

Repeated transcranial Direct Current Stimulation (tDCS) safety in a patient with anorexia nervosa

Segurança do uso de Estimulação Elétrica Transcraniana para o tratamento de paciente com anorexia nervosa

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Dear editor,

Anorexia nervosa appears at a rate of 80- 85%, in young women at the age of 12- 25 years old, in the middle and upper socio-economic status, in whose profession a good appearance and thinness are considered as a professional and especially desirable requirement, while the small male percentage that suffer from anorexia nervosa with compulsive exercising. Although anorexia nervosa is described as primary, many patients may suffer from medical disorders, psychosis, neurosis, personality disorders and depressive inclination with lack of emotional expression⁽¹⁻³⁾.

With limited resources endorsed by the medical community regarding efficient treatment for eating disorders, neuromodulation techniques may play a role in unveiling the mechanisms behind cerebral functions. Moreover, non-pharmacological brain stimulation might aid to overcome current challenges in treat-

ing eating disorders related to treatment adherence and minor side effect⁽⁴⁾. To the best of our knowledge, Transcranial direct current stimulation (tDCS) safety has not been evaluated in anorexia hitherto.

"Ms. F" is a 24 year-old female patient diagnosed with Anorexia Nervosa. Clinical Presentation was associated with purging behavior and depressive symptoms at admission. The disease's onset presented approximately two years before admission, triggered by work overload and subsequent anxiety. When tDCS protocol was initiated the patient presented a body mass index (BMI) of 14.8 and all clinical exams were and remained unremarkable throughout treatment. In addition, at entry patient was already using mirtazapine 30mg/d, since she was undergoing previous psychiatric treatment for her depressive symptoms for the last 6 weeks. The medical team decided for a tDCS treatment protocol given the availability of this device in our service. After a written informed consent was signed by the patient, a tDCS protocol was initiated as follows: the anode electrode placed over the left prefrontal cortex and the cathode electrode located on the right prefrontal cortex region. Twenty sessions were applied over two weeks (twice daily, with minimal interval of three hours between then).

Collateral effects were clinically monitored by a trained team (psychiatrist and nurse). The patient was also inquired before and after each stimulation as well as during the follow-up regarding the presence of abnormal symptoms such as headache, dizziness, pain, paresthesia, erythema or other relevant symptoms. Vital signs were also assessed and no significant changes were presented regarding blood pressure and cardiac frequency. The treatment protocol was safe and no adverse effect was reported. However, the patient did not present clinical improvement of her symptoms during one-month follow-up regarding both eating habits and depressive symptoms.

tDCS involves the application of a continuous electrical current on the cortex through two electrodes (anode and cathode) positioned on the scalp of the patient. The effects of tDCS depend on the direction

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of the electric current: anodal stimulation increases brain activity and excitability and cathodal stimulation reduces cortical excitability in order to modulate neuronal firing. As highlighted by Hecht(2011)⁽⁵⁾, in AN a possible there is evidence of hyperactivity in right-hemisphere frontal region, justifying the rationale fo cathodal stimulation over this particular brain area. Regarding safety, Brunoni et al(2011)⁽⁶⁾ performed a meta-analysis of tDCS clinical trials, and found out that the most common adverse effects reported were itching, tingling, headache, burning sensation and discomfort.

We report an experimental tDCS protocol for a patient with anorexia without adverse effects. To the best of our knowledge only Hecht(2010)⁽⁵⁾ evaluated tDCS for treating AN. We used a similar protocol, with anodic stimulation over the left prefrontal cortex and cathodic stimulation on the right homotopic region. Further studies are needed as to adequately establish the participation of tDCS for treating AN patients.

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