



LETTER TO THE EDITOR

Successful combination of sleep deprivation therapy and intermittent theta burst stimulation in a patient with recurrent depressive disorder and suicidal ideation

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Dear Editor,

Major depressive disorder is a significant mental health condition characterized by considerable morbidity, disability, and a heightened risk of suicide. In recent years, non-pharmacological treatments such as sleep deprivation (SD) therapy and repetitive transcranial magnetic stimulation (rTMS) have shown promise in managing depression (1).

SD therapy, a form of chronotherapy, can achieve a 40–60% reduction in depressive symptoms after just one night of total or partial sleep deprivation. It is a rapid, non-invasive, cost-effective, and well-tolerated treatment option. SD therapy positively affects treatment compliance and reduces suicidal thoughts in patients with depression at risk of suicide (2). rTMS is a noninvasive brain stimulation therapy. The Food and Drug Administration has approved rTMS for the treatment of major depressive disorder. In depression management, two main protocols are generally utilized: low-frequency rTMS (≤ 1 Hz), targeting the right dorsolateral prefrontal cortex, and high-frequency rTMS (5–20 Hz), targeting the left dorsolateral prefrontal cortex (LDLPFC), with each session lasting between 20 and 40 minutes.

Intermittent Theta Burst Stimulation (iTBS) is another rTMS protocol, which lasts up to three minutes and can be used to treat depression. It is applied for a shorter duration than the classical rTMS treatment and has shown equivalent antidepressant effectiveness (3). Many studies have demonstrated that rTMS significantly reduces suicidality in patients with depression (3).

A 22-year-old female patient, who had experienced three major depressive episodes over four years, was diagnosed with recurrent depressive disorder according to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision (DSM-5-TR). She presented at the outpatient clinic with symptoms of depression, including sadness, anhedonia, and suicidal thoughts. Her medication regimen prior to admission included lithium carbonate (900 mg/day), venlafaxine (300 mg/day), and aripiprazole (5 mg/day). Upon admission, her score on the Hamilton Depression Scale-17 (HDRS-17) indicated moderate depression, with a total of 17 points, including a score of 3 on the suicide-related item. The decision was made to hospitalize the patient in the psychiatry clinic, continue her current medication regimen, and initiate SD therapy and rTMS treatment. The patient had no comorbidities,

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such as epilepsy, that would contraindicate the use of TMS or SD therapy. She underwent partial SD therapy for five days prior to starting rTMS. Following the SD therapy, her HDRS-17 score decreased to 10 points. The patient then received twenty sessions of iTBS, including two iTBS sessions per day to the LDLPFC, with 1,200 pulses at 110% of the motor threshold. After completing the rTMS sessions, her HDRS-17 score further decreased to 6 points. The patient was found to be in remission during the 3rd and 6th-month follow-ups, with her suicidal thoughts completely resolved. The suicide-related item on the HDRS-17 scored 0 throughout all follow-up periods. No changes were made to the patient's medication during the SD + rTMS treatment and follow-up periods. No side effects were observed during the SD + rTMS protocol, and the patient tolerated the treatment well.

It is believed that the combination of SD therapy and rTMS produces a synergistic effect on the anterior cingulate cortex, a key region implicated in the pathophysiology of depression (4). rTMS has been recognized as a method to extend the antidepressant effects of SD therapy. Eichhammer et al. (5) demonstrated that rTMS could prolong the antidepressant benefits of SD therapy and prevent relapse in patients. Our findings indicate that combining SD therapy with rTMS effectively reduces depressive symptoms and suicidal thoughts without inducing side effects. Further research is necessary to explore the potential synergistic use of SD and rTMS.

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