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SUCCESSFUL ADMINISTRATION OF REPETITIVE TRANSCRANIAL MAGNETIC STIMULATION IN A WOMAN WITH BULIMIA NERVOSA COMORBID WITH DEPRESSIVE DISORDER

DEPRESİF BOZUKLUK VE KOMORBİD BULİMİA NERVOZA TANILARI OLAN BİR KADIN HASTADA TRANSKRANİAL MANYETİK UYARIM TEDAVİSİNİN BAŞARILI KULLANIMI

Gökben Hızlı Sayar^{1*}, Hüseyin Ünübol¹, Oğuz Omay¹, Nevzat Tarhan¹

Abstract

Repetitive transcranial magnetic stimulation is an effective treatment option for treatment resistant depressive disorder. The presented case suggests that repetitive transcranial magnetic stimulation might be effective in inhibition of binge eating and purging behaviors. This case suggests that left dorsolateral prefrontal stimulation with high frequency repetitive transcranial magnetic stimulation could be a potential treatment option for bulimia nervosa comorbid with depressive disorder.

Keywords: transcranial magnetic stimulation, eating disorder, bulimia nervosa

Özet

Transkranial manyetik uyarım tedavisi, tedaviye dirençli depresif bozuklukta etkili bir tedavi seçeneğidir. Burada sunulan olgu transkranial manyetik uyarım tedavisinin tıknırcasına yeme ve kusma nöbetlerinin önlenmesinde etkili olabileceğini düşündürmektedir. Bu olgu depresif bozukluk ile komorbid izlenen bulimia nervosa olgularında sol dorsolateral prefrontal kortekse uygulanan yüksek frekanslı transkranial manyetik uyarım tedavisinin potansiyel etkisine dikkat çekmektedir.

Anahtar Kelimeler: transkranial manyetik uyarım tedavisi, yeme bozukluğu, bulimia nervosa

¹İnsan ve Toplum Bilimleri Fakültesi, Üsküdar Üniversitesi, İstanbul, Türkiye

*Corresponding Author: Altunizade Mahallesi, Haluk Türksoy Sk. No:14 Üsküdar/İstanbul E-mail: gokben.hizlisayar@uskudar.edu.tr Mobile Phone: 530 2441316

1. Introduction

Eating disorders are severe mental disorders associated with multiple comorbidities and complications, with a lifetime prevalence of 5% in women (Hudson et al., 2007) Eating disorders are found to be commonly associated with depressive disorder (Araujo et al., 2010) Treatment options for these disorders are limited and treatment response is often inadequate.

Repetitive transcranial magnetic stimulation (rTMS) is an evolving technique that depends on modulation of cortical excitability. Although rTMS administered on dorsolateral prefrontal cortex (DLPFC) is reported to be effective in treatment of depressive disorder, the number of studies investigating the efficacy of rTMS in eating disorders are limited (Van den Eynde et al., 2013)

This report presents a case of a bulimia nervosa comorbid with depressive disorder, whose symptoms improved abruptly after administration of rTMS to the left DLPFC.

2. Case

A 27-year-old woman, with a longstanding history of severe and refractory bulimia nervosa was seen at psychiatric outpatient clinic. She had first been diagnosed at 18 years of age with bulimia nervosa and has had binge eating episodes 5-7 times a week followed by self-induced vomiting after every episode for the last nine years. She also received a diagnosis of persistent depressive episode beginning two years ago. She had a history of untreated and self-resolved depression without psychotic features, five years ago. There was an increase in bulimia nervosa severity during the past and current depressive episodes. She stated that depressive symptoms decreased partially while she was on fluoxetine 40 mg/day, but after two months of treatment they recurred. She did not report any decrease in binge eating or self-induced vomiting during treatment with fluoxetine.

She did not have any other major psychiatric disorder or substance abuse. On her physical evaluation, poor dental hygiene associated with purging was observed. There were neither eating disorders, nor any other mental disorders in her family.

Severity and frequency of her binge eating and purging episodes had increased over the last 2 years, with the emergence of depressive symptoms. She had unsuccessful trials of fluoxetine, escitalopram, mianserine and sulphiride. Although she received cognitive behavioral therapy for 12 sessions a year ago, the severity of eating disorder had remained the same.

rTMS administration was planned to address her refractory depressive disorder. She scored 29 on the Hamilton Depression Rating Scale, 17 item version (HAMD-17) at the baseline measurement. Her weight was 75kg and body-mass index was 27.2. rTMS was delivered with a Magstim Super-Rapid Stimulator with the figure-of-eight-shaped coil to the left DLPFC as 25 Hz with an intensity of %110 motor threshold. The treatment schedule was five days a week, from Monday to Friday, for four weeks. The 25-Hz stimulation was administered as 2 seconds trains with 25-second intertrain intervals. A

session comprised of 1000 pulses; a total of 20 sessions were administered. Her antidepressant medication did not change as she was on fluoxetine 40 mg/day for the last 3 months. The patient tolerated the stimulation well and the only adverse effect was localized minor pain at the administration site on the first two sessions. Her HAMD-17 score decreased from 29 at baseline to 21 after 5 sessions, to 16 after 10 sessions, to 11 after 15 sessions and to 6 at the end of 20 sessions.

Surprisingly, after the first week of the rTMS treatment, the binge eating and purging behaviors decreased along with the depressive symptoms. She reported 4-5 binge eating and two purging episodes on the first week, two binge eating and one purging episode on the second week. She did not have any binge eating or purging episodes after that. By the third week of rTMS, a full remission of binge eating and purging episodes was observed. The treatment response was persistent at 12 weeks after the completion of treatment. Her depressive symptomatology also remained remitted during the 12 weeks follow-up period; her HAMD-17 score was 8 on the 12th week. Even though she reported a significant psychosocial stressor on the 6th week of the post-treatment period, she did not have any relapse of depression or eating disorder.

3. Discussion

The comorbid presence of depressive disorder and eating disorders are common. In this case, the patient was administered high-frequency rTMS for the treatment of treatment-resistant depression. We incidentally observed rapid remission of binge eating and purging episodes. This case suggests that DLPFC stimulation by rTMS could be a potential treatment option. Previous literature has denoted the beneficial treatment effects of rTMS on eating disorder symptoms, food craving, and body weight (Val-Laillet et al., 2015)

The exact mechanism of DLPFC stimulation in this instance of refractory bulimia nervosa is not known. However, prefrontal cortex has been shown to be involved in impulse control and self-control of behaviors. Prefrontal cortex was also reported as being activated during self-inhibition during food cravings (Kober et al., 2010). Prefrontal cortex may also be critical for the control of impulses associated with binge eating and purging. rTMS stimulation of prefrontal cortical area may be linked to the remission of eating disorder symptoms. Accordingly, recent studies noted decrease of nicotine and heroin cravings, following high-frequency rTMS of the left DLPFC (Pripfl et al., 2014).

Most studies using rTMS in eating disorders have TMS protocols administered on DLPFC (Van den Eynde et al., 2013; Hausmann et al., 2004). However, neuroimaging studies of various eating disorders also underline structural and functional abnormalities of anterior cingulate cortex and the dorsomedial prefrontal cortex (Fuglset et al., 2016). Dorsomedial prefrontal dysfunction may have a fundamental role in bulimia nervosa as it is a brain region associated with impulse control. Medial orbitofrontal pathology has also been found to be related to difficulties in food reward processing and self-regulation (Schafer et

al., 2010). All these results suggest that brain sites other than DLPFC might be efficient rTMS targets in case of eating disorders.

4. Conclusion

In conclusion, rTMS could offer a potential treatment option for eating disorders comorbid with depression. The presented case suggests that rTMS might be effective in inhibition of binge eating and purging behaviors. Randomized, sham-controlled trials would be helpful in establishing the optimum administration site and parameters in severe and treatment-resistant eating disorders.

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