INPLASY PROTOCOL

To cite: Peng et al. Relationship between peripheral blood inflammatory factors and prognosis of subarachnoid hemorrhage: A meta-analysis. Inplasy protocol 2022110033. doi: 10.37766/inplasy2022.11.0033

Received: 08 November 2022

Published: 08 November 2022

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Support: **None.**

Review Stage at time of this submission: **Completed but not published.**

Conflicts of interest:
None declared.

Relationship between peripheral blood inflammatory factors and prognosis of subarachnoid hemorrhage: A meta-analysis

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Review question / Objective: **To determine the relationship between inflammatory factors and the prognosis of SAH.**
Condition being studied: **Subarachnoid hemorrhage (SAH) is a severe cerebrovascular event with high mortality and disability rate. Neuroinflammation is involved in the brain injury after SAH, but the exact association between SAH progression and peripheral blood inflammatory factors is unknown.**
Eligibility criteria: **Studies were chosen based on the following criteria for inclusion: (1) Adults over the age of 18 who have spontaneous SAH caused by a ruptured aneurysm, as verified by a computed tomography angiogram (CTA) or digital subtraction angiography (DSA). (2) Compared the blood levels of CRP, IL-6, IL-10 and TNF-α in SAH patient according to modified Rankin Scale (mRS), Glasgow outcomes scale (GOS), CVS, DCI, or DINDs. (3) Blood samples collected within 72 hours of admission. Exclusion criteria were designed as follows: (1) Research on patients with SAH caused by trauma or other secondary causes. (2). CRP, IL-6, IL-10, and TNF-α studies without quantifiable results. (3) Comorbidities, such as autoimmune illness, suspected infections, a history of malignancy, and present pregnancy, which may have a major impact on baseline inflammation. (4) Animal studies, reviews, case report and retrospective studies.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 08 November 2022 and was last updated on 08 November 2022 (registration number INPLASY2022110033).

INTRODUCTION

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Condition being studied: **Subarachnoid hemorrhage (SAH) is a severe cerebrovascular event with high mortality and disability rate. Neuroinflammation is involved in the brain injury after SAH, but**

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METHODS

Participant or population: (1) Adults over the age of 18 who have spontaneous SAH caused by a ruptured aneurysm, as verified by a computed tomography angiogram (CTA) or digital subtraction angiography (DSA). (2) Compared the blood levels of CRP, IL-6, IL-10 and TNF-α in SAH patient according to modified Rankin Scale (mRS), Glasgow outcomes scale (GOS), CVS, DCI, or DINDs. (3) Blood samples collected within 72 hours ofadmission.

Intervention: Not applicable. (Only case control studies is included in this meta-analysis).

Comparator: Not applicable. (Only case control studies is included in this meta-analysis).

Study designs to be included: case control studies.

Eligibility criteria: Studies were chosen based on the following criteria for inclusion: (1) Adults over the age of 18 who have spontaneous SAH caused by a ruptured aneurysm, as verified by a computed tomography angiogram (CTA) or digital subtraction angiography (DSA). (2) Compared the blood levels of CRP, IL-6, IL-10 and TNF-α in SAH patient according to modified Rankin Scale (mRS), Glasgow outcomes scale (GOS), CVS, DCI, or DINDs. (3) Blood samples collected within 72 hours of admission. Exclusion criteria were designed as follows: (1) Research on patients with SAH caused by trauma or other secondary causes. (2). CRP, IL-6, IL-10, and TNF-α studies without quantifiable results. (3) Comorbidities, such as autoimmune illness, suspected infections, a history of malignancy, and present pregnancy, which may have a major impact on baseline inflammation. (4) Animal studies, reviews, case report and retrospective studies.

Information sources: Studies will be retrieved from PubMed, EMBASE, and Cochrane Library databases.

Main outcome(s): Outcome measures included poor functional outcome and the occurrence of CVS, DCI, and DINDs. Functional outcomes were scored by mRS or GOS. Poor function outcomes were defined as mRS 3 or 4 - 6, or GOS 1-3 or 4 from discharge to 1-year follow-up. CVS was defined as by an experienced neuroradiologist blinded for clinical data through computed tomography angiography. DCI was defined as a new onset of focal neurologic deficits or at least a 2-point reduction in Glasgow Coma Scale, with other causes (such as hydrocephalus or rebleeding) excluded. DINDs were identified as the occurrence of secondary neurological deficits.

Quality assessment / Risk of bias analysis: As recommended by the Cochrane Non-Randomized Studies Methods Working Group, the New-castle–Ottawa Scale (NOS) for case control studies was used to assess the quality of included studies. The scale awards up to 9 stars per study: 4 stars for adequate selection of case control studies participants, 2 stars for comparability of case control studies participants on the design and analytical basis, and 3 stars for results with sufficient certainty. The quality assessment was conducted by two independent reviewers, and a third reviewer was consulted if uncertainties arise.

Strategy of data synthesis: The data was evaluated using Review Manager 5.4 software. For continuous variables, we calculated the mean difference (MD) with a 95% confidence interval (CI). Whenever I2 was more than 50%, the random-effects model were used; otherwise, the fixed-effects model results were preferred.

Subgroup analysis: Subgroup analysis was carried out according to the operation mode of patients, which were divided into clipping group and embolism group.

Sensitivity analysis: Sensitivity analysis was performed using the leave-one-out method. By removing one study from the included literature, the final combined value and the degree of change in heterogeneity are evaluated. If the change is small, it indicates high sensitivity; otherwise, it indicates low sensitivity.

Country(ies) involved: China.

Keywords: subarachnoid hemorrhage, inflammatory factors, prognosis, meta-analysis.

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