Abstract

Background:

Drug treatment is the mainstay of treatment for bipolar affective disorder (BD). However, the side effects of drug treatment can lead to poor drug compliance, resulting in relapses. Transcranial magnetic stimulation (TMS) is an emerging and promising treatment option for a number of psychiatric disorders. It is reported to have good tolerability. Newer studies on its treatment efficacy in BD have been published. However, meta-analysis in assessing the treatment efficacy of TMS in BD is still lacking.

Objectives:

The objectives of this systematic review and meta-analysis are to examine and summarise the available data on the treatment efficacy of TMS for depressive and manic symptoms in patients with BD, and to examine the moderators of treatment efficacy.

Methodology:

MEDLINE, EMBASE, PsycINFO, Cochrane Central Register of Controlled Trials (CENTRAL) databases were searched from inception to 31st March 2018, for controlled trials on the treatment of BD with TMS. Random-effects meta-analysis with main outcome measures as changes in depression or mania scores, response and remission rates were performed. Occurrence of adverse events was examined. Cochrane Risk of Bias Tool was used to estimate the risk of bias within studies. Publication bias was assessed with funnel plot and Egger's regression test. Subgroup analysis was undertaken to examine the effects of specific TMS parameters and patient characteristics on treatment efficacy.

Results:

Eleven controlled trials compared TMS with sham control. Trials of TMS versus sham control in bipolar depression showed a small but statistically significant improvement in depression scores (standardised mean difference = 0.302, 95% CI = 0.055 – 0.548, p < 0.05). TMS was more likely to lead to remission in patients with bipolar depression (40/116, 34.5% vs. 24/124, 19.4%; risk difference = 0.104, 95% CI = 0.018 to 0.190, p <0 .05), whereas the difference in response rate of bipolar depression between TMS and sham control group was not statistically significant (69/116, 59.5% vs. 58/124, 46.8%; risk difference = 0.074, 95% CI = -0.003 to 0.151, p > 0.05). There was inadequate evidence to suggest if TMS could improve manic symptoms in bipolar mania or not. No serious adverse events were reported with TMS.

Conclusion:

TMS could be a potentially effective treatment option for bipolar depression, based on the current evidence available. It was a safe and well-tolerated treatment option. More stringent randomised controlled trials in this area would be needed, before the treatment could be recommended.