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ECT response after relapse during continuation repetitive transcranial magnetic stimulation. A case report

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1. Introduction

rTMS is a new tool in the treatment of depression. Most scientific papers report on significant short-term antidepressant effects in the treatment of patients suffering from non-psychotic major depressive disorder (MDD) [5]. Need for continuation treatment seems to be indicated as latency to relapse without therapy was reported to be rather short [2]. Till date only one paper [10] deals with rTMS as a continuation or maintenance therapy. Recent work shows that the 3 and 6 months outcome of rTMS treated patients equals the outcome of ECT in non-psychotic MDD [3] and that patients could benefit of a rTMS substitution for ECT in a course of ECT [9]. We describe a case in which we administered rTMS as a continuation treatment after a response to the acute rTMS course. The chosen rTMS frequency during continuation treatment was based on the APA–ECT guidelines for continuation treatment [1] and the stimulus intensity on the results published by Pridmore indicating that rTMS corresponds to ECT in the relation of 2:1 [9].

2. Case report

Ms. F is a 48-year-old, right handed, whose major depression, according to ICD-10 criteria, was diagnosed for the first time in 1994. Additionally she is affected by a known chronic hepatic disorder. In 1996 she was treated the first time at our hospital after a failed suicide attempt. Because of the treatment resistance to various antidepressants we started a course of ECT. She gained benefit from the ECT in the acute phase as well as in the maintenance period for 3 years. However she wanted to discontinue the maintenance ECT. A half year later she visited our ambulatory center during a mild depressive episode lasting an average of 4 weeks. The current medication then was vitamin E, gestagenes and St. John's wort 900 mg/day. After detailed information about the risks and side effects of the rTMS as an alternative treatment to ECT she gave her written informed consent. The laboratory examination showed raised liver enzymes, the other routine parameters were within the limits. The EEG showed temporal theta activities, especially under provocation, but without any signs of epileptic activities. The CCT was normal.

3. Methods

3.1. rTMS protocol

We used the Figure 8 coil to deliver rTMS with a Cadwell stimulator. According to Klein et al. [7] we applied rTMS to the right dorsolateral prefrontal cortex (DLPC) at a stimulus intensity of 110% of the motor threshold of abductor digiti minimi muscle, 1 Hz, 600 s and 1 train for the total dose of 600 stimuli each session for a total of 3000 stimuli. Acute treatment consisted of five sessions during the first week. After the first week we switched to the continuation phase with a frequency of three times a week for 3 weeks for a total of 5400 stimuli followed by a once weekly stimulation for further 3 weeks for a total of 1800 stimuli, before starting rTMS biweekly. A total of 10,800 stimuli were administered.

3.2. ECT protocol

We administered the electrical stimuli with a MECT-SR 1 device using the seizure threshold procedure for unilateral ECT the d'Elia non-dominant electrode placement was implemented. Electrode placement was decided on the basis of standard clinical criteria [1]. After switching from rTMS we started the acute phase ECT treatment with three sessions weekly up to a total of 15.

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4. Results

When we started the course of rTMS, the patient scored 18 in the 24-item HAMD score and 5 in the CGI score. She was treated on an outpatient basis and had a response rate of more than 50% in both scales under the acute phase TMS and St. John's wort. Upon her wish and after receiving her written informed consent we started the continuation rTMS. The patient remained stable for another 8 weeks. No side effects were observed during the therapy.

After switching from weekly treatment to biweekly (one session) the patient relapsed suddenly 2 days after the last rTMS without any predictors. She was rehospitalized experiencing a recurrent depressive severe episodes without psychotic symptoms (according to ICD-10; F32.2). The HAMD score was 23 and the CGI score was 6. She was switched to ECT after her given written informed consent. Her response rate was more than 60% within 4 weeks in both, the CGI and the HAMD score. Based on the previous experiences with regard to her past compliance she got continuation ECT as an outpatient after her remission.

5. Discussion

ECT is known as a powerful treatment in patients suffering from therapy resistant depression. One of the adverse events may be partial amnesia especially in impersonal memory [8]. Some authors argue that rTMS is an alternative method to treat patients suffering from non-psychotic MDD which can achieve results approaching these of ECT as the antidepressive short-term outcome of both therapies is considered to be similar [6]. The positive effects we found in terms of augmentation properties after acute rTMS treatment go along with findings of other studies [4]. After an impressive response (HAMD <9) during the acute phase of five rTMS sessions we switched the patient to the continuation phase. Missing information about the relation of stimulation frequency between rTMS and ECT we decided to use the equation of Pridmore et al. [9] despite knowing that Pridmore used a high frequency stimulation. Upon her request the patient was scheduled to three sessions weekly for 1 week, subsequently once per week for 6 weeks, which is a low session incidency. In fact the small amount of sessions per week might have contributed to the relapse the patient suffered. An increased severity of symptoms during relapse is expected during a failure of continuation treatment. Nevertheless, the sudden relapse without any predictors 2 days after the first biweekly adopted rTMS is noteworthy. However, switching the patient from rTMS to ECT led to a remission; this observation stays in accordance to Dannon and Grunhaus [3] who reported that switching rTMS non-responders to ECT was successful for 40% of their sample. In this case rTMS had a good clinical impact as an acute treatment strategy but failed to reveal effectiveness in maintenance therapy. The decrease in number of rTMS sessions per week and thus, a decrease in stimulation intensity could be responsible suggesting a weaker potency of rTMS than ECT in the continuation treatment.

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