

INPLASY PROTOCOL

To cite: Wang et al. Effects of Transcranial Magnetic Stimulation on cerebellar Ataxia: A Systematic Review and Meta-Analysis. Inplasy protocol 2022100025. doi: 10.37766/inplasy2022.10.0025

Received: 05 October 2022

Published: 05 October 2022

Corresponding author:
Ying wang

948752373@qq.com

Author Affiliation:
Chengdu University of
Traditional Chinese Medicine.

Support: NO.2020LC0081.

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

Conflicts of interest:
None declared.

Effects of Transcranial Magnetic Stimulation on cerebellar Ataxia: A Systematic Review and Meta-Analysis

Wang, Y¹; Zhang, D²; Ma, J³; Wang, J⁴; Lu, L⁵; Jin, S⁶.

Review question / Objective: (1) aged \geq 18 years old, (2) cerebellar ataxia based on the clinical history and neurological examination; (3) the types of intervention were TMS. (4) they were randomized controlled trials.

Condition being studied: TMS parameters were further optimized, and patient selection criteria improved; an updated meta-analysis is necessary to reassess the overall impact of TMS on ataxia's symptom recovery.

Information sources: EMBASE, the Cochrane Library, Springer, Science Direct, China National Knowledge Infrastructure (CNKI), Chinese Science and Technology Periodical Database (VIP).

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 05 October 2022 and was last updated on 05 October 2022 (registration number INPLASY2022100025).

INTRODUCTION

Review question / Objective: (1) aged \geq 18 years old, (2) cerebellar ataxia based on the clinical history and neurological examination; (3) the types of intervention were TMS. (4) they were randomized controlled trials.

Condition being studied: TMS parameters were further optimized, and patient

selection criteria improved; an updated meta-analysis is necessary to reassess the overall impact of TMS on ataxia's symptom recovery.

METHODS

Search strategy: We will search PubMed, EMBASE, the Cochrane Library, Springer, Science Direct, China National Knowledge Infrastructure (CNKI), Chinese Science and

Technology Periodical Database (VIP). The search terms were “Cerebellar Ataxias, Transcranial Magnetic Stimulation/TMS, systematic review, Treatment” In addition, the bibliography lists of selected papers will be checked manually.

Participant or population: Cerebellar ataxia based on the clinical history and neurological examination.

Intervention: The types of intervention were TMS.

Comparator: TMS/ sham.

Study designs to be included: They were randomized controlled trials.

Eligibility criteria: Study information (number of participants, Intervention), participant characteristics (Age, Duration), intervention protocol (TMS stimulation, frequency, and additional interventions), Outcomes.

Information sources: EMBASE, the Cochrane Library, Springer, Science Direct, China National Knowledge Infrastructure (CNKI), Chinese Science and Technology Periodical Database (VIP).

Main outcome(s): Eight studies with 272 participants were published between 2014 and 2022 were included, the effect of TMS on ICRAS ($P<0.01$, $I^2=4\%$), SARA ($P<0.01$, $I^2=27\%$), BBS ($P<0.01$, $I^2=0\%$), TUG ($P<0.01$, $I^2=0\%$) in cerebellar Ataxia patients was significant.

Quality assessment / Risk of bias analysis: Two reviewers will assess the risk of bias in the included trials using the Cochrane Collaboration’s risk of a bias assessment tool. We will evaluate the risk of bias (low, unclear, or high risk) in seven areas, including random sequence generation, allocation concealment, blinding of participants and personnel, blinding of outcome assessment, incomplete outcome data, selective reporting, and other sources of bias. Methodological quality was assessed using an improved Jada scale (0–3: low rate; 4–7: high quality) 11.

Strategy of data synthesis: Review Manager V.5.3 software will be used for meta-analysis. The I^2 and Cochran-Q test are used to assess the heterogeneity between studies. $P<0.1$ or $I^2<50\%$, the fixed effects model will be used; and $p<0.1$ or $I^2\geq 50\%$, the random-effects model will be used. Mean differences (MD) or standardized mean differences (SMD), as well as 95% confidence intervals (CI), will be computed for continuous data. When the quantitative evaluation is unavailable, we will provide a qualitative description of the individual study results. Publication bias was conducted by using funnel plots.

Subgroup analysis: For quantitative data synthesis, the estimated combined effect was calculated by comparing the changes between the intervention and control groups from baseline to the end of the study. We assessed transcranial magnetic stimulation on symptoms in patients with cerebellar ataxia, compared with sham samples using the total score of each scale.

Sensitivity analysis: For quantitative data synthesis, the estimated combined effect was calculated by comparing the changes between the intervention and control groups from baseline to the end of the study. We assessed transcranial magnetic stimulation on symptoms in patients with cerebellar ataxia, compared with sham samples using the total score of each scale.

Country(ies) involved: China.

Keywords: cerebellar Ataxias, Hereditary Ataxias; Spinocerebellar Ataxias, Transcranial Magnetic Stimulation, systematic review, Treatment, meta-analysis.

Contributions of each author:

Author 1 - ying wang.
Email: 948752373@qq.com
Author 2 - Di Zhang.
Author 3 - Jiang Ma.
Author 4 - Ju Wang.
Author 5 - Li Lu.
Author 6 - Song Jin.