Repetitive Transcranial Magnetic Stimulation: The Magic Bullet for Managing Treatment-Resistant Obsessive-Compulsive Disorder in a Congenitally Deaf and Mute Woman

To the Editor: Obsessive-compulsive disorder (OCD) is a chronic psychiatric disorder characterized by recurrent persistent thoughts (obsessions) or repetitive compulsory behaviors (compulsions) that produce anxiety or distress, are time consuming, and cause significant socio-occupational dysfunction.[1] Prevalence of OCD across various studies[2,3] was found to range from 2%–3%. About 30% of patients with OCD do not respond to traditional treatment.[4] Nonresponders have been defined as those with < 25% reduction in Yale-Brown Obsessive-Compulsive Scale (YBOCS)[5] score or a Clinical Global Impressions[6] score ≥ 4. Refractory OCD has been defined as failure to respond to all available treatment modalities.[7,8] Use of another antiobsessional agent, cognitive-behavioral therapy, lithium carbonate, low doses of atypical antipsychotics, buspirone, psychosurgery, repetitive transcranial magnetic stimulation (rTMS), and deep brain stimulation are some of the strategies discussed in the literature[9,10] for management of treatment-resistant OCD. Functional magnetic resonance imaging and magnetic resonance spectroscopy studies[11] in OCD patients have reported hyperactivation of the medial frontal cortex and supplementary motor area (SMA). According to the literature,[12] low-frequency rTMS over the SMA appears to be a promising treatment strategy. We report a unique case of treatment-resistant OCD in a congenitally deaf and mute woman managed with rTMS over the SMA.

Case report. Ms A is a congenitally deaf and mute 23-year-old divorced Hindu woman of middle socioeconomic status with a 12th-grade education. She presented to the psychiatry outpatient department with insidious onset continuous course illness of 12 years characterized by obsessions and compulsions—need to have things in a particular order, repetitive ritualistic counting behavior with passage of urine in clothes, marked slowing of activity, social withdrawal, and lack of self-care for the last year, leading to severe socio-occupational dysfunction. Ms A was admitted to the hospital for diagnostic clarification and management. During the hospital stay, her evaluation revealed that the passage of urine in clothes was secondary to the ritualistic counting behavior, and a diagnosis of OCD with poor insight was made on the basis of *DSM-5* criteria.[13] As the patient was deaf and mute, scoring of the YBOCS compulsive items was determined via the mother communicating with Ms A in sign language. At admission, ritualistic behavior was occurring nearly all day. The patient received adequate trials of fluoxetine and fluvoxamine and augmentation with adequate doses of clomipramine and risperidone. However, there was no significant improvement in YBOCS score (ie, < 25% reduction in score compared to baseline score of 19/20).

Due to treatment resistance, rTMS was started. Five sessions per week of low-frequency (1 Hz) stimulation delivering 1,200 pulses at 85% power over the SMA were conducted. The rTMS was performed with a Magstim Rapid2 Stimulator for biphasic pulses (Magstim Company Ltd, Whitland, Carmarthenshire, United Kingdom) with a focal 70-mm 8-shaped coil. To determine the resting motor threshold, we used the thumb movement visualization method, stimulating the left primary motor cortex.[14]

Ms A started showing marked improvement clinically and in YBOCS score after the 10th session of rTMS, with score reduction to 8/20. She stopped passing urine in her clothes, and ritualistic behavior reduced to 1 to 1½ hours per day. There was progressive improvement until the 32nd session (YBOCS score reduced to 6/20 and ritualistic behavior reduced to 20 min/d). rTMS was stopped after the 35th session, as there had been no further improvement.

About 2 weeks after stopping rTMS, Ms A's symptoms worsened, and her YBOCS score increased to 13/20 and ritualistic behavior increased to 45 min/d. Thus, rTMS was restarted, and Ms A was given 21 more sessions (2 sessions per week). Her YBOCS score decreased to 5/20 and ritualistic behavior to 15 min/d and gradually stopped completely. Given her improvement, Ms A was sent daily to the rehabilitation center for the deaf and mute and was subsequently discharged from the hospital.

Plans for rTMS maintenance were made such that the patient would be evaluated in weekly follow-up, and if the YBOCS score increased, rTMS would be reinitiated. Approximately 8 weeks after discharge, Ms A's YBOCS scores started increasing, and rTMS was restarted on an outpatient basis per the previous parameters but at 80% power in 1 session per week. Approximately 12 weeks after discharge, the patient again started showing improvement and maintained a score of 9/20 in continuation with her rehabilitation activities at the center for the deaf and mute. She has received a total of 44 sessions in the rTMS maintenance phase during the past year.

This case posed several unique challenges to the treatment team. First, communication with the patient was a challenge given that she was deaf and mute. We communicated with Ms A via her mother who played the role of interpreter through sign language. There was no specialized scale for OCD that could be applied in a deaf and mute individual, thus we used the YBOCS scale with the help of Ms A's mother. Hence, there is a need for development of specialized scales for measuring psychopathology in the deaf and mute.

Second, the case posed a diagnostic challenge in that OCD masqueraded as psychosis in the form of the passage of urine, which initially was considered as disorganized behavior but was actually secondary to ritualistic behavior.

Third, this case highlights rTMS as a management modality in treatment-resistant OCD. To our knowledge, this is the first report of rTMS for management of treatment-resistant OCD in a deaf and mute patient.

Fourth, although there is literature[15,16] on maintenance rTMS for treatment-resistant depression, we found no literature regarding maintenance rTMS for treatment-resistant OCD or even OCD. Studies[17] in treatment-resistant OCD have reported that over time, the positive outcome due to rTMS becomes equivalent to that of sham interventions, suggesting that the effect of rTMS does not sustain but rather tapers off. The total cumulative number of pulses that Ms A has received to date is 120,000 pulses distributed over 100 rTMS sessions, which is more than is mentioned in any study in the literature. No adverse events were reported by the patient. Research is warranted regarding development of guidelines for maintenance rTMS in OCD.

rTMS was a "magic bullet" in the treatment of Ms A. Although rTMS may not be the treatment of choice for all deaf and mute patients with OCD, it may be useful in a select few with medication resistance or in a refractory case scenario.

This case reports successful diagnosis and management of treatment-resistant OCD in a deaf and mute individual using rTMS. The utility and safety of maintenance rTMS is also indicated.

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