

Transcranial Magnetic Stimulation (rTMS) Outcomes in Cases of Treatment-Resistant Depression

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ABSTRACT

Major depressive disorder (MDD) is a prevalent and debilitating mental health condition characterized by persistent low mood, anhedonia, and impaired functioning. Although many patients respond to first-line treatments such as antidepressant medications and psychotherapy, a significant subset—referred to as treatment-resistant depression (TRD)—fails to achieve adequate symptom relief despite multiple therapeutic trials. In recent years, non-invasive neuromodulation techniques have been introduced as alternative options for patients with TRD. Among these, repetitive transcranial magnetic stimulation (rTMS) has gained prominence due to its efficacy, safety profile, and favorable tolerability. rTMS involves delivering focused magnetic pulses to targeted regions of the brain, particularly the left dorsolateral prefrontal cortex (DLPFC), which is associated with mood regulation. Compared to electroconvulsive therapy (ECT), which is generally more efficacious, rTMS is often preferred by patients as it does not require general anesthesia, does not induce seizures, and has fewer cognitive side effects. Several studies have demonstrated significant improvement in depressive symptoms following rTMS, yet more data are needed from real-world clinical settings to assess its effectiveness across different populations. This study contributes to this growing body of evidence by evaluating the clinical impact of rTMS on symptomatology in patients with treatment-resistant depression using structured outcome measures at different phases of therapy.

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