HIGH FREQUENCY REPETITIVE TRANSCRANIAL MAGNETIC STIMULATION OF THE MOTOR CORTEX IN PARKINSON’S DISEASE: A RANDOMIZED, DOUBLE-BLIND, PLACEBO-CONTROLLED STUDY

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Introduction: Based on several open-label and case studies, repetitive transcranial magnetic stimulation (rTMS) of the motor cortex seems to have an effect on clinical symptoms of patients with Parkinson’s disease (PD). However, this hypothesis requires further confirmation.

Aims: We conducted a randomized, double-blind placebo-controlled study to evaluate the effect of rTMS over bilateral motor cortex on various motor and non-motor features of PD.

Methods: Twenty-two PD patients were assigned into two groups, one receiving real-rTMS (90% of resting motor threshold, 5 Hz, 600 pulses-a-day for 10 days) over the motor cortex, and another group receiving sham-rTMS. An investigator blinded to the treatment performed three video-taped examinations on each patient: before stimulation (baseline), 1 day (short-term) and 30 days after treatment-session ended (long-term effect). MMSE, UPDRS, Hoehn-Yahr, Epworth Sleepiness, Visual Analogue and Montgomery-Asberg Depression Rating Scales (MADRS), Beck Depression Inventory (BDI), and Trail making and Stroop tests were applied.

Results: No side-effects occurred and the effectiveness of blinding was acceptable. Thirty day after treatment ended, the UPDRS-III improved by 11 points in the stimulated group compared to baseline. However, the size of improvement was also similar (10 points) in the sham-treated group. Between the stimulated and the sham-stimulated groups, none of the examined variables showed any statistically significant differences.

Discussion: Both real and sham stimulation produced a considerable improvement in the UPDRS-III. Because we could not find any significant changes between the two groups, we might conclude that this improvement is probably due to the placebo effect of rTMS.