COCHRANE CORNER

Magnetic seizure therapy for treatment-resistant depression: a Cochrane Review†

Jiangling Jiang, Caidi Zhang, Chunbo Li, Zhimin Chen, Xinyi Cao, Hongyan Wang, Wei Li & Jijun Wang

† This review is the abstract of a Cochrane Review previously published in the *Cochrane Database of Systematic Reviews*, 2021, Issue 6: CD013528, doi: 10.1002/14651858.CD013528.pub2 (see www.cochranelibrary.com for information). Cochrane Reviews are regularly updated as new evidence emerges and in response to feedback, and the *Cochrane Database of Systematic Reviews* should be consulted for the most recent version of the review.

We thank the Cochrane Common Mental Disorders Group for their support in publishing this review.

See Round the Corner in this issue.

Background

Magnetic seizure therapy (MST) is a potential alternative to electroconvulsive therapy (ECT). Reports to date on use of MST for patients with treatment-resistant depression (TRD) are limited.

Objectives

To evaluate the effects of MST in comparison with sham-MST, antidepressant, and other forms of electric or magnetic treatment for adults with TRD.

Search method

In March 2020, we searched a wide range of international electronic sources for published, unpublished, and ongoing studies. We handsearched the reference lists of all included studies and relevant systematic reviews and conference proceedings of the Annual Meeting of the American College of Neuropsychopharmacology (ACNP), the Annual Scientific Convention and Meeting, and the Annual Meeting of the European College of Neuropsychopharmacology (ECNP) to identify additional studies.

Selection criteria

All randomised clinical trials (RCTs) focused on MST for adults with TRD.

Data collection and analysis

Two review authors extracted data independently. For binary outcomes, we calculated risk ratios (RRs) and 95% confidence intervals (CIs). For continuous data, we estimated mean differences (MDs) between groups and 95% CIs. We employed a random-effects model for analyses. We assessed risk of bias for included studies and created a 'Summary of findings' table using the GRADE approach. Our main outcomes of interest were symptom severity, cognitive function, suicide, quality of life, social functioning, dropout for any reason, serious adverse events, and adverse events that led to discontinuation of treatment.

Main results

We included three studies (65 participants) comparing MST with ECT. Two studies reported depressive symptoms with the Hamilton Rating Scale for Depression (HAMD). However, in one study, the data were skewed and there was an imbalance in baseline characteristics. Analysis of these two studies showed no clear differences in depressive symptoms between treatment groups (MD 0.71, 95% CI –2.23 to 3.65; 2 studies, 40 participants; very low-certainty evidence). Two studies investigated multiple domains of cognitive function. However most of the outcomes were not measured by validated neuropsychological tests, and many of the data suffered from unbalanced baseline and skewed distribution. Analysis of immediate memory performance measured by the Wechsler Memory Scale showed no clear differences between treatment groups (MD 0.40, 95% CI –4.16 to 4.96; 1 study, 20 participants; very low-certainty evidence). Analysis of delayed memory performance measured by the Wechsler Memory Scale also showed no clear differences between treatment groups (MD 2.57, 95% CI –2.39 to 7.53; 1 study, 20 participants; very low-certainty evidence). Only one study reported quality of life, but the data were skewed and baseline data were unbalanced across groups. Analysis of quality of life showed no clear differences between treatment groups (MD 14.86, 95% CI –42.26 to 71.98; 1 study, 20 participants; very low-certainty evidence). Only one study reported dropout and adverse events that led to discontinuation of treatment. Analysis of reported data showed no clear differences between treatment groups for this outcome (RR 1.38, 95% CI 0.28 to 6.91; 1 study, 25 participants; very low-certainty evidence). Adverse events occurred in only two participants who received ECT (worsening of preexisting coronary heart disease and a cognitive adverse effect). None of the included studies reported outcomes on suicide and social functioning. No RCTs comparing MST with other treatments were identified.

Authors' conclusions

Evidence regarding effects of MST on patients with TRD is currently insufficient. Our analyses of available data did not reveal clearly different effects between MST and ECT. We are uncertain about these findings because of risk of bias and imprecision of estimates. Large, long, well-designed, and well-reported trials are needed to further examine the effects of MST.