



The Effect of Transcranial Direct Current Stimulation on Chronic Neuropathic Pain in Patients with Multiple Sclerosis

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Neuropathic pain is a key symptom in patients with multiple sclerosis and it affects around 63% of this population. Pain has been rated by people with MS as one of their most important symptoms which is often severe. Pain has been recognized as an important factor in their overall health-related quality of life and disability. Medical treatments for central neuropathic pain have “hit a brick wall”. Medications are not effective and they are producing several side effects e.g. organ toxicity, drowsiness, impaired memory, addiction.

Aim: The aim of this study was to assess the effect of a five-day application of within-session repeated a-tDCS on neuropathic pain levels in patients with MS.

Method: A total of 30 participants were recruited in the study (n=15 in sham and active groups). A-tDCS was applied via a pair of surface electrodes (5cm x 7cm). The active and return electrodes were placed over primary motor cortex contralateral to the side of pain and the supraorbital area contralateral to the stimulated motor cortex respectively (Figure 1). Participants received 2 sessions of 10 minutes a-tDCS each day, 25 minutes apart for 5 consecutive days (Figure 2).

The VASp and NPS level was evaluated before and after repeated application of a-tDCS on primary motor cortex. for up to 4 weeks. DASS, MSQOL and SF-MGQ were completed only at baseline and at the end of week 4.

Results: The results showed that the pain level decreased significantly in active group compared to the sham group for up to 2 weeks (Figure 3). All participants tolerated the intervention with no side effect.

Therefore, there is a definite need for adjunctive or alternative therapeutic approaches to decrease neuropathic pain.

Transcranial Direct Current Stimulation (tDCS)

TDCS is a non-invasive technique that uses low intensity currents (1-2 mA) and modulates brain excitability via membrane resting membrane potentials.

Figure 1: Electrode montage for tDCS intervention

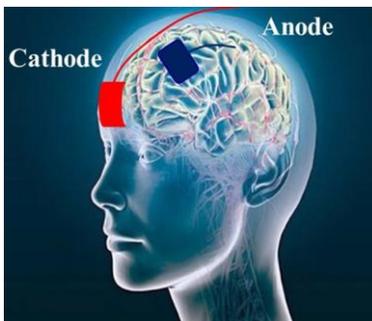


Figure 2: Study design

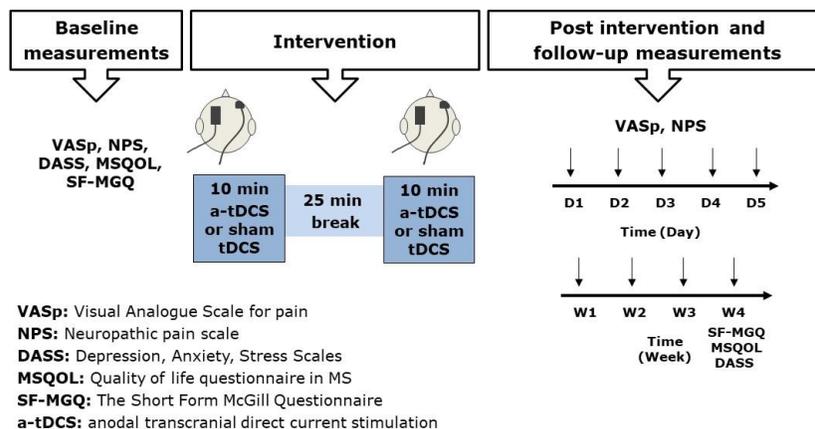
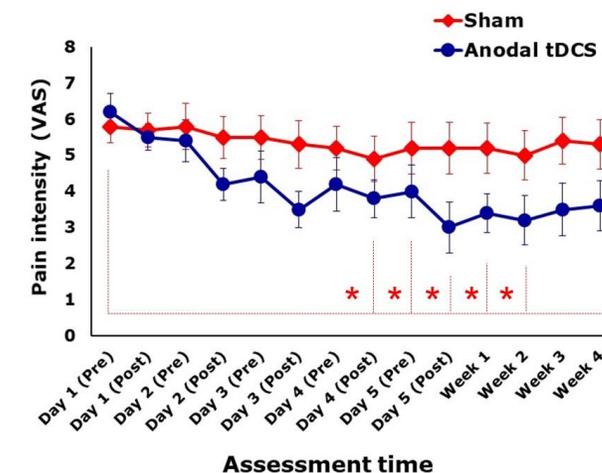


Figure 3: VASp changes over time



Conclusion: With-in session repeated a-tDCS can be an effective adjunct intervention for managing pain in patients with MS.