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Letter to the Editor

Successful use of theta burst stimulation (TBS) for treating psychogenic non epileptic seizures (PNES) in a pregnant woman

Dear Editor,

Although infrequently reported, psychogenic non-epileptic seizures (PNES) during pregnancy may indicate serious emotional conflicts and these patients are at a high risk for self-harm, including suicide attempts (DeToledo et al., 2000; Dworetzky et al., 2015). We report a case of PNES who presented during first trimester pregnancy and showed significant improvement on a trial of repetitive transcranial magnetic stimulation (rTMS).

1. Case vignette

The index patient is a 22-year old female with 10-years of formal education, hailing from rural area of Uttar Pradesh and belonged to lower socio-economic-status. She had a well-balanced pre-morbid personality and nil contributory family history. Past history was suggestive of a prolonged depressive episode lasting for 2 years that improved on escitalopram 10mg. She was maintaining well for about 18 months till her marriage a year back. Then she discontinued treatment and relapsed, her symptoms had deteriorated for the last 6 weeks since detection of pregnancy. Her chief complaints were repeated episodes of unresponsiveness that were associated with vigorous shaking of the head with arms flexed and crossed at the chest and kicking of both legs in an uncoordinated manner with up rolling of eyeballs and intermittent opening and closing of eyelids lasting 10–15 min. All the episodes occurred in the presence of family members and at home while lying on the bed and some while sitting down. Frequency of these episodes for 6 weeks, i.e. antenatally, was on an average 3–4 per day. Additionally, she also complained of sadness, loss of interest and decreased sleep. Her activities of daily living, family and social functioning were severely affected. She had no prior history of epilepsy. A video EEG (with photic stimulation and hyperventilation) showed no evidence of epileptic/epileptiform activity. Magnetic resonance imaging- brain was normal. Antenatal-ultrasonography revealed foetal sizecorrespondingto 8 weeks' gestation. Complete blood cell count, metabolic panel results including thyroid profile were within normal limits. Baseline scores on Psychogenic Non-Epileptic Seizures (PNES) scale (Cianci et al., 2011), Hamilton Depression Rating Scale (HAM-D 17) and Hamilton Anxiety Rating Scale (HAM-A) were 48, 19 and 23 respectively.

Patient and her relatives were reluctant for treatment with psychotropics (citing early pregnancy) and lacked psychological mindedness as they refused to undergo any form of psychological or behavioural intervention, despite persuasion. She was offered treatment by rTMS.

1.1. rTMS protocol

A MagVenture-MagPro- R30 device and a figure-of-eight shaped coil were used for the delivery of rTMS. rTMS protocol, especially type and site (i.e. excitatory stimulation to right temporoparietal junction (TPJ)), was adapted from the study by Peterson et al. (2018). As a modification to their protocol, we opted for intermittent theta burst stimulation (iTBS), which has been suggested as an effective alternative requiring significantly lesser time for stimulation (Blumberger et al., 2018), instead of high frequency stimulation. Stimulation was administered at 80% resting motor threshold (RMT), which was ascertained prior to stimulation sessions. In each session she received 600 pulses. She received a total of 10 rTMS sessions (2/day) over a period of 7-days. rTMS stimulation site chosen was an area "1 cm lateral to CP4 (10–20 International EEG System)", corresponding to TPJ. Stimulation parameters and duration of treatment were chosen according to safety guidelines prescribed for TBS (Rossi et al., 2009). This protocol had the approval of the Institute's ethics committee (Reference.no. SGRR/IEC/13/18, IEC Registration No. ECR/710/Inst/UK/2015/RR-18).

Over the course of the rTMS sessions, she showed significant improvement. Her scores immediately after completion of 10 sessions on PNES, HAM-D 17 and HAM-A scales were 22, 13 and 21 respectively. She showed improving trend even after completion of the sessions over the next one week. Her scores after one week of completion rTMS sessions (i.e. post 2 weeks) on PNES, HAM-D 17 and HAM-A scales were 3, 10 and 14 respectively. Attack frequency reduced to '1 every 2 days' post 1 week and no attacks in the 2nd and 3rd week. Apart for transient tiredness on day 5 and 6 and, muscle stiffness, scalp discomfort and sleepiness on day 6, she did not report any significant side-effects. Her antenatal check-up including ultrasonography were normal at discharge.

2. Discussion

Patients with PNES presenting during pregnancy are prone to unnecessary medical treatments that lead to adverse iatrogenic complications (Dworetzky et al., 2015). Although, selective serotonin-reuptake inhibitors (SSRIs) have been shown to reduce PNES frequency (Perez and LaFrance, 2016) and not to significantly increase the risk of teratogenicity (Louik et al., 2007), their usage is still controversial and is guided by client's preference.

We report rTMS as a successful treatment option in this case. This report endorses its recommendation as an effective, safe and well tolerated treatment option during pregnancy (HızlıSayar et al., 2014). Neurobiological mechanisms that could have underpinned the improvement in clinical profile of the patients may be- improved interval between intention awareness and movement and, enhanced capacity for self-agency secondary to restored multisensory integration (Peterson

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et al., 2018); both resulting from excitatory activation of the right TPJ/IPL region. Improvement in depression and anxiety scores in our case might imply that stimulation at right TPJ/IPL improves cortical connectivity and result in ancillary stimulation of prefrontal cortices as well. Perhaps, our treatment might have had specific influence on certain (yet to be revealed) biological targets distinct to antepartum PNES. Having mentioned these, certainly a possibility of a placebo response cannot be ruled out; demonstration of the efficacy of this treatment protocol in sham controlled clinical trials will be required to clarify this issue.

Conflict of interest

None

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Rashi Agarwal, Shobit Garg
Department of Psychiatry, Shri Guru Ram Rai Institute of Medical and Health Science, Dehradun, Uttarakhand, India

Sai Krishna Tikka*
Department of Psychiatry, All India Institute of Medical Sciences, Raipur, Chhattisgarh, India
E-mail address: cricsai@gmail.com.

Sumit Khatri
Department of Psychiatry, Shri Guru Ram Rai Institute of Medical and Health Science, Dehradun, Uttarakhand, India

Deepak Goel
Department of Neurology, Himalayan Institute of Medical Sciences, Dehradun, Uttarakhand, India

* Corresponding author.