Effects of transcranial direct current stimulation on pain, mood and serum endorphin level in the treatment of fibromyalgia: A double blinded, randomized clinical trial.

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Abstract:

BACKGROUND: Recent studies have shown that novel neuro-modulating techniques can have pain-relieving effects in the treatment of chronic pain. The aim of this work is to evaluate the effects of transcranial direct current stimulation (tDCS) in relieving fibromyalgia pain and its relation with beta-endorphin changes. MATERIAL AND METHODS: Forty eligible patients with primary fibromyalgia were randomized to receive real anodal tDCS or sham tDCS of the left motor cortex (M1) daily for 10 days. Each patient was evaluated using widespread pain index (WPI), symptom severity of fibromyalgia (SS), visual analogue scale (VAS), and determination of pain threshold as a primary outcome. Hamilton depression and anxiety scales (HAM-D and HAM-A) and estimation of serum beta-endorphin level pre and post-sessions were used as secondary outcome. All rating scales were conducted at the baseline, after the 5th, 10th session, 15 days and 1 month after the end of the sessions. RESULTS: Eighteen patients from each group completed the follow-up schedule with no significant difference between them regarding the duration of illness or the baseline scales. A significant TIME × GROUP interaction for each rating scale (WPI, SS, VAS, pain threshold, HAM-A, HAM-D) indicated that the effect of treatment differed in the two groups with higher improvement in the experimental scores of the patients in the real tDCS group (P = 0.001 for WPI, SS, VAS, pain threshold, and 0.002, 0.03 for HAM-A, HAM-D respectively). Negative correlations between changes in serum beta-endorphin level and the changes in different rating scales were found (P = 0.003, 0.003, 0.05, 0.002, 0.002 for WPI, SS, VAS, HAM-A, and HAM-D respectively). CONCLUSION: Ten sessions of real tDCS over M1 can induce pain relief and mood improvement in patients with fibromyalgia, which were found to be related to changes in serum endorphin levels.

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