

Abstract

In the theoretical part of our study, we provide a systematic review of contemporary methods (pharmacological and non-pharmacological) of ECT augmentation, as scored by three factors – manipulation of the seizure threshold, length of therapeutic seizures and the effect on ECT efficacy measured by the total number of ECT sessions and the rate/quantity of change on used objective/subjective scales. We also provide a summary of possible side effects and risks associated with the use of respective ECT augmentation methods.

In the research part of our study, we explore the effect of high frequency transcranial magnetic stimulation on the respective ECT parameters, in a double blinded, placebo controlled, randomised study on a sample of 46 patients treated for a major depressive episode. During ECT titration, we registered a significantly lower seizure threshold in the experimental group, an average decrease in charge by 34.55%, from 34.23mC to 22.4mC, $p < 0.001$ (Wilcox test). We have not observed a significant effect of HF rTMS on the length of seizure or ECT efficacy. Our study confirms the hypothesis, that the application of HF rTMS briefly before an ECT session reduces the seizure threshold, which might be useful in certain types of patients.