INPLASY PROTOCOL

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Review Stage at time of this submission: **Piloting of the study selection process.**

Conflicts of interest:
None.

Evaluation of the Efficiency of Propofol versus Isoflurane Anesthesia Interventions in Treating Elderly Patients with Postoperative Cognitive Dysfunction: A Protocol for Systematic Review and Meta-analysis

Shen, YX[1]; Chen, X[2]; Zang, HC[3]; Shao, G[4].

Review question / Objective: 1. Types of participants Furthermore, the study will consider only elderly patients (over 60 years old) with postoperative cognitive dysfunction. The review will include participants with postoperative cognitive dysfunction, regardless of factors such as age, sex, region, or other factors. At the same time, we excluded studies that enrolled participants with heart surgery and neurosurgery. 2. Types of interventions and comparisons In the trial phase, propofol was given to the elderly patients in the treatment group and isoflurane given to elderly patients in the control group. Accordingly, there will be no limitation on the duration of trials. 3. Types of outcome measures 1) Primary outcomes Regarding the study, the primary outcome is the occurrence of postoperative cognitive dysfunction in elderly surgical patients receiving different anesthetics. 2) Secondary outcomes i) Mortality at 30 days. ii) Intraoperative hypotension as defined by the study authors. iii) Length of stay in the PACU (measured in minutes). iv) Length of hospital stay (measured as days).

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 09 September 2020 and was last updated on 09 September 2020 (registration number INPLASY202090042).

INTRODUCTION

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Condition being studied: Previous reports in the literature have indicated that the prevalence of cognitive dysfunction in elderly patients within the first week following major non-cardiac surgery is often as high as 25.8%. Meanwhile, other studies have illustrated that the occurrence of postoperative cognitive dysfunction in elderly patients is associated with anesthesia, old age, surgical methods, as well as the prior use of anticholinergic drugs before surgery. To this end, anesthesia could be associated with the incidences of postoperative cognitive dysfunction. In a study, Mason et al. realized that the general anesthesia is more likely to cause postoperative cognitive dysfunction than non-general anesthesia. Still, the impacts of the intravenous general anesthesia, as well as, the gas general anesthesia on postoperative cognitive dysfunction remain to be controversial. For this reason, we employed a meta-analysis method to illustrate the impact of using propofol and isoflurane on elderly patients and determine the occurrence of early cognitive dysfunction after non-cardiac surgery in elderly patients.

METHODS

Participant or population: Furthermore, the study will consider only elderly patients

(over 60 years old) with postoperative cognitive dysfunction. The review will include participants with postoperative cognitive dysfunction, regardless of factors such as age, sex, region, or other factors. At the same time, we excluded studies that enrolled participants with heart surgery and neurosurgery.

Intervention: In the trial phase, propofol was given to the elderly patients in the treatment.

Comparator: Isoflurane given to elderly patients in the control group.

Study designs to be included: Randomized controlled trials (RCTs), which employed propofol or isoflurane as intervention measures, were considered eligible for the research.

Eligibility criteria: 1. Types of studies For this present study, randomized controlled trials (RCTs), which employed propofol or isoflurane as intervention measures, were considered eligible for the research. Accordingly, the study will exclude the use of non-randomized control studies, as well as, observational study. 2. Types of participants Furthermore, the study will consider only elderly patients (over 60 years old) with postoperative cognitive dysfunction. The review will include participants with postoperative cognitive dysfunction, regardless of factors such as age, sex, region, or other factors. At the same time, we excluded studies that enrolled participants with heart surgery and neurosurgery. 3. Types of interventions and comparisons In the trial phase, propofol was given to the elderly patients in the treatment group and isoflurane given to elderly patients in the control group. Accordingly, there will be no limitation on the duration of trials. 4. Types of outcome measures 1) Primary outcomes Regarding the study, the primary outcome is the occurrence of postoperative cognitive dysfunction in elderly surgical patients receiving different anesthetics. 2) Secondary outcomes i) Mortality at 30 days. ii) Intraoperative hypotension as defined by the study authors. iii) Length of

stay in the PACU (measured in minutes). iv) Length of hospital stay (measured as days).

Information sources: Further, we performed an in-depth search of the following resources: PubMed, EMBASE, Cochrane Library, Chongqing VIP, WanFang, China National Knowledge Infrastructure, and SinoMed. The search was performed without language restriction. All of these databases will be correctly analyzed from the beginning to the present, with regard to their language and publication time.

Main outcome(s): Regarding the study, the primary outcome is the occurrence of postoperative cognitive dysfunction in elderly surgical patients receiving different anesthetics.

Quality assessment / Risk of bias analysis: In particular, the quality of studies included in the current study was explored by the two independent authors as well to ensure compliance with the guidelines established by the Cochrane Renal Group. Obvious discrepancies were addressed by the two independent authors through discussion. Additionally, they considered the quality of items worth assessing by listing randomization methods, the intention of treating analysis, concealment of allocation, completeness of follow-up processes, and blinding of participants, outcome assessors, and investigators.

Strategy of data synthesis: Moreover, the paper analyzed heterogeneity using a Chi2 test on N-1 degrees of freedom, along with an alpha value of 0.05 for the statistical significance, with the I2 test. In essence, I2 values of 25%, 50% and 75% corresponded to low, medium and high levels of heterogeneity. The paper used the fixed-effects model to estimate the effects of the amount when $P > 0.1$ or $I2 < 50\%$. Also, it will use a random-effects model where the value of $P < 0.1$ or $I2 > 50\%$.

Subgroup analysis: Subgroup analysis will be handled according to the different factors.

Sensibility analysis: Overall, the paper will perform a sensitivity analysis to assess the vigor of the results obtained during the study. Besides, the study will exclude studies that were incorporated in the analysis, one after another, and re-analyze, as well as, gather data to ascertain the accuracy of the results. Also, the study will evaluate the differences between the re-obtained and original effects.

Country(ies) involved: China.

Keywords: propofol, isoflurane, elderly postoperative cognitive dysfunction, efficacy.

Contributions of each author:
Author 1 - Yan-Xi Shen - Data curation, formal analysis, supervision, visualization, and writing.
Author 2 - You-Ping Chen - Data curation, software, resources.
Author 3 - Hong-Cheng Zang - Data curation, software, investigation.
Author 4 - Gang Shao - Formal analysis, methodology, Writing.