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REPETITIVE TRANSCRANIAL MAGNETIC STIMULATION (RTMS) TREATMENT RESPONSE IN MAJOR DEPRESSION: ASSOCIATIONS WITH ANGER EXPRESSION STYLES AND SOMATIC SYMPTOMS

Elif Poyraz, Onur Durmaz

Psychiatry Department, Erenkoy Mental and Nervous Diseases Training and Research Hospital, Istanbul, Türkiye

BACKGROUND AND AIM: Major depressive disorder (MDD) is frequently accompanied by anger regulation difficulties and prominent somatic symptoms, increasing overall clinical burden. Although repetitive transcranial magnetic stimulation (rTMS) is an established treatment for depression, its relationship with anger expression styles and somatic symptom severity remains unclear. This study aimed to evaluate clinical changes following rTMS in patients with MDD and to examine the associations between anger expression styles, particularly suppressed anger (anger-in), somatic symptoms, and treatment response.

METHODS: (Ethics Committee Approval must be obtained and the number should be specified). This prospective observational study included 30 patients diagnosed with unipolar MDD according to DSM-5 criteria. All patients received 20 sessions of rTMS targeting the left dorsolateral prefrontal cortex (20 Hz, 100% motor threshold, 2000 pulses per session). Depression (HAMD), anxiety (HAMA), somatic symptoms (PHQ-15), pain severity (VAS), quality of life (SF-12), and anger dimensions (STAXI-2) were assessed before and after treatment. Ethical approval was obtained from the institutional ethics committee. (30.05.2024/26).

RESULTS: The mean age of the participants was 42.9 ± 12.9 years, and 70% were female. rTMS was associated with significant reductions in depressive symptoms (HAMD: 16.63 ± 4.56 to 10.13 ± 6.28, $p < 0.001$), with remission observed in 33.3% and clinical response in 40% of patients. Anxiety, somatic symptoms, and pain severity also improved significantly (all $p \leq 0.001$). State anger did not change following treatment. Baseline anger-in levels were not associated with changes in somatic symptoms, and baseline PHQ-15 scores were not related to antidepressant response ($p > 0.05$). Higher trait anger and lower anger control were associated with greater reductions in pain severity.

CONCLUSIONS: rTMS was associated with significant improvements across affective, somatic, and pain-related domains in MDD. Anger expression styles did not predict overall treatment response but showed a symptom-specific association with pain outcomes, suggesting that anger-related traits may represent relatively stable

Keywords: Depression, pain, rTMS, quality of life, anger, somatic symptoms