

P02-548

EEG SYNCHRONIZED TMS FOR INDIVIDUALIZED THERAPY IN MAJOR DEPRESSIVE DISORDER

Y. Jin, J. Phillips, Yueqin Huang, Steven Heurta

Neosync, Inc., Newport Beach, CA, USA

Introduction: Efficacy of conventional repetitive transcranial magnetic stimulation (rTMS) in major depressive disorder (MDD) is limited. The authors report here on an alternative treatment using low energy synchronized TMS (sTMS) at the intrinsic frequency of subjects' alpha electroencephalogram (EEG).

Objectives: Establish efficacy and safety profile of sTMS in MDD.

Aim:

(1) Examine the clinical effectiveness of sTMS.

(2) Identify adverse effects associated with sTMS.

Methods: Fifty-two MDD subjects with 17-item Hamilton Depression Rating Scale (HAMD₁₇) scores >17 were enrolled into a randomized, sham controlled, double-blind trial. Current medication remained unchanged during the trial. Depressive symptoms were evaluated by HAMD₁₇ administered weekly.

EEGs were recorded at baseline to determine the stimulus frequency and at week 4 to evaluate the physiological effect. sTMS was delivered through three 6000-G cylindrical neodymium magnets synchronously rotating at a rate equal to the subject's intrinsic alpha frequency.

Results: Forty-five subjects completed at least 1 week of treatment and were evaluable.

Those who received active treatment had superior clinical response to sham ($t = 2.54$, $P = 0.01$), where 55.2% in the active treatment group were clinical responders versus 12.5% in sham ($\chi^2 = 7.82$, $P = 0.005$). No significant side effects were reported. The clinical improvement was correlated with the degree of EEG improvement ($r = .46$, $P = 0.009$).

Conclusions: A therapeutic effect in MDD subjects can be achieved through administration of sTMS at the subject's alpha EEG frequency. Because of minimal side effects, this appears to be a safe and effective treatment option.