospital mortality, 24-hour fluid requirement, 24-hour urine test, and the incidence of acute kidney injury. S: Randomized controlled trial or observational study.**
Condition being studied: **High-dose ascorbic acid (HDAA) administration has been detected to have promising potential benefit for burn patients. However, the effects are controversial.We reviewed the existing studies systematically and performed a meta-analysis to evaluate the effects of HDAA on fluid resuscitation in burn patients.Ascorbic acid, Vitamin C, Burn, Fluid requirement, Mortality, Meta-analysis.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 25 September 2021 and was last updated on 25 September 2021 (registration number INPLASY202190091).

INTRODUCTION

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METHODS

Participant or population: Patients with burns.

Intervention: High-Dose Ascorbic Acid on Fluid Resuscitation.

Comparator: Routine Fluid Resuscitation without High-Dose Ascorbic Acid.

Study designs to be included: Randomized controlled trial or observational study.

Eligibility criteria: Inclusion criteria: (1)observational or randomized controlled trials（RCT）; (2) HDAA supplementation versus control in burn patients.(3) the outcomes include at least one of the following: 24-hour fluid requirements(fluid requirements in the first 24h), 24-hour urine output(urine output in the first 24h), in-hospital mortality, and acute kidney injury. Exclusion criteria: (1) repeated publications; (2)published in other languages except English or Chinese; (3) reviews, meta-analysis, preclinical studies, animal studies, case reports, and conference documents; (4) the data that cannot be acquired or transformed; (5) children patient (6) combined with other antioxidant in the HDAA group or any dose of ascorbic acid contained in the controlled group;(7) no control group.

Information sources: MEDLINE, the Cochrane Database, web of science, and Chinese Biomedical Literature Database.

Main outcome(s): In-hospital mortality, 24-hour fluid requirement, 24-hour urine test, and the incidence of acute kidney injury.

Quality assessment / Risk of bias analysis: The Cochrane risk of bias evaluation tool was used to evaluate the quality of included randomized controlled studies.The quality assessment of non-randomized studies was judged with the ROBINS-I tool. The risk of bias was classified as low, unclear or high and judged by the authors individually. The conclusions were obtained by the authors' group discussion. The bias evaluation of included studies was judged and graphed with Review Manager 5.3.

Strategy of data synthesis: The data of included studies were merged and analyzed with the software R 3.5. R packages of meta was used to run models. The results for dichotomous variable were presented with forest plots using odds ratio (OR) with 95% confidence intervals (CIs). As for the results of continuous data, forest plots using standard mean difference (SMD) with 95% CI for continuous data were presented.Mantel–Haenszel (MH) and inverse variance methods were used for the two types of outcomes. I2 test was taken to assess the heterogeneity among these included studies. It was considered homogeneous and a fixed model was used when I2 was less than 50%. Or else, a random model was used if I2>50%. The difference was statistically significant when $p<0.05$. The data transformation were performed when necessary. Publication bias was determined by Egger's test if the included studies＞5 in each merge of results.

Subgroup analysis: Subgroup analysis will be performed according to the studies included.

Sensitivity analysis: Sensitivity analysis was performed for test the stability of the results. Our study followed the PRISMA guidelines.

Language: English or Chinese.

Country(ies) involved: China.

Keywords: **Ascorbic acid, Vitamin C, Burn, Fluid requirement, Mortality, Meta-analysis.**

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