Transcranial Magnetic Stimulation for the Treatment of Obsessive-Compulsive Disorder

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About 10% of patients diagnosed with obsessive-compulsive disorder (OCD) remain symptomatic despite standard pharmaceutical and psychotherapy treatments.[1] Many suffer treatment resistance despite optimal care. For such individuals, the US Food and Drug Administration approved transcranial magnetic stimulation (TMS) in 2018 as a potentially effective intervention.[2]

Deep TMS (dTMS) employs a H7 coil and targets deep brain areas of the anterior cingulate and medial prefrontal cortex. It can induce improved clinical results.[3,4]

One randomized study[3] involved 100 subjects with OCD. The treatment group received 29 dTMS sessions over 6 weeks, while a sham coil was applied for the control set. The dTMS patients evidenced a 38% reduction in OCD symptoms compared to 11% for controls. Improvement for the dTMS group was maintained at 10-week follow-up.[3]

Another trial[4] evaluated the effectiveness of dTMS in 99 treatment-resistant individuals with OCD. Subjects were randomized to 20-Hz high-frequency and sham groups. Nearly 45% of participants who received high-frequency dTMS showed clinical improvement compared to those in the sham group. High-frequency exposure modulates neural activity and sustained inhibited compulsions in patients with OCD.[4]

More TMS research[5] documented that targeting other brain areas also attenuated OCD symptoms. The effect of repetitive TMS (rTMS) over the right dorsolateral prefrontal cortex was tested among 45 subjects. Groups were divided into low-frequency, high-frequency, and sham exposures. Application of low-frequency rTMS yielded the best response rates.[5]

An investigation[6] comparing α-electroencephalograph TMS with a sham intervention bilaterally in 46 patients with OCD resulted in less obsessions, anxiety, and depression following TMS treatment. Administration of rTMS over a supplemental motor area in 2 trials[6,7] yielded fewer OCD symptoms. Another study[8] monitored low-frequency, double-cone rTMS over the right orbitofrontal cortex; time-limited improvement was significant but only briefly sustained.

With clinical benefit safely documented, dTMS can be a reasonable adjunctive treatment option for OCD-diagnosed patients. Metallic objects or implanted devices in or near the head are the contraindication against administering dTMS. Further research is ongoing.[2]

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