INPLASY

The Clinical Efficacy and Safety of Remote Ischemic Conditioning for Ischemic Stroke: A Systematic Review and Meta-Analysis

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ADMINISTRATIVE INFORMATION

Support - Evaluation of the therapeutic effect of meridian guidance combined with remote ischemia conditioning technique in the treatment of cardiopulmonary dysfunction after stroke (4202305461).

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

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 17 January 2024 and was last updated on 17 January 2024.

INTRODUCTION

Review question / Objective The aim of this meta-analysis is to evaluate the clinical efficacy and safety of remote ischemic conditioning for ischemic stroke.

Condition being studied In recent years, the incidence, disability and mortality of ischemic stroke are high, and it is easy to recur, which seriously threatens human health. At present, the most effective treatment for ischemic stroke is thrombolytic therapy, but the indications of thrombolytic therapy, the timing of thrombolytic therapy and the risk of thrombolytic therapy limit its use, and reperfusion injury may occur after thrombolytic therapy, which may aggravate nerve damage. Therefore, it is necessary to explore an effective and feasible treatment method. Ischemic adaptation refers to the improvement of the body's tolerance to ischemia in the process of sustained ischemia after transient, non-fatal ischemia to tissues and organs. Because it does not directly act on target tissues, so as to avoid damage to vital organs, many scholars have paid attention to it. But its efficacy and mechanism of action are unclear. Therefore, through systematic review, this study summarizes the clinical efficacy and safety of remote ischemic conditioning.

METHODS

Search strategy In this study, two authors will independently search nine electronic databases(Web of Science, PubMed, Scopus, Cochrane Library, Ovid, China National Knowledge Internet (CNKI), Wanfang Data, VIP Information Chinese Periodical Service Platform (VIP), and Chinese Biomedical Database (SinoMed)). To retrieve the research from the database

establishment to December 2023. There are no restrictions on the language and year of publication.

Participant or population Patients with ischemic stroke.

Intervention Remote ischemic conditioning and standard medical management.

Comparator The control group is treated with standard medical management, with or without sham RIC, which requires application of a blood pressure cuff, tourniquet or other occlusive device without full interruption of blood flow.

Study designs to be included Randomized controlled studies.

Eligibility criteria Included criteria: 1.participants: adults with ischemic stroke, age≥18years. 2.intervention: remote ischemic conditioning and standard medical management. The intervention time and frequency of the intervention will not be limited. 3.comparison: standard medical management, with or without sham RIC. 4.outcomes: the main outcomes should include National Institute of Health stroke scale (NIHSS), Modified Rankin Scale (MRS), Barthel index(BI). There must be at least one item to evaluate clinical efficacy more comprehensively. The secondary outcomes should include safety evaluation and the mechanism of RIC improving ischemic stroke. 5. published in Chinese core journals or English journal. Excluded criteria: 1. participants: in vitro and animal experimental studies; 2.intervention: treatment similar to RIC was also used; 3.comparison: the control group don' t receive standard medical management; 4. outcomes: there were no predefined primary outcome measures; 5. study design: cross studies, reviews, meta-analyses, case reports, abstracts; 6. repeated publication; 7.non-chinese core journals.

Information sources We will select the studies from nine databases, including the Web of Science, PubMed, Scopus, Cochrane Library, Ovid, China National Knowledge Internet (CNKI), Wanfang Data, VIP Information Chinese Periodical Service Platform (VIP), and Chinese Biomedical Database (SinoMed). The eligible reference will also be included.

Main outcome(s) The main outcomes should include National Institute of Health stroke scale (NIHSS), Modified Rankin Scale (MRS), Barthel index(BI).

Quality assessment / Risk of bias analysis The Systematic Review Centre for the Cochrane Collaboration's tool for assessing risk of bias will be applied to evaluate the risk of bias in individual included studies. Two authors will independently assesse the quality of included studies using the bias risk tool of SYRCLE. The evaluation results are "yes", "no" and "unclear", which respectively represent "low risk of bias", "high risk of bias" and "unclear risk of bias". Any differences will be resolved through consultation with the corresponding author.

Strategy of data synthesis All meta analyses will be performed using R software (version 4.1.2). The pooled statistics of the results will be quantitatively determined using the standardized mean difference (SMD) and the corresponding 95% confidence interval (95% CI). The risk ratio or odds ratio was used as the effect index for counting data.We will use I2 and Cochrane's Q test as evaluation indicators. If there is heterogeneity between studies (I2>50% or P<0.1), a random effects model will be used; If not, a fixed effect model will be used.

Subgroup analysis When the heterogeneity is significant, subgroup analysis shall be carried out according to the duration of intervention, thrombolytic or not, follow-up period and the way of RIC.

Sensitivity analysis To check the robustness of the main analysis, an omitted sensitivity analysis will be performed, omitting one study at a time.

Country(ies) involved China.

Keywords Remote Ischemic Conditioning; Ischemic Stroke; meta-analysis; Systematic Review; Randomized Controlled Trial.

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