TRANSCRANIAL DIRECT CURRENT STIMULATION AS ADD-ON IN PATIENTS AFFECTED BY MEDICATION OVERUSE HEADACHE: A RANDOMIZED CONTROLLED TRAIL

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INTRODUCTION

In the last years transcranial direct current stimulation (tDCS) has been widely studied in the management of different painful conditions such as fibromyalgia, diabetic polyneuropathy, trigeminal neuralgia, post-stroke pain and migraine.

Medication Overuse Headache (MOH) is a disabling condition in which chronic headache (more than 15 day/months) is induced and then maintained by an overuse of symptomatic drugs. Detoxification and discontinuation of drug abuse are considered as first line treatment options, although not all patients show good clinical response.

The aim of our study is to evaluate the efficacy of tDCS as add-on to conventional detoxification treatment in patients with MOH.

MATERIALS AND METHODS

We enrolled twenty patients affected by MOH (according to ICHD-III beta version) among those hospitalized at the C. Mondino National Neurological Institute of Pavia for detoxification. Patients were randomly assigned to two different groups:

ANODIC group (5 daily sessions of anodic tDCS on motor primary area M1);

SHAM group (5 daily sessions of placebo-sham stimulation).

The two groups were comparable for clinical and demographic features.

Study design is illustrated in Figure 1. At all study points we collected headache variables, *ad hoc* clinical scales and EEG.

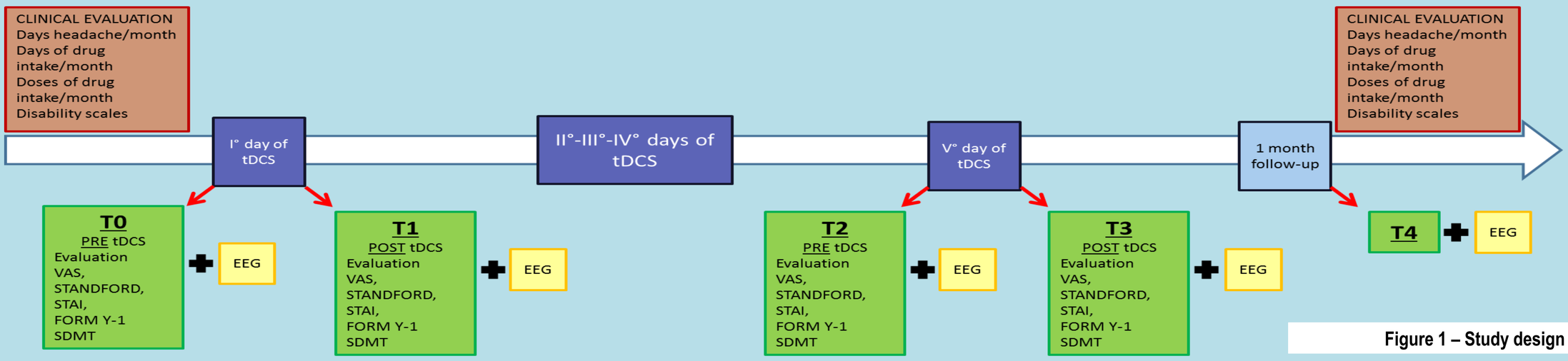

Figure 1 – Study design

RESULTS

At T4 we found an improvement in days and doses of drug intake/month in both groups, but the reduction in days of headache/month was significant only in the intervention group (Figure 2, 3 and 4).

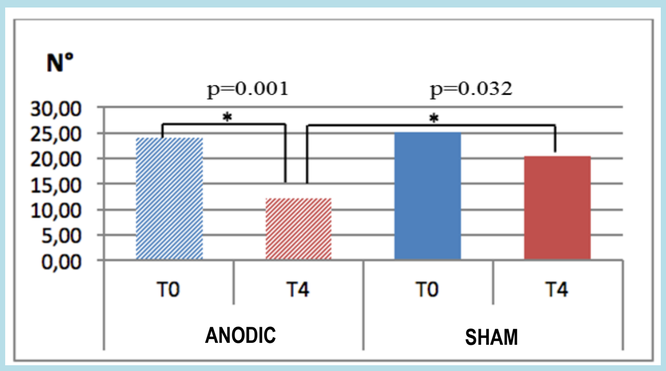

Figure 2 – Days of headache/month

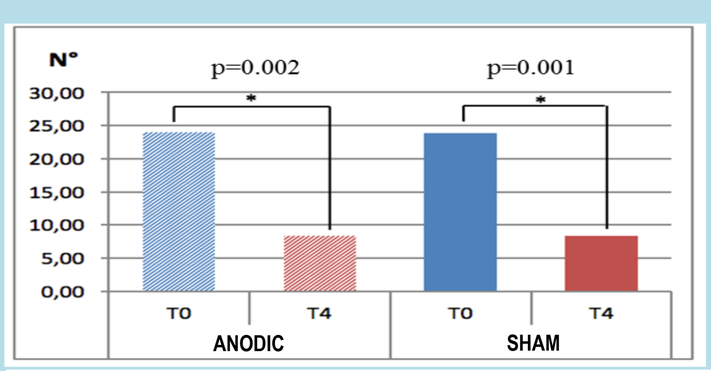

Figure 3 – Doses of drug intake/month

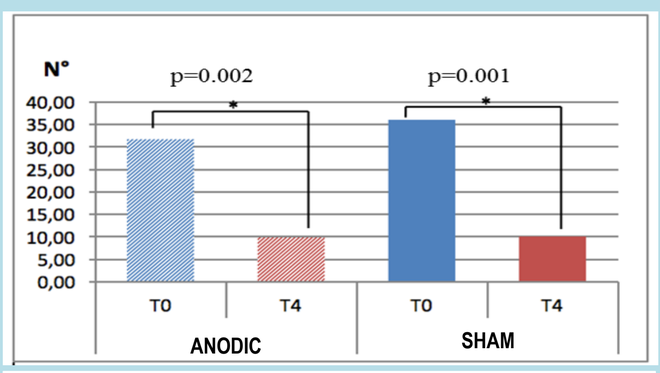

Figure 4 – Days of drug intake/month

Regarding the neurophysiological data, we did not see any significant variation in EEG pattern along the study. In particular tDCS did not produce an “acute” modulation on EEG (T0 vs. T1 and T2 vs. T3) (Figure 5). However, in the tDCS group we detected a potentiation of the alfa rhythm at T3, which was not recorded in the sham stimulation (Figure 6).

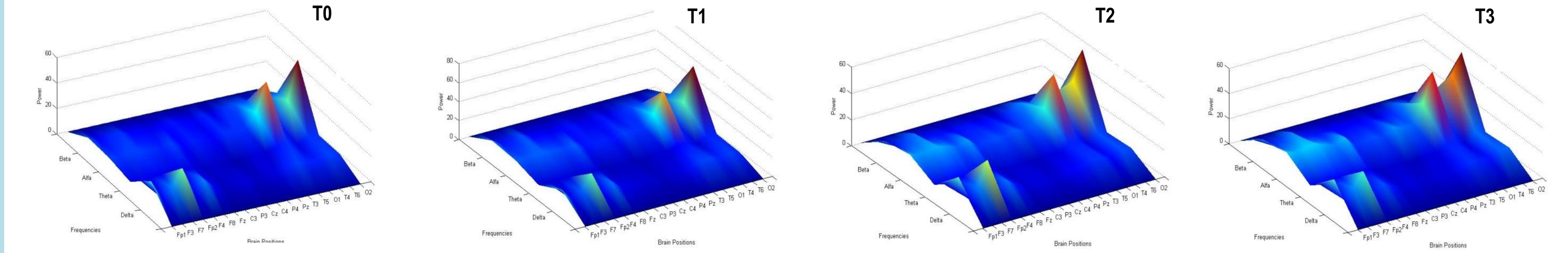

Figure 5 – Acute modulation of ANODIC tDCS

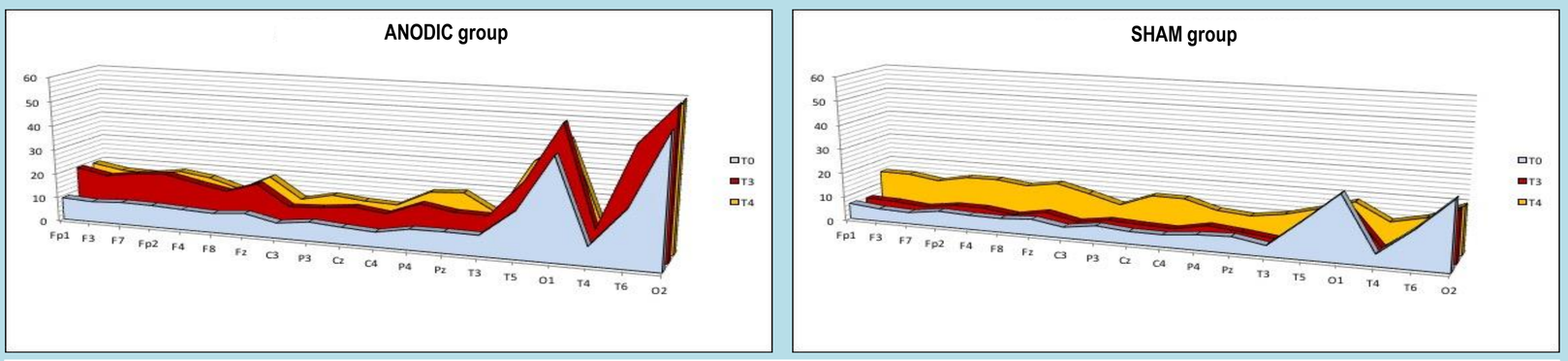

Figure 6 – Modulation of Alfa frequency in ANODIC and SHAM groups

DISCUSSION AND CONCLUSIONS

Our study, along with other data in literature, confirms the clinical efficacy of anodic tDCS in patients affected by MOH. A trend toward a potentiation of alfa rhythm is present but a larger population is needed to confirm this observation.