

Exploring the Effect of Transcranial Magnetic Stimulation on Quality of Sleep in Parkinson's Disease.

Repetitive transcranial magnetic stimulation (rTMS) is a noninvasive therapeutic approach that targets particular brain regions that had been used and displayed significant impact in various neurological disorders. This study aimed to explore if high-frequency (HF) rTMS over the parietal cortex could influence sleep quality in Parkinson's disease (PD).

Methods This was a prospective sham-controlled study conducted on 40 individuals with PD. The enrolled patients were examined with Unified Parkinson's Disease Rating Scale (UPDRS-III) and Modified Hoehn and Yahr Staging Scale (H&Y staging) for motor disability evaluation and staging. Pittsburgh Sleep Quality Index (PSQI) was used for sleep quality and Epworth Sleepiness Scale (ESS) for excessive daytime sleepiness and Beck Depression Inventory-II (BDI-II) for depression. Patients were classified into 2 groups: patients who underwent real-rTMS positioned over their bilateral parietal cortex. 100% of the motor threshold. Patients had a total of 12 sessions, one every other day. Another group received sham rTMS.

Results The patients receiving active rTMS showed significant improvement in UPDRS-III, PSQI, ESS, and BDI-II immediately after the sessions and 1 month later. The follow-up PSQI had a significant positive correlation with the baseline BDI-II ($r=0.88$, $P=0.001$), H&Y staging ($r=0.78$, $P=0.001$), and UPDRS-III ($r=0.78$, $p=0.001$). Multivariate linear regression analysis exhibited that the age of the patients was a significant predictor of sleep quality.

Conclusion HF rTMS over the parietal cortex had shown a significant impact on sleep quality by the modulation of affected brain areas and by improving concomitant motor and mood manifestations.