INPLASY PROTOCOL

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None declared.

Can dexmedetomidine improve survival outcomes in septic patients with mechanical ventilation compared with other sedatives?: A meta-analysis of a randomized controlled trial

Wu, S[1]; Wang, Y[2]; Ma, K[3].

Review question / Objective: **In this meta-analysis, dexmedetomidine can improve short-term and long-term survival outcomes in ICU sepsis patients requiring sedation compared with other sedatives (such as midazolam and propofol, etc.). The main outcomes include:ICU stay, duration of mechanical ventilation, ventilator-free days at 28 days.**
Condition being studied: **Worldwide, at least 20 million patients are diagnosed with sepsis each year for various primary or secondary causes, and at least 4 million of these patients require mechanical ventilation support. Sedatives are frequently used for patient comfort and safety. Dexmedetomidine is a highly selective α 2-adrenergic agonist that has been shown to reduce bacterial infection-related inflammation, the incidence of brain dysfunction, and the dosage of catecholamines. However, its short and long-term survival outcomes in patients with sepsis remain controversial.**

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 INPLASY202190092).

INTRODUCTION

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METHODS

Participant or population: Adults with sepsis (as diagnosed by a clinician, or using any recognized diagnostic criteria) will be included.

Intervention: Intervention group: maintain a certain amount of dexmedetomidine intravenous infusion to meet the set depth of sedation.

Comparator: Control group: other sedation drugs except dexmedetomidine.

Study designs to be included: Randomized controlled clinical trial.

Eligibility criteria: Randomized controlled trials, data available.

Information sources: The databases searched included PubMed, EMBASE, The Cochrane Library, and the Web of Science. For relevant clinical data that were not publicly available or were not specifically described in the literature, requests were made to the original authors via email.

Main outcome(s): Choose RR/OR for binary variable effect size, choose SMD/MD for continuous variable.

Quality assessment / Risk of bias analysis: Two reviewers will independently assesses the quality of the selected studies according to the Cochrane Collaboration's tool for randomized controlled trials. Items will be evaluated in three categories: Low risk of bias unclear bias and high risk of bias. The following characteristics will be evaluated: Random sequence generation (selection Bias) Allocation concealment (selection bias) Blinding of participants and personnel (performance bias) Incomplete outcome data (attrition bias) Selective reporting (reporting bias) Other biases Results from these questions will be graphed and assessed using Review Manager 5.4.

Strategy of data synthesis: Risk ratio(RR) for both fixed and random effects models (weighting by inverse of variance) will be used. A continuity correction will also be used for cells with zero values. Between-study heterogeneity will be assessed using the t2.x2 (Cochran Q) and 12 statistics. According to the Cochrane handbook, the I^2 will be considered non-important (60%). Results will be assessed using forest plots and presented as RRs for the main outcome and secondary outcomes. An influence analysis will be performed to ascertain the results of the meta-analysis by excluding each of the individual studies. Publication bias will be assessed by a funnel plot for meta-analysis and quantified by the Egger method. Statistical analysis will be conducted using STATA software for Mac v15.0 (Stata Corp, College Station, Texas)[module meta' and R studio v1.0.136 (The R Foundation for Statistical Computing) [package "meta v4.2"].

Subgroup analysis: We will consider subgroups such as jurisdiction, clinic type, and location(rural/urban).

Sensitivity analysis: Sensitivity analysis will be conducted on outcome indicators with greater heterogeneity to exclude experimental data with greater heterogeneity.

Language: No language limits.

Country(ies) involved: China.

Keywords: sepsis dexmedetomidine mortality.

Contributions of each author:
Author 1 - Wu siyin.
Author 2 - Wang yunlong.
Author 3 - Ma ke.