

## Randomized sham controlled trial of repetitive transcranial magnetic stimulation to the dorsolateral prefrontal cortex for the treatment of panic disorder with comorbid major depression.

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### Author information

### Abstract

**BACKGROUND:** In an open-label trial low-frequency repetitive transcranial magnetic stimulation (rTMS) to the right dorsolateral prefrontal cortex (DLPFC) significantly improved symptoms of panic disorder and major depression. Here we present data of a randomized double-blind study.

**METHODS:** Twenty-five patients were assigned 4 weeks of active or sham rTMS to the right DLPFC. rTMS parameters consisted of 1800 stimuli/day, 1-Hz, at 110% of resting motor threshold. Response was defined as a  $\geq 40\%$  decrease on the panic disorder severity scale and a  $\geq 50\%$  decrease on the Hamilton depression rating scale. At the end of the randomized phase, patients were offered the option of receiving open-label rTMS for an additional 4 weeks.

**RESULTS:** Repeated-measures ANOVA revealed significantly better improvement in panic symptoms with active compared with sham rTMS, but no significant difference in depression. At 4 weeks, response rate for panic disorder was 50% with active rTMS and 8% with sham. After 8 weeks of active rTMS, response rate was 67% for panic and 50% for depressive symptoms. Repeated-measure ANOVA showed significant improvements in panic disorder, major depression, clinical global impression, and social adjustment. Clinical improvement was sustained at 6-month follow-up.

**LIMITATIONS:** Limitation of this study is the relatively small sample size.

**CONCLUSIONS:** Although 4 weeks of rTMS was sufficient to produce a significant effect in panic symptoms, a longer course of treatment resulted in better outcomes for both panic disorder and major depression. These data suggest that inhibitory rTMS to the right DLPFC affects symptoms expression in comorbid anxiety and depression. ClinicalTrials.gov Identifier: [NCT00521352](https://clinicaltrials.gov/ct2/show/study/NCT00521352).

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## Repetitive Transcranial Magnetic Stimulation (rTMS) in the treatment of panic disorder (PD) with comorbid major depression.

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### Abstract

**BACKGROUND:** Studies suggest that the dorsolateral prefrontal cortex (DLPFC) participates in neural circuitry that is dysregulated in Panic Disorder (PD) and Major Depressive Disorder (MDD). We tested whether low-frequency repetitive Transcranial Magnetic Stimulation (rTMS) could normalize the overactivity of right frontal regions and thereby improve symptoms.

**METHODS:** Six patients with PD and comorbid MDD were treated with daily active 1-Hz rTMS to the right DLPFC for 2 weeks in this open-label trial.

**RESULTS:** Clinical improvements were apparent as early as the first week of treatment. After the second week, 5/6 of patients showed improvements in panic and anxiety, and 4/6 showed a decrease in depression, with sustained improvement at 6 months of follow-up. Right hemisphere resting motor threshold increased significantly after rTMS.

**LIMITATIONS:** Limitations of this study are the open design and the small sample size.

**CONCLUSIONS:** Slow rTMS to the right DLPFC resulted in significant clinical improvement and reduction of ipsilateral motor cortex excitability. Replications in larger sample will help to clarify the relevance of this preliminary data and to define the potential role of right DLPFC rTMS in panic with major depression.

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