

Transcranial magnetic stimulation improves hand gesture deficits in schizophrenia

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By Marilynn Larkin

NEW YORK (Reuters Health) - In schizophrenia patients, single sessions of continuous theta burst stimulation (cTBS) over the right inferior parietal lobe (IPL) briefly but "substantially" improved gesture performance accuracy and manual dexterity, researchers say.

"Single sessions of transcranial magnetic stimulation (TMS) last about one to three minutes and result in a temporary change in local brain function that lasts for approximately 30 minutes," Dr. Sebastian Walther of the University of Bern in Switzerland told Reuters Health by email.

"Other TMS protocols are used to treat neuropsychiatric conditions and repeated daily administration of TMS for 2-3 weeks typically enhances the behavioral effect for a duration of several weeks or even months," Dr. Walther said. "Thus, the single sessions tested in our study are not useful in clinical settings, but repeated administration may work out well. It could also pave the way to enhancing the training effects of group psychotherapy. The idea is to prepare the relevant brain network using TMS in order to amplify the training effects that are exerted by psychotherapy."

Schizophrenia patients are particularly impaired in using and understanding hand gestures correctly, which may contribute to social isolation, he noted. "Using brain imaging, we detected poor engagement of the brain network that is critical in gesture processing in our patients. We tested whether one of two different TMS protocols would help improve poor gesture performance."

Dr. Walther and colleagues randomized 20 right-handed schizophrenia patients and 20 matched healthy controls in a crossover trial in which the protocols of repetitive TMS were separated by 48 hours. Participants' mean age was about 32 and about two-thirds were men.

Participants received facilitory intermittent theta burst stimulation (iTBS) over the left inferior frontal gyrus; inhibitory continuous theta burst stimulation (cTBS) over the right IPL; and placebo over the left IPL.

The primary outcome was change in the test of upper limb apraxia (TULIA), rated from video recordings of hand gesture performance. The secondary outcome was change in manual dexterity using the coin rotation task.

As reported online October 21 in *Schizophrenia Bulletin*, overall, single sessions of cTBS improved gesture performance by 6.5% and manual dexterity by 10.8% compared to baseline.

Facilitatory iTBS over the left IFG improved gesture performance by 5%, but this was not superior compared with placebo.

Only right IPL cTBS improved gesture performance overall (TULIA) compared to placebo. Results of the coin rotation paralleled those of the TULIA, with improvements following right IPL cTBS.

The combined treatment will be tested in study funded by the Swiss National Science Foundation, with recruitment starting in December 2019.

"We hope to get a safe, effective, and low-cost treatment option in schizophrenia that will particularly improve social functioning and quality of life of these patients, both of which are currently rarely achieved with standard treatment," Dr. Walther concluded.

Ben Spielberg, founder and CEO of TMS and Brain Health in Santa Monica, California, called the findings "exciting."

"We've known for a while that TMS can help to alleviate myriad ailments and disorders, usually after 20 or so sessions," he told Reuters Health by email. "This (study) demonstrates that TMS can have an important impact after just a single 3-minute treatment."

"Right now, in the U.S., TMS is only covered by insurance for the treatment of depression," he noted. "We remain hopeful that insurance companies will begin to cover TMS for everything it has been shown to be helpful for."