INPLASY PROTOCOL

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Conflicts of interest:
None declared.

Correlation between peripheral high levels of CRP and cognitive impairment: a systematic review and meta-analysis

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Review question / Objective: **We aimed to investigate the correlation between peripheral high levels of C-reactive protein (CRP) and cognitive impairment through a systematic literature review and meta-analysis.**
Condition being studied: **As the global population ages, the prevalence of cognitive impairment disorders such as Alzheimer's disease has increased dramatically, which will lead to an increased healthcare burden. However, the biological mechanism of cognitive decline in the elderly is still unclear, and aging-related studies suggest that systemic inflammation may play an important role. Peripheral blood C-reaction protein (CRP) is one of the most widely studied systemic inflammatory markers. Numerous studies have suggested that high levels of CRP may be associated with cognitive impairment, but some have shown no or negative correlation.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 11 July 2022 and was last updated on 11 July 2022 (registration number INPLASY202270058).

INTRODUCTION

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in the elderly is still unclear, and aging-related studies suggest that systemic inflammation may play an important role. Peripheral blood C-reaction protein (CRP) is one of the most widely studied systemic inflammatory markers. Numerous studies have suggested that high levels of CRP may be associated with cognitive impairment, but some have shown no or negative correlation.

METHODS

Search strategy: ((("Cognitive Dysfunction"[Mesh]) OR ((((((Dysfunction*, Cognitive[Title/Abstract]) OR (Cognitive Impairment*[Title/Abstract])) OR (Impairment*, Cognitive[Title/Abstract])) OR (Cognitive Decline*[Title/Abstract])) OR (Decline*, Cognitive[Title/Abstract])) OR (Dementia[Title/Abstract])))) AND (("C-Reactive Protein"[Mesh]) OR (((((C Reactive Protein[Title/Abstract]) OR (hsCRP[Title/Abstract])) OR (High Sensitivity C-Reactive Protein[Title/Abstract])) OR (High Sensitivity C Reactive Protein[Title/Abstract])) OR (hs-CRP[Title/Abstract]))))) AND ("cohort studies"[mesh] OR "cohort"[tw] OR "prospective"[tw] OR "follow-up"[tw] OR "longitudinal"[tw]).

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

Intervention: No intervention in the study, exposure is peripheral blood high levels of C-reactive protein.

Comparator: The control group is low level of C-reactive protein in peripheral blood.

Study designs to be included: Prospective cohort studies will be included.

Eligibility criteria: Inclusion criteria: (1)Subjects with normal cognitive function at baseline; (2) Subjects are grouped according to peripheral blood CRP concentrations; (3) There are global cognitive assessments or dementia diagnostic criteria during follow-up;(4) It has effect size that can be extracted or transformed.

Information sources: The study will be conducted according to PRISMA guidelines. Search PubMed, Embase, Web of Science databases up to May 2022, only for English articles. To avoid omissions, references of subject-related reports and reviews will also be manually searched.

Main outcome(s): The scores of global cognitive test scale declined or diagnosed with dementia by neurologists.

Quality assessment / Risk of bias analysis: The quality of observational studies will be assessed using the Newcastle-Ottawa Quality Assessment Scale by two reviewers, with "★" used to mark the "high" quality option, and studies with a score of 7 or higher will be considered high-quality studies.

Strategy of data synthesis: Extracting OR or HR values calculated by regression analysis. Studies that can not be pooled will be systematically reviewed. A random-effects model will be selected for meta-analysis. The Cochran Q and I2 statistic will be chosen to measure the heterogeneity. Screening for heterogeneity-related factors using meta-regression. Sensitivity analysis will be used to test whether pooled effects are affected by excluding individual study. 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 (version 15.0, College Station, Texas, USA).

Subgroup analysis: We will consider subgroups such as outcome, age and location.

Sensitivity analysis: Sensitivity analysis will be used to test whether pooled effects are affected by excluding individual study.Delete one study at a time to explore how the study affected the results.

Language: English.

Country(ies) involved: China.

Keywords: C-reactive protein; cognitive impairment; dementia; meta-analysis.

Contributions of each author:

Author 1 - Siwei Long wrote the manuscript and performed the analysis.
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