INPLASY

Balanced crystalloids versus normal saline in kidney transplant: an updated systematic review and meta-analysis

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None reported.

ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - Data extraction.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202370047

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 12 July 2023 and was last updated on 12 July 2023.

INTRODUCTION

Review question / Objective Do balanced crystalloid solutions administered peri-operatively decrease the incidence of delayed graft function and provide better electrolyte balance in kidney transplant patients in comparison with 0.9% saline solution?

Condition being studied Normal saline is commonly used for fluid replacement during renal transplantation in order to maintain intravascular volume, improve graft function and decrease postoperative morbidity. Nevertheless, its higher chloride content might lead to hyperchloremic acidosis with subsequent hyperkalemia, as well as delayed graft function. Balanced crystalloids might provide a better acid-base balance due to their lower-chloride content, but current knowledge on the subject is still limited.

METHODS

Participant or population Kidney transplant patients.

Intervention Balanced low-chloride crystalloid.

Comparator 0.9% saline.

Study designs to be included Randomized controlled trials.

Eligibility criteria Randomized controlled trials comparing balanced crystalloids with normal saline in kidney transplant patients with outcomes of interest will be included.

Information sources The following electronic databases, as well as references found in the retrieved studies, will be searched: MEDLINE, EMBASE and CENTRAL.

Main outcome(s) We will extract data for a pooled analysis on the following outcomes: (1) delayed graft function – risk ratio, (2) hyperkalemia, (3) length of hospital stay, (4) postoperative chloride, (5) postoperative potassium, (6) postoperative base excess, (7) postoperative creatinine and (8) postoperative blood urea nitrogen. Effect measures will be risk ratio and mean difference.

Quality assessment / Risk of bias analysis We will use the Cochrane Collaboration's tool for assessing risk of bias in randomized trials for quality assessment of individual randomized studies.

Strategy of data synthesis The systematic review and meta-analysis will be performed in line with recommendations from the Cochrane Collaboration and the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) statement guidelines. Treatment effects for binary endpoints will be compared using pooled HR or risk ratio (RR) with 95% confidence intervals. Weighted mean differences will be used to pool continuous outcomes. Heterogeneity will be evaluated with Cochran Q test and I^2 statistics; p values inferior to 0.10 and I^2>25% will be considered significant for heterogeneity. We will use a fixed-effect model for endpoints with I^2 < 25% (low heterogeneity). In pooled outcomes with high heterogeneity, DerSimonian and Laird random-effects model will be used. Review Manager 5.4 (Nordic Cochrane Centre, The Cochrane Collaboration, Copenhagen, Denmark) will be used for statistical analysis.

Subgroup analysis Subgroup analysis will be performed on: (1) ringer's lactate and plasma-lyte and (2) living and deceased donors.

Sensitivity analysis Sensitivity analysis will be performed on: (1) ringer's lactate and plasma-lyte and (2) living and deceased donors.

Language restriction English.

Country(ies) involved Brazil.

Keywords balanced crystalloids; low-chloride solutions; normal saline; kidney transplant.

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