

A New Hope in Treatment-Resistant Depression: Accelerated Transcranial Magnetic Stimulation

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Dear Editor;

Major depressive disorder (MDD) is a substantial public health concern that impacts individuals' mood, thoughts, and physical well-being. Depression is recognized the primary cause of worldwide disability (1). Current treatment guidelines recommend antidepressants as the primary treatment for MDD. Approximately 44% of people with depression fail to respond to two consecutive antidepressant treatments; this is called treatment resistant depression (TRD). Moreover, TRD poses a significant clinical issue because of its elevated risk of suicide. Patients with TRD have twice the risk of suicide compared to patients without TRD. The development of more efficient, quick, safe, and tolerable TRD treatments is desperately needed. Repetitive transcranial magnetic stimulation (rTMS) is a noninvasive technique that alters the brain's activity by changing the way neurons communicate with each other. The Food and Drug Administration has approved intermittent theta burst stimulation (iTBS) of the left dorsolateral prefrontal cortex (DLPFC) in TRD. iTBS has a response rate of approximately 40% in individuals with TRD. Compared to conventional rTMS, iTBS has the advantage of being administered in a shorter time (37 minutes vs. 3 minutes) in the treatment of TRD. However, like traditional rTMS, several weeks of treatment are required to achieve a clinical response. Accelerated (intensive) treatment schedules with higher dosing and multiple sessions per day have been developed to reduce the financial and time burden of iTBS and reduce time-to-response. The Stanford Neuromodulation Therapy (SNT) showed encouraging results, with a remission rate

of 90% in patients with TRD after five days (2). The SNT protocol consists of ten sessions of iTBS per day, with 1800 pulses per session. The sessions are spaced 50 minutes apart and are conducted over five consecutive days, targeting the left DLPFC. Several studies have investigated the use of accelerated intermittent theta-burst stimulation (aiTBS) in patients with TRD. A current study found the SNT protocol improved depressive symptoms in bipolar disorder patients (3). A systematic review of these studies found variations in the number of daily sessions, inter-session intervals, and total number of aiTBS days (4). The number of daily sessions ranged from 5 to 10, and aiTBS was administered for a total of 4 or 5 days. Session intervals varied from 15 to 50 minutes. However, these studies only assessed the response and remission rates of aiTBS after the first four weeks and did not evaluate its long-term antidepressant efficacy (4). The response rates after treatment varied between 20% and 86.4%, while the rates observed after four weeks of aiTBS ranged from 0% to 66.4%. The remission rates following treatment ranged from 10.0% to 86.4%, whereas after four weeks of aiTBS, they spanned from 0.0% to 57.1% (4). Some studies also reported a significant decrease in suicide scores after aiTBS (4). No serious side effects of aiTBS were reported, and patients generally tolerated the treatment well (4). In conclusion, aiTBS has shown rapid antidepressant and anti-suicidal effects. The current review found aiTBS is safe and well tolerated, with similar rates of seizure and side effects as once-daily rTMS. Mania or hypomania has not been reported in studies on aiTBS (5). In addition, some other treatment modalities, like sleep deprivation, are used together with aiTBS in TRD patients.

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However, the optimal number of daily sessions, total sessions, and time intervals between sessions have not been determined. Further research is needed to evaluate its long-term efficacy and establish standardized protocols.

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