

Noninvasive brain stimulation with high-frequency and low-intensity repetitive transcranial magnetic stimulation treatment for posttraumatic stress disorder.

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Author information

Abstract

OBJECTIVE: We aimed to investigate the efficacy of 20 Hz repetitive transcranial magnetic stimulation (rTMS) of either right or left dorsolateral prefrontal cortex (DLPFC) as compared to sham rTMS for the relief of posttraumatic stress disorder (PTSD)-associated symptoms.

METHOD: In this double-blind, placebo-controlled phase II trial conducted between October 2005 and July 2008, 30 patients with DSM-IV-diagnosed PTSD were randomly assigned to receive 1 of the following treatments: active 20 Hz rTMS of the right DLPFC, active 20 Hz rTMS of the left DLPFC, or sham rTMS. Treatments were administered in 10 daily sessions over 2 weeks. A blinded rater assessed severity of core PTSD symptoms, depression, and anxiety before, during, and after completion of the treatment protocol. In addition, a battery of neuropsychological tests was measured before and after treatment.

RESULTS: Results show that both active conditions-20 Hz rTMS of left and right DLPFC-induced a significant decrease in PTSD symptoms as indexed by the PTSD Checklist and Treatment Outcome PTSD Scale; however, right rTMS induced a larger effect as compared to left rTMS. In addition, there was a significant improvement of mood after left rTMS and a significant reduction of anxiety following right rTMS. Improvements in PTSD symptoms were long lasting; effects were still significant at the 3-month follow-up. Finally, neuropsychological evaluation showed that active 20 Hz rTMS is not associated with cognitive worsening and is safe for use in patients with PTSD.

CONCLUSIONS: These results support the notion that modulation of prefrontal cortex can alleviate the core symptoms of PTSD and suggest that high-frequency rTMS of right DLPFC might be the optimal treatment strategy.

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Repetitive transcranial magnetic stimulation of the right dorsolateral prefrontal cortex in posttraumatic stress disorder: a double-blind, placebo-controlled study.

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Abstract

OBJECTIVE: The efficacy of repetitive transcranial magnetic stimulation (rTMS) of the right prefrontal cortex was studied in patients with posttraumatic stress disorder (PTSD) under double-blind, placebo-controlled conditions.

METHOD: Twenty-four patients with PTSD were randomly assigned to receive rTMS at low frequency (1 Hz) or high frequency (10 Hz) or sham rTMS in a double-blind design. Treatment was administered in 10 daily sessions over 2 weeks. Severity of PTSD, depression, and anxiety were blindly assessed before, during, and after completion of the treatment protocol.

RESULTS: The 10 daily treatments of 10-Hz rTMS at 80% motor threshold over the right dorsolateral prefrontal cortex had therapeutic effects on PTSD patients. PTSD core symptoms (reexperiencing, avoidance) markedly improved with this treatment. Moreover, high-frequency rTMS over the right dorsolateral prefrontal cortex alleviated anxiety symptoms in PTSD patients.

CONCLUSIONS: This double-blind, controlled trial suggests that in PTSD patients, 10 daily sessions of right dorsolateral prefrontal rTMS at a frequency of 10 Hz have greater therapeutic effects than slow-frequency or sham stimulation.

Comment in

Mania after transcranial magnetic stimulation in PTSD. [Am J Psychiatry. 2005]

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