3

Treatment of Unipolar, Non-Psychotic Major Depressive Disorder with Transcranial Magnetic Stimulation: Examining TMS Effects on Pharmacotherapy Changes, Acute and Long-Term Outcomes from a Retrospective Evaluation during Routine Clinical Practice
Kimberly Cress M.D.
TMS Serenity Center, Sugar Land, Texas

Background: The purpose of this review is to evaluate standardized symptom score outcomes in routine clinical practice and the effects of TMS on medication changes post-TMS.

Methods: 111 patients with a primary diagnosis of unipolar MDD who had not received benefit from antidepressant treatment (average of 3.7) received TMS treatment. Patients were assessed using Beck Depression Inventory scale, Patient Health Questionnaire depression scale and Beck Anxiety Inventory scale. Scores were performed prior to and at the end of the acute treatment phase. Long-term results and acute medication changes were reported on patients that returned for assessment.

Results: 85 (76.6%) patients demonstrated a minimum 50% improvement in BDI-II scores while 79 (71.2%) achieved remission. Long-term data was established by tracking 28 remitted patients in the acute treatment phase. 28 patients at 12 months post-TMS were assessed with 24 (85.7%) of patients maintaining remission (average of 19.9 months post-acute treatment phase).

Medication changes were tracked on 38 patients during a 3-6 month period following an acute course of treatment. 28 (73.6%) patients achieved remission, measured by the BDI-II. Patients were placed into medication groups identified as Increased (29%), No Change (32%) and Reduced (39%).

Conclusion: In routine clinical practice, TMS shows significant improvements in symptom scores across multiple scales in a treatment-resistant population. Long-term data shows a low 14.7% relapse rate, thus supporting TMS as a durable depression treatment.

Medication changes post-acute treatment concludes that in 2 achieving remission had medication reduction and maintained wellness.

4

A Retrospective Analysis of Right Dorsolateral Prefrontal Cortex (RDLPC) Transcranial Magnetic Stimulation Treatments for Patients Showing Symptoms of Anxiety and/or Irritability
Kimberly Cress M.D.
TMS Serenity Center, Sugar Land, Texas

Background: TMS Therapy is approved for Unipolar, Non-Psychotic Major Depressive Disorder. We found that in treating patients with GAD or irritability as part of their depression, their symptoms often increase when treated with the typical depression treatment assessed by Zung Self-Rating Depression Scale (ZSRDS). However, a significant effect of caffeine usage was observed on dTMS treatment post-maintenance (20 sessions), after which 6 patients discontinued treatment and did not receive further maintenance treatment. The effect of caffeine usage, on dTMS efficacy was evaluated using Repeated Measure ANOVA to contrast baseline with post-acute and maintenance treatment paradigms.

Results: All patients reported significantly reduced DSS after dTMS treatment assessed by ZSRDS. However, a significant effect of caffeine usage was observed on dTMS treatment post-maintenance phase (p=0.021). Specifically, caffeine users reported greater decrease in DSS scores in post-maintenance (30 sessions) treatment.

Conclusion: These results suggest that patients who are caffeine users report greater decrease in DSS scores post-maintenance treatment. However, further research is warranted to reach firmer conclusions.

5

Investigating the Effect of Caffeine on dTMS Treatment Outcomes in Major Depressive Disorder Patients in a Real-world Clinical Setting.
Walter Duffy M.D.abc*, Zia Choudhry M.D., Ph.D., MBAabc,
Mahesh Rajamani M.D.abc, Ryan Nathanb, Waqar Siddiqui M.D.abc,
Mohammed Waris M.D., MBAabc
a Premier Psychiatric Group
b Premier Psychiatric Research Institute
c Nebraska Neuropsychiatric Research Institute
*e-mail: droffy@premierpsych.com.

Background: A positive correlation between caffeine consumption and depression was recently reported. Biologically, caffeine inhibits adenosine A1 and A2A receptors. Researchers link A2A receptors with depression pathogenesis. They suggest a tight interaction between A2A receptors and TrkB receptors which are upstream of Brain-Derived Neurotrophic Factor (BDNF). Thus, it is possible to infer that caffeine usage may modulate deep Transcranial Magnetic Stimulation (dTMS) treatment outcomes in patients with Major depressive disorder (MDD). In the current design, we explore the effect of caffeine on modulating dTMS outcomes.

Design/Methods: Fifty-seven patients (68% female) with MDD, ages 24-67 years (mean=42.50), previously failing 0-8 MDD medication regimens (mean=4.2) received dTMS. Amongst these, forty-two (74%) reported habitual caffeine usage. Depressive symptom severity (DSS) was assessed using the Zung Self-Rating Depression Scale (ZSRDS) at baseline and every 5 treatments subsequently. Patients received an acute-phase dTMS treatment (20 sessions), after which 6 patients discontinued treatment and did not receive further maintenance treatment. The effect of caffeine usage, on dTMS efficacy was evaluated using Repeated Measure ANOVA to contrast baseline with post-acute and maintenance treatment paradigms.

Results: All patients reported significantly reduced DSS after dTMS treatment assessed by ZSRDS. However, a significant effect of caffeine usage was observed on dTMS treatment post-maintenance phase (p=0.021). Specifically, caffeine users reported greater decrease in DSS scores in post-maintenance (30 sessions) treatment.

Conclusion: These results suggest that patients who are caffeine users report greater decrease in DSS scores post-maintenance treatment. However, further research is warranted to reach firmer conclusions.

6

Examining Relationship Between Prior Lifetime Electroconvulsive Therapy and dTMS Treatment Outcomes in Major Depressive Disorder Patients Using H-Coil Technology in a Naturalistic Clinical Setting.
Walter Duffy M.D.abc*, Zia Choudhry M.D., Ph.D., MBAabc,
Mahesh Rajamani M.D.abc, Ryan Nathanb, Waqar Siddiqui M.D.abc,
Mohammed Waris M.D., MBAabc
a Premier Psychiatric Group
b Premier Psychiatric Research Institute
c Nebraska Neuropsychiatric Research Institute
*e-mail: droffy@premierpsych.com.
Background: Electroconvulsive Therapy (ECT) is believed to be an effective treatment for treatment resistant depression (TRD). However, ECT has been associated with major side-effects including cognitive sequel. Alternatively, Deep Transcranial Magnetic Stimulation (dTMS) is another effective treatment for alleviating MDD symptoms. Reports comparing efficacy of ECT and dTMS yield mixed results. Thus, most clinicians administer ECT in TRD patients prior to dTMS treatment. However, a recent study highlighted the possibility of a subpopulation of depressed patients who did not benefit from prior ECT treatment but subsequently benefited from dTMS treatment.

Methods: 80 patients (27% male) with MDD, ages 24-84 years (mean=46.85), previously failing 1-8 medication regimens (mean=4.23) received dTMS using H-coil technology. Symptom severity was assessed using PHQ-9 scores at baseline and every 5 treatments subsequently. Patients received an acute-phase dTMS treatment (20 sessions), and also received further maintenance treatment (10 sessions). Effect of Prior Lifetime ECT (PL-ECT) on modulating dTMS efficacy was evaluated using Repeated Measure ANOVA to contrast baseline, acute and maintenance paradigms. Response (≥ 10 or ≥50% from baseline) and remission (≥5) were calculated.

Results: A significant dTMS treatment effect (p<0.000) on MDD symptom severity was observed in both paradigms for all study subjects. However, no significant effect of PL-ECT was observed on modulating dTMS treatment response in both post-acute and maintenance phases (p=0.963; p=0.734).

Conclusion: These results suggest that, exposed and unexposed PL-ECT MDD subjects equally benefit from both dTMS treatment paradigms. However, further research is warranted to reach firmer conclusions.

7 Improvement in Quality of Life Outcomes in Patients with Major Depressive Disorder Using dTMS Treatment in a Real-world Clinical Setting.

Walter Duffy M.D.a,b,c,*, Zia Choudhry M.D, Ph.D., MBAa,b,c, Mahesh Rajamani M.D.a,b,c, Ryan Nathan1, Waqar Siddiqui M.D.a,c, Mohammed Waris M.D., MBAa,c, Premier Psychiatric Group

*Nebraska Neuropsychiatric Research Institute

E-mail: drduffy@premierpsych.com.

Background: Currently, pharmacotherapy is the first-line treatment for Major Depressive Disorder (MDD). However, review of clinical studies have revealed that 2/3 of MDD patients do not respond sufficiently to pharmacotherapy alone. This in turn, has a considerable impact on MDD patients overall wellbeing and Quality Of Life (QOL). Furthermore, empirical data shows that, this negatively impacts patients work/school performance, social, and family life. Deep Transcranial Magnetic Stimulation (dTMS) has become the subject of many recent investigations as an alternative MDD treatment modality. Interestingly, to our knowledge, very few studies to date have examined the improvement in QOL outcomes after dTMS treatment using H-coil technology in MDD patients. In the current design, we present a review of QOL outcomes to dTMS in MDD patients.

Methods: Twenty-one patients (65% female) with MDD, ages 18-84 years (mean=44.5) received dTMS therapy. QOL was assessed using the Sheehan Disability Scale (SDS) total score at baseline and post-maintenance phase. Patients received acute (20 sessions) and maintenance-phase (10 sessions) dTMS treatments. The effect of dTMS on QOL was evaluated using Repeated Measure ANOVA to contrast SDS - Total Score (SDS-TS) at baseline with post-treatment paradigm.

Results: A significant therapeutic effect of dTMS treatment was observed in the over-all treatment (30 session) paradigm (p<0.001) which was assessed using Sheehan Disability Scale (SDS).

Conclusion: These results highlight that dTMS therapy not only effectively treats MDD symptoms but also improves the patients QOL outcomes. However, further research employing a larger sample size is warranted to reach firmer conclusions.

8 TMS Treatment of Two Cases of Schizo-Obsessive Disorder (SC-OD), Literature Review and Implications for Treatment and Pathophysiology of SC-OD

James Halper MDa,b,c, Alan Manevitz MDa,b,c, Chie Yagi RNa, Kasumi Nishimoto RNb,d, Gregory Toso d

a,b,c Premier Psychiatric Group

b Nebraska Neuropsychiatric Research Institute

c E-mail: drduffy@premierpsych.com

Background: SC-OD patients clinical presentations may range from a combination of classical psychotic and OCD symptoms (Type1) to one in which the two type of symptoms meld (Type2) and which is frequently unrecognized. Herein we present a review of the SC-OD literature and the first cases of SC-OD treated with TMS. We discuss implications of our results for treatment of this disorder and for elucidating its pathophysiology.

Methods: Patient BA (male) Current episode (followed abruptly discontinuing clozapine) included classical psychotic symptoms delusions and command hallucinations and classical compulsions(hand washing, checking). Because of the debilitating nature of the hallucinations he was initially treated with TMS to Wernickes (Neurostar) with minimal results followed by the Brainsway H-coil. Patient NH (21 yo female) was bullied at age15 and currently alternates between hallucinating the bullying and obsessing over actual events. She was treated with the Brainsway H and OCD coil.

Results: Patient BA: After a prolonged course frequency and strengths of hallucination lessened allowing him to do things forbidden by AH (no change in OCD). After abruptly stopping TMS, due to financial limitations, gains disappeared.

9 Review of 200 Patients (7,000 treatments) Clinical Outcomes of Transcranial Magnetic Stimulation (TMS)Therapy performed in a Naturalistic Clinical Setting using the Brainsway® (H coil) and NeurostarTM Stimulators: A BioPsychoSocial Integrated Clinical Care Approach

Alan Manevitz MDa,b,c, James Halper MDb,c, Chie Yagi RNa, Kasumi Nishimoto RNb,d, Gregory Toso d

a,b,c Premier Psychiatric Group

b Well Cornell University Medical College

c Lenox Hill Hospital

d Consultant

Background: Brainsway and Neurostar are FDA-cleared TMS-devices. Results with 200 Depressed patients treated in a clinical setting wherein medications and psychotherapy may be utilized are presented.

Methods: Neurostar was used to treat Left and/or Right-DLPFC while the Brainsway H-coil provided DEEP bilateral stimulation Left & Right. We varied stimulation parameters, laterality of treatment, number and frequency of treatments (5-7/week) and provided...