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Deep Transcranial Magnetic Stimulation (Tms) in Obsessive Compulsive Disorder (Ocd) Patients

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Abstract: Characterized by compulsive rituals and Obsessive thoughts, OCD is a chronic and disabling disorder. Despite converging evidence pointing towards the involvement of dysfunctional cortico-striato-thalamo-cortical circuit in OCD, the neurophysiological pathology of OCD is still not well characterized. Indeed, 40%-60% of patients do not respond adequately to standard treatments.

TMS is a noninvasive therapeutic technique, recently applied to treat and investigate OCD. However, lacking the ability to target the CSTC circuit directly, standard TMS treatment protocols for OCD showed diversified results. The use of special deep TMS (dTMS) coils allows direct stimulation of deeper neuronal pathways relative to those affected by standard TMS coils. Here we evaluated whether dTMS targeting the medial prefrontal and the anterior cingulate cortices may influence symptom severity.

Method: 40 patients were treated with either dTMS or a sham coil for five weeks in a double-blind controlled study. The patients were divided into groups receiving either high (20Hz) or low (1Hz) stimulation frequencies, and were simultaneously administrated with symptom provocation. EEG measurements were taken at baseline and at the end of treatment.

Results: The active 20Hz dTMS group improved significantly in YBOCS score compared to the 1Hz and placebo groups (28% vs. 6% reduction),
{t (93) = -2.29 (p=0.0243)}. Moreover, follow-up assessments revealed 3 months stability in improvements as measured by YBOCS scores. EEG evoked responses measured over the ACC correlated with clinical response.

Conclusions: High frequency dTMS treatment, targeting the medial prefrontal and the anterior cingulate cortices is a promising therapeutic intervention in OCD.

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