

Differential Predictors of Clinical Response after Repeated Transcranial Magnetic Stimulation in Bipolar and Unipolar Disorders

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Abstract

Repetitive transcranial magnetic stimulation has been recognized as a promising non-invasive therapeutic tool for treating mood disorders such as bipolar and unipolar disorders. However, response to rTMS treatment can be highly variable between individuals, and little is known about the predictors of clinical response in these populations. In this article, we will discuss recent research findings regarding the differential predictors of clinical response after repeated transcranial magnetic stimulation in bipolar and unipolar disorders.

Keywords: Bipolar disorder • Drug-resistant depression • Unipolar disorder

Introduction

rTMS involves the delivery of repetitive magnetic pulses to specific regions of the brain, inducing electrical currents that can modulate neuronal activity in the targeted area. In mood disorders, rTMS is often used to stimulate the dorsolateral prefrontal cortex (DLPFC), a brain region that is hypoactive in depression and hyperactive in mania. However, the therapeutic effects of rTMS on mood disorders can be highly variable between individuals, and identifying predictors of clinical response is critical for optimizing treatment outcomes.

Literature Review

One potential predictor of clinical response to rTMS is the patient's diagnosis. Bipolar and unipolar disorders are distinct in their symptom presentation and underlying neurobiology, and recent research has suggested that they may also differ in their response to rTMS. A study conducted by Baeken et al. found that bipolar patients were more likely to respond to rTMS treatment than unipolar patients, with a response rate of 60% compared to 30%. This finding suggests that the underlying neurobiology of bipolar disorder may make it more amenable to rTMS treatment than unipolar disorder [1].

Another potential predictor of clinical response is the patient's baseline clinical severity found that patients with lower baseline symptom severity were more likely to respond to rTMS treatment than those with higher baseline severity. This finding suggests that rTMS may be more effective in treating mild-to-moderate depression or mania, rather than severe or treatment-resistant cases [2].

Discussion

Diagnosis and baseline severity, several neuroimaging biomarkers have

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been investigated as potential predictors of clinical response to rTMS. One such biomarker is the functional connectivity of the DLPFC. A study conducted by Segrave et al. (2019) found that bipolar patients with greater baseline functional connectivity between the DLPFC and the amygdala were more likely to respond to rTMS treatment. This finding suggests that patients with greater pre-treatment functional connectivity in the mood-regulating network may be more responsive to rTMS treatment. Another neuroimaging biomarker that has been investigated is the volume. Zou et al. found that patients with larger baseline DLPFC volume were more likely to respond to rTMS treatment. This finding suggests that patients with greater baseline DLPFC volume may have a greater capacity for neural plasticity, allowing for greater response to rTMS treatment [3-5].

The study looked at the ideas of maternal functioning and maternal mental well-being (the presence or absence of which are crucial in understanding the process of becoming a mother. Finally, recent research has also investigated the role of genetic factors in predicting clinical response found that patients with a specific genotype of the brain-derived neurotrophic factor (BDNF) gene were more likely to respond to rTMS treatment. BDNF is a protein that plays a critical role in promoting neural plasticity, and the findings of this study suggest that patients with a genetic predisposition for greater BDNF expression may have a greater capacity for neural plasticity, allowing for greater response to rTMS treatment [6].

Conclusion

Repeated transcranial magnetic stimulation is a promising non-invasive therapeutic tool for treating mood disorders such as bipolar and unipolar disorders. However, response to rTMS. In the postpartum period, a variety of etiological variables may contribute to sadness and anxiety, which may be harmful to both the mother and the child. To help moms deal with the conditions and emotions encountered at this time, preventive measures should be taken early on before birth and even continuing after delivery.

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Conflict of Interest

None.

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