INPLASY PROTOCOL

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Support: **None.**

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

Conflicts of interest:
None declared.

Resting-state fMRI in temporal lobe epilepsy patients with cognitive impairment: protocol for a meta-analysis and systematic review

Ye, Q[1]; Wen, Q[2]; Sun, YM[3]; Liu, XR[4]; Peng, YX[5]; Yang, XP[6]; Dai, Y[7].

Review question / Objective: **The aim of this study is to acquire a better understanding of the functional connectivity networks involved in TEL with cognitive impairment by fMRI, ALFF, and ReHo.**
Condition being studied: **Temporal lobe epilepsy (TLE) frequently occurs in patients with epilepsy and is a common comorbidity cognitive impairment. However, the mechanism of cognitive impairment has not been fully elucidated. At present, RS-fMRI studies have found that cognitive impairment is closely related to brain structure and function abnormalities in patients, and many fMRI studies about TLE with cognitive impairment(TLE-CI) have been published.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 24 March 2021 and was last updated on 24 March 2021 (registration number INPLASY202130092).

INTRODUCTION

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structure and function abnormalities in patients, and many fMRI studies about TLE with cognitive impairment(TLE-CI) have been published.

METHODS

Search strategy: A systematic literature search of articles from the establishment of database to April 20, 2021 will be performed in electronic databases: PubMed, Cochrane Library, EMBASE, Web of Science, China National Knowledge Infrastructure (CNKI), WANGFANG DATA and Chinese Biomedical Literature Database (CBM) and Baidu scholar Database. Collect all the RCT about fMRI in temporal lobe epilepsy patients with cognitive dysfunction. While only English and Chinese will be applied in the study.

Participant or population: Patients were diagnosed as temporal lobe epilepsy (left or right) with cognitive impairment. All participants were as treatment for their condition.

Intervention: None.

Comparator: Healthy adolescents and adults or temporal lobe epilepsy patients without cognitive impairment.

Study designs to be included: Randomized controlled trials.

Eligibility criteria: 1. Studies of comparing functional connectivity cerebral alterations of TLE patients with cognitive impairment with that of healthy controls will be included. 2. Adolescents and adult patients diagnosed with TLE-CI according any recognized diagnostic criteria. 3. Whole-brain results in three-dimensional coordinates (x, y, z) of changes in standard stereotactic space (Talairach or MNI) were reported. 4. Thresholds for significance corrected for multiple comparisons or uncorrected with spatial extent thresholds were used. Criteria for exclusion. 1. Studies only reporting region of interests (ROIs) findings were excluded. 2. Studies using coordinates relative to analyze employing small volume corrections (SVC) in preselected ROIs were excluded.

Information sources: The following database will be searched:PubMed, Cochrane Library, EMBASE, Web of Science , China National Knowledge Infrastructure(CNKI), WANGFANG DATA and Chinese Biomedical Literature Database (CBM) and Baidu scholar Database.

Main outcome(s): Separate functional brain response abnormalities will be conducted with the anisotropic effect size version of signed differential mapping (AES-SDM). This method bases on using the peak coordinates to recreate a statistical parametric map for each study. This map is created by using the effect sizes of the differences between patients and controls, and then conducting a standard random-effects variance-weighted meta-analysis in each voxel.

Additional outcome(s): None.

Data management: Two reviewers independently browsed the selected articles and extracted the following information form on Microsoft Excel: 1.essential information: title, the first author, published journal, year of publication, MRI type, country; 2.study design: inclusion and exclusion criteria, randomization method, definition of CI, statistical analysis technique and patient characteristics, sample size; 3.participants: gender, age and disease duration; 4.results and conclusion.

Quality assessment / Risk of bias analysis: The methodological quality of randomized controlled trials will be assessed with the bias risk assessment tool by NOS (Newcastle-Ottawa Scale).

Strategy of data synthesis: We will use the anisotropic effect size version of signed differential mapping AES-SDM software analysis in patients with TLE- CI and Healthy controls (HC) by the ReHo or ALFFs between the subjects. The peak coordinates in Talarach space are

transformed into MNI space. In the experiment, if the result is Z value, it needs to be converted to T value. AES-SDM is used to reconstruct the effect scales and statistical parameters of increased and decreased brain activation in each original study.

Subgroup analysis: If adequate trials are included, we will explore the following potential sources of heterogeneity using subgroup analyses or meta-regression:1. Studies with low risk of bias compared to trials with high risk of bias;2. Methods: ALFF\ReHo;3. Scan T:1.5\3.0.

Sensitivity analysis: We will conduct the sensitivity analysis to evaluate the stability and reliability of the research results.

Language: English and Chinese.

Country(ies) involved: China.

Keywords: protocol; systematic analysis; meta-analysis.

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