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TRANSCRANIAL DIRECT CURRENT STIMULATION (TDCS) OF THE PREFRONTAL CORTEX IN THERAPY-RESISTANT DEPRESSION: A DOUBLE-BLIND, PLACEBO-CONTROLLED STUDY

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Background: TDCS for modulating neurophysiology is known since the 1960s. tDCS trials in patients with depression showed promising results.

Methods: 22 patients with therapy resistant major depression (DSM-IV criteria) were included in a four week cross-over trial, 10 received 1 mA tDCS, 12 received 2 mA tDCS, 2 dropped out. Patients received add-on tDCS under a stable antidepressant treatment over 3 weeks and were randomized to active or sham tDCS treatment. The sham condition was evaluated in 10 healthy volunteers and was indistinguishable. Both, active (1 mA resp. 2 mA) and placebo tDCS were applied for 20 min per day and for two weeks and then switched to the other condition. The anode was positioned over F3 and the cathode over the contralateral supraorbital region. For placebo tDCS a novel sham device (neuroConn, Ilmenau, Germany) was used which is indistinguishable for the applying person. Severity of depression was assessed by HAMD, BDI, CGI and CORE scales and raters were blind to treatment conditions.

Results: Mean HAMD decreased by 25% in the whole population after four weeks of tDCS. Active tDCS performed significantly better ($p=0.0492$) than the control treatment. However this positive association was restricted to the first study phase as there was also a significant ($p=0.0271$) influence of the study phase in the cross-over design and an almost significant ($p=0.0864$) interaction between treatment and study phase.

Conclusion: Though active tDCS was not superior to sham treatment, we observed hang-over effects in weeks 3 and 4 depending on the first condition.