



A case of coenesthetic hallucinations treated with low-frequency repetitive transcranial magnetic stimulation

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Repetitive transcranial magnetic stimulation
Coenesthetic hallucination

Dear Editor:

Repetitive transcranial magnetic stimulation (rTMS) has been broadly used for treating psychiatric disorders. It is already approved as an effective treatment for major depression, and it has been studied in patients with panic syndrome, post-traumatic stress disorder, phantom limb, conversion disorder, and auditory hallucinations with schizophrenia [1]. In a single case report, Jardri et al. [2] suggested that functional magnetic resonance imaging-guided rTMS over the somatosensory cortex could be useful as a symptomatic treatment for coenesthetic hallucinations.

Somatic hallucinations with peculiar visceral, bodily, or tactile perceptions in the absence of sensorial input are coenesthetic hallucinations. This is a rare and disabling condition that did not have the pathophysiology well understood. Thus, only a few possible treatment approaches have been reported for this specific hallucination type [3,4].

We describe the case of a woman with a well controlled major depression and a subacute episode of hemifacial spasm followed by coenesthetic hallucinations who was successfully treated with 1 Hz of rTMS over the somatosensory cortex, i.e., on the anatomical spot equivalent to the facial area of the sensory homunculus. The patient provided informed consent to publish her case.

A 64-year-old woman acutely developed an abnormal sensory perception, which she described as an itching sensation on a specific tooth in the right inferior dental arch. She was previously treated for major depression with serotonin-norepinephrine reuptake inhibitors and benzodiazepines, and she was currently undergoing regular use of duloxetine and a course of regular botulinum toxin treatment for a primary hemifacial spasm with no abnormal features in MRI. It is well reported that hemifacial spasm can course with non-motor symptoms, such as abnormal sensations [5], that might not improve after use of botulinum toxin [6].

Abbreviations: rTMS, repetitive transcranial magnetic stimulation.

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Although her dentist reported no abnormalities in the clinical and radiological assessments, which included a normal brain magnetic resonance imaging scan, her symptoms worsened. She reported experiencing a recurrent abnormal feeling of “metallic objects sliding from her tongue to the throat.” This perceived sensation prompted her to constantly move her tongue in an attempt to alleviate the sensation, with spared capacity to voluntarily suppress the movement. Based on previous evidence reported for controlling hallucinations and because of the high degree of impairment caused by the symptom, we planned to treat her with low-frequency rTMS using a figure-of-eight coil.

Initially, she was inadvertently treated with high-frequency rTMS (10 Hz) over the anatomical spot equivalent to the somatosensory cortex (i.e., contralateral to the symptomatic side) for six sessions. She reported worsening of the abnormal sensation.

Her treatment was reevaluated, and then a low-frequency stimulation protocol (1200 pulses, 1 Hz, 110% of the motor threshold) was used for 20 minutes for 15 sessions over the sensory facial area of the contralateral cortex (left) using a MagPro stimulator (Medtronic Functional Diagnostics, Skovlunde, Denmark). To find the stimulation spot motor evoked potentials were elicited in the hotspot of the facial motor area, measured as 5 cm perpendicular to the vertex on the direction of the tragus (primary motor cortex, pre-central gyrus – M1), being the motor threshold considered as the percent of the maximal stimulator output required to produced 5 visible twitches (out of 10) of the lower facial muscles. The figure of 8 coil was then moved in a posterior direction, in steps of 10 mm, applying single pulses of 110% motor threshold until no twitches were detected and the subject ceased to report moving sensation over the facial area.

After the first 5 days of stimulation, there was already a significant improvement in the frequency and intensity of coenesthetic hallucinations. At the end of the treatment, an 80% reduction in the visual analog scale score was achieved. She experienced relief for 15 days, but the improvement slowly declined over the next 2 months. The same low-frequency stimulation protocol was repeated after relapse with the same results.

The present case objectively illustrates a short-term effect of somatosensory cortex neuromodulation on sensorial processing. The worsening and improvement of coenesthetic hallucinations after high-frequency and low-frequency rTMS, respectively, may be proof of the principle that modulation of the excitability of the sensory cortex in opposite directions results in antagonistic outcomes.

Treating hallucinations with rTMS is well reported in the medical literature [7]. Our case report indicates the potential benefit of this treatment for somatic hallucinations. To our knowledge, this is the first non-schizophrenic patient with coenesthetic hallucinations treated with rTMS. Although we observed a satisfactory

outcome in our patient, more studies are needed to ascertain such a therapeutic effect.

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Conflicts of interest

None.

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