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Successful continued TMS treatment after a seizure: A letter to the editor

Dear Editor

I report the following TMS-related seizure.

The patient was a 48 year old female with a 20 + year history of major depression and anxiety. She had tried at least 6 different antidepressants without benefit. After discussing the risks/benefits of TMS, treatment was initiated using the *Brainsway* H1 system. During therapeutic session # 11 the patient developed a generalized tonic/clonic seizure. She had no prior history of seizures or head injuries. She reported weekly alcohol use of one drink per setting (usually a glass of wine with dinner). She denied drug use. There was no family history of seizures. She was on Xanax PRN for panic, and may have been using it slightly less as she had already noticed an improvement in her anxiety along with depression using TMS. She denied a change in her sleep patterns or caffeine intake. She had no medication changes, no fever, or any physical findings suggesting another physical illness prior to the seizure. She denied headaches. At the time of the seizure the patient was on Vortioxetine 20 mg q day, Alprazolam 0.25 mg q 8 hours PRN, Eszopiclone 2 mg q hs PRN, and Propranaolol 10 mg q AM and q afternoon.

We were using the *Brainsway* H1 coil placed at 1.5/14 @ 63% (120%MT). She had some brief mild mouth twitching and slight hand twitching on a couple of occasions during TMS on a few days prior to the date of the seizure that was noted by the TMS tech and by the patient. (These episodes also occurred with treatment sessions after the date of the seizure.) TMS session #11 was being administered at 18 Hz, 2 second pulse trains, 20 second inter-train rate and 55 trains per treatment. At the onset of the seizure TMS was immediately stopped and 911 was called at train #28. I was summoned to the room where passive supportive measures were given until the arrival of the EMS. The patient was sitting upright in our outpatient office during the treatment. She had no noticeable urinary or fecal incontinence. She did experience tongue biting/bleeding and post ictal confusion. The seizure self-terminated. Blood pressure and pulse were elevated upon arrival of the EMS, but later normalized. The patient had vomiting and sedation after the event. She was taken to the emergency room. The emergency room physician found the patient to have a normal neurologic/physical exam, insignificant labs, a negative urine drug screen, and a normal CT scan with and without contrast. A sleep deprived EEG was completed at a later date and was also within normal limits.

On the night of the seizure while still in the emergency room, the patient was contacted via phone to check on her status. At that time she asked to continue treatment based on the progress she had already noted with TMS. Four days later she restarted TMS at 100% MT and advanced to 120% MT slowly over the next two weeks. She completed a total of 39 treatments with an improvement on her Beck Depression Inventory from a score of 47 to a score of 14 and an improvement on her PHQ-9 test from a score of 24 to 8. The patient was able to complete a full course of TMS despite the seizure with no additional complications, no changes on her EEG, and with clinical improvement. The clinical diagnosis of this event was TMS-related seizure. This event was also reported to the FDA.

Conflicts of interest

No conflicts of interest to report.

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