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Abstract:

Abstract BACKGROUND: The purpose of this study was to investigate the long-term efficacy of transcranial direct current stimulation (tDCS) in the neurorehabilitation of Alzheimer's disease (AD). METHODS: Thirty-four AD patients were randomly assigned to three groups: anodal, cathodal, and sham tDCS. Stimulation was applied over the left dorsolateral prefrontal cortex for 25 min at 2 mA, daily for 10 days. Each patient was submitted to the following psychometric assessments: mini-mental state examination (MMSE) and Wechsler adult intelligence scale-third edition at base line, at the end of the 10th sessions and then at 1 and 2 months after the end of the sessions. Motor cortical excitability and the P300 event-related potential were assessed at baseline and after the last tDCS session. RESULTS: Significant treatment group × time interactions were observed for the MMSE and performance IQ of the WAIS. Post hoc comparisons showed that both anodal and cathodal tDCS (ctDCS) improved MMSE in contrast to sham tDCS. Whereas, this was only true for ctDCS in the performance IQ. Remarkably, tDCS also reduced the P300 latency, but had no effect on motor cortex excitability. CONCLUSION: Our findings reveal that repeated sessions of tDCS could not only improve cognitive function but also reduce the P300 latency, which is known to be pathologically increased in AD.

Keywords:

Alzheimer's disease; Wechsler Adult Intelligent Scale; auditory event-related potentials (P300); cognitive function; cortical excitability; cortical plasticity; transcranial direct current stimulation

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