INPLASY PROTOCOL

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None declared.

Intravenous high-dose vitamin C monotherapy for sepsis and septic shock: a meta-analysis of randomized controlled trials

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Review question / Objective: **Vitamin C has been used as an adjuvant in the treatment of sepsis and septic shock; however, its role remains controversial. This study aimed to assess the effectiveness of intravenous (IV) high-dose vitamin C monotherapy in sepsis and septic shock patients.**
Condition being studied: **Sepsis is a dysregulated systemic response to infection that causes organ dysfunction . Globally, sepsis remains one of the leading causes of death in intensive care units (ICUs) and continues to pose a major public health issue. Vitamin C has been used as an adjunctive therapy for sepsis because of its anti-inflammatory and antioxidant properties. Specifically, intravenous (IV) high-dose vitamin C therapy has recently become a popular research topic in adjuvant therapy for sepsis.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 22 February 2023 and was last updated on 22 February 2023 (registration number INPLASY202320097).

INTRODUCTION

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METHODS

Participant or population: The patients had sepsis or septic shock according to Sepsis-1, -2, or -3 definitions.

Intervention: IV high-dose vitamin C (≥ 6 g or 100- mg/kg every day) monotherapy was administered to the intervention group.

Comparator: Standard treatment for sepsis was administered to thecontrol group.

Study designs to be included: RCTs.

Eligibility criteria: The patients were ≥ 18 years old.

Information sources: The PubMed, Embase, and Cochrane Library databases were systematically searched.

Main outcome(s): Short-term all-cause mortality.

Quality assessment / Risk of bias analysis: Two authors independently perform the methodological quality of the included studies by the Cochrane risk-of-bias tool.

Strategy of data synthesis: For dichotomous data, we calculated the pooled relative risk (RR) with corresponding 95% confidence intervals (CI); continuous data were expressed as mean difference (MD) with 95% CI, and if different unit were used between studies, standardised MD (SMD) with 95% CI was calculated. Differences were considered significant at $p < 0.05$. Statistical heterogeneity was estimated by calculating the I2 statistic where I2 ≥ 50% indicates significant heterogeneity. A fixed-effects model was utilized if there was no significant heterogeneity; otherwise, a random-effects model was applied.

Subgroup analysis: If high heterogeneity was observed and more than five studies were included, subgroup analysis will conduct using the leave-one-out approach to assess the reliability of the overall results and the impact of each study on the final outcome.

Sensitivity analysis: If high heterogeneity was observed and more than five studies were included, sensitivity analysis will conduct using the leave-one-out approach to assess the reliability of the overall results and the impact of each study on the final outcome.

Country(ies) involved: China.

Keywords: vitamin C, sepsis patient, septic shock patient.

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