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A systematic review and meta-analysis of perioperative taurine or taurolidine supplementation on clinical outcomes

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ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202410071

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 17 January 2024 and was last updated on 17 January 2024.

INTRODUCTION

Review question / Objective Does perioperative taurine or taurolidine supplementation reduce risk of infection, delirium, arrhythmias and mortality?

Rationale Taurine (2-aminoethane-sulfonic acid) is a unique amino acid in many ways. It is considered as a conditionally essential amino acid because it plays an important part in the development of the human infant brain when they are entirely dependent on dietary taurine intake with limited endogenous synthesis during that period of life. Different from other amino acids, taurine is not used for protein synthesis or energy generation in humans. It has been argued that there are significant differences in the physiological and pharmacological actions of taurine where the beneficial effects of taurine can only be realized and demonstrated when sufficiently high taurine concentrations beyond the levels that can be obtained through standard Western dietary intake (of <400mg/day) are achieved. Because taurine is inexpensive and generally considered as safe when taken up to 6 grams per day for adults, using taurine supplementation as a perioperative adjunct may have a huge potential in improving surgical outcomes.

Condition being studied Postoperative risks of infection, cardiac arrhythmias, delirium and mortality.

METHODS

Search strategy The following keywords or subject headings were used to search for randomized-controlled-trials (RCTs) using the PubMed, MEDLINE and EMBASE databases on September 14, 2023: taurine or taurolidine and surgery or perioperative and clinical trials or RCTs. There was no language restriction in study inclusion but non-human studies and those studies involving children (<18 years old) were excluded.

Participant or population Surgical adult patients.

Intervention Taurine or Taurolidine.

Comparator Placebo (or control).

Study designs to be included Randomized controlled trials in humans.

Eligibility criteria Adult surgical patients randomized controlled trials with data on the intended study outcomes.

Information sources Electronic databases without using grey literature and contacting the authors.

Main outcome(s) Infection, delirium, arrhythmias, and mortality.

Data management Two reviewers independently extract the data and crossed check the accuracy.

Quality assessment / Risk of bias analysis Trim and fill technique for publication bias and the quality of the studies was reported on their individual components (allocation, concealment, deviation from intended intervention, missing data, outcome assessment, trial registration) without a composite score.

Strategy of data synthesis We used a fixed effect model to pool the odds ratios (ORs) of the outcomes between placebo and intervention groups because of the small number of studies included. Similarly, the I2 was not used to quantify heterogeneity in this meta-analysis because the number of studies pooled was small.

Subgroup analysis None.

Sensitivity analysis Excluding those without trial registration.

Language restriction No restriction.

Country(ies) involved Australia.

Other relevant information Prospero registration (number 462909) was submitted before initiation of the systematic review but was later rejected for registration due to excessive submissions to Prospero registry and was not prioritized due to authors not originated from UK.

Keywords Taurine, surgery, perioperative.

Dissemination plans Peer review publication.

Contributions of each author

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