INPLASY PROTOCOL

To cite: Geng et al. Are Alzheimer Disease Biomarkers Associated With Postoperative Delirium or Postoperative Cognitive Change: a Meta-analysis with Trial Sequential Analysis of Prospective Observational Clinical Trial. Inplasy protocol 202350001. doi: 10.37766/inplasy2023.5.0001

Received: 30 April 2023

Published: 01 May 2023

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Support: **No.**

Review Stage at time of this submission: **The review has not yet started.**

Conflicts of interest:
None declared.

Are Alzheimer Disease Biomarkers Associated With Postoperative Delirium or Postoperative Cognitive Change: a Meta-analysis with Trial Sequential Analysis of Prospective Observational Clinical Trial

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Review question / Objective: **We aimed to figure out whether perioperative Alzheimer disease biomarkers are associated with postoperative delirium or postoperative cognitive change.**
Condition being studied: **Delirium is an acute change in mental status, characterized by fluctuations in the level of consciousness and lack of concentration. Postoperative deliriumPOD is a specific subset of delirium that is not related to emergence from anesthesia. postoperative cognitive change is a decline in cognitive function, especially in memory and executive functions, that may last from 1-12 months after surgery or longer.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 01 May 2023 and was last updated on 01 May 2023 (registration number INPLASY202350001).

INTRODUCTION

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executive functions, that may last from 1-12 months after surgery or longer.

METHODS

Search strategy: The search was conducted by comprehensive text word and medical subject headings-based electronic searches of PubMed, Embase, Web of Science, Cochrane. The terms we used included "delirium" or "cognitive changes," as well as "amyloid" or "tau".

Participant or population: The inclusion criteria for the study were: (1) surgical patients aged ≥18 years, (2) postoperative delirium or postoperative cognitive dysfunction or postoperative cognitive changes were studied, (3) AD biomarkers including Aβ or tau or P-tau in blood or cerebrospinal fluid.

Intervention: POD or POCC.

Comparator: No POD or NO POCC.

Study designs to be included: Prospective observational clinical trial.

Eligibility criteria: The inclusion criteria for the study were: (1) full text is available (detailed information). The exclusion criteria for the study were: (1) study data could not be pooled for analysis; (2) non-human studies; and (3) non-English and non-Chinese articles.

Information sources: electronic searches of PubMed, Embase, Web of Science, Cochrane.

Main outcome(s): The relationship of preoperative cerebral spinal fluid Aβ42 level and POD. Mean difference will be used to measure effects.

Quality assessment / Risk of bias analysis: The quality of the studies was independently assessed by two authors using the Newcastle-Ottawa Scale (NOS).

Strategy of data synthesis: I2 is a percentage with values between 0% and 100%. A value of 0% indicates no observed heterogeneity. The presence of statistical heterogeneity among the results of each study was evaluated using the I2 statistic, which is considered significant when P50%. If no heterogeneity exists (heterogeneity P>0.1), then a fixed-effect model is selected to calculate the pooled effect. If heterogeneity is significant, a random-effects model is chosen to calculate the pooled effect.

Subgroup analysis: We may conduct subgroup analysis based on different surgical procedures.

Sensitivity analysis: For our sensitivity analysis, we achieved this by either recalculating the pooled results by excluding studies with high heterogeneity or by using different effect models. Trial Sequential Analysis will also be used to confirm our results.

Language restriction: English or Chinese.

Country(ies) involved: China.

Keywords: Aβ; tau; POD; POCC.

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