INPLASY PROTOCOL

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Corresponding author:
Jichang Hu

hujichang@whu.edu.cn

Author Affiliation:
Renmin Hospital of Wuhan University

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The authors declare that they have no competing interests.

Comparative risk of anaesthetic drugs on postoperative cognitive dysfunction in elderly patients: a Bayesian network meta-analysis of randomized trials

Hu, J[1]; Yao, Z[2]; Yan, H[3]; Hu, J[4].

Review question / Objective: **Postoperative cognitive complications are associated with substantial morbidity and mortality. Anaesthetic drugs have been suggested to have neuroprotective effects in various settings. This systematic review evaluates the effects of anaesthetic drugs administration on postoperative delirium and postoperative cognitive dysfunction (POCD).**
Condition being studied: **The results of this systematic review and meta-analysis will be published in a peer-reviewed journal.**
Information sources: **Postoperative cognitive complications are associated with substantial morbidity and mortality. Anaesthetic drugs have been suggested to have neuroprotective effects in various settings. This systematic review evaluates the effects of anaesthetic drugs administration on postoperative delirium and postoperative cognitive dysfunction (POCD).**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 03 July 2020 and was last updated on 03 July 2020 (registration number INPLASY202070008).

INTRODUCTION

Review question / Objective: **Postoperative cognitive complications are associated with substantial morbidity and mortality. Anaesthetic drugs have been suggested to have neuroprotective effects in various settings. This systematic review evaluates the effects of anaesthetic drugs administration on postoperative delirium**

and postoperative cognitive dysfunction (POCD).

Condition being studied: The results of this systematic review and meta-analysis will be published in a peer-reviewed journal.

METHODS

Participant or population: We will include patients with age over 60 years.

Intervention: The intervention in the experimental group was a anaesthetic drugs anaesthesia; the control groups received an anaesthetic drugs or placebo.

Comparator: The intervention in the experimental group was a anaesthetic drugs anaesthesia; the control groups received an anaesthetic drugs or placebo.

Study designs to be included: Randomized controlled trials.

Eligibility criteria: We identified randomized controlled trials (RCTs) of patients undergoing surgery under general anaesthesia.

Information sources: Postoperative cognitive complications are associated with substantial morbidity and mortality. Anaesthetic drugs have been suggested to have neuroprotective effects in various settings. This systematic review evaluates the effects of anaesthetic drugs administration on postoperative delirium and postoperative cognitive dysfunction (POCD).

Main outcome(s): The main outcome indicator in eligible studies was the incidence of cognitive dysfunction on and after the first postoperative day, and MMSE score on the first postoperative day.

Quality assessment / Risk of bias analysis: The quality of included RCTs was assessed using the 5-point Jadad scale. Trials with a score ≤2 were regarded as low quality, and trials with score ≥ 3 were regarded as high quality, respectively. We used GradePro® 3.6 (http://ims.cochrane.org/revman/other-resources/gradepro/download) designed by the Cochrane Collaboration to evaluate the strength of evidence for outcomes. In case of disagreement between the two reviewers, further reference to the original literature and negotiation with the third reviewer were adopted to solve the problem. The risk of bias of included RCTs were assessed using the Cochrane Collaboration's risk of bias assessment tool and the key elements of bias risk assessment: random sequence generation (selection bias), allocation concealment (selection bias), blinding of participants and personnel (performance bias), blinding of outcome assessments (detection bias), incomplete outcome data (attrition bias), selective reporting (reporting bias) and other bias.

Strategy of data synthesis: The quality of evidence was assessed using the GRADE approach. Factors such as high likelihood of methodological bias, unexplained heterogeneity, inconsistency or imprecision of results were deemed to decrease the quality level of a body of evidence. The following ratings were used: high, moderate, low, very low.

Subgroup analysis: Where the data allowed, we planned to explore the effect of age, specific anaesthesia regimen , depth of anaesthesia and intraoperative hemodynamic events through pre-defined subgroup analyses, since these factors have been found to affect the occurrence of postoperative cognitive outcomes.

Sensibility analysis: First, we conducted a heterogeneity test (significance level a ¼ 0.10) on included studies using the 2 test, and judged the extent of heterogeneity in combination with the I2 test. A fixed effects model was used to conduct the meta-analysis if no heterogeneity (P > 0.1 and I2< 50.0%) was found among the studies. If significant heterogeneity (P 0.1 or I2 50.0%) was identified, we sought its source. For studies with significant clinical heterogeneity, subgroup or sensitivity analysis was employed, while for studies without distinct clinical heterogeneity, a

random effects model was carefully applied for the meta-analysis.

Country(ies) involved: China.

Keywords: anesthesia, cognitive function, meta-analysis, RCT, POCD.

Contributions of each author:
Author 1 - jichang hu.
Author 2 - zhaohui yao.
Author 3 - jingping yuan.
Author 4 - hongling yan.