

The effects of rTMS on eating disorder in a patient with stroke: A case report

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Introduction

The repetitive transcranial magnetic stimulation(rTMS) is known to be a non-invasive and safe treatment in post-stroke rehabilitation. The rTMS can modify excitability at the cerebral cortex site stimulated as well as in remote structures along functional anatomical connections. Recent RCT showed one evidence which the rTMS would modify eating behaviors and weight. We present a case who has had chronic stroke, morbid obesity, and binge eating disorder history, was treated by rTMS.

Case report

A 63 year-old male visited our rehabilitation clinic due to binge eating disorder, progressive weight gain and mild dysphagia. He had stroke histories; first attack was intracranial hemorrhage at left striatum 12 years ago, second attack was intracranial hemorrhage at right striatum 10 years ago. Since then, he has suffered by gait disturbance, cognitive decline, regularly visited in rehabilitation outpatient clinic. Several months ago, his caregiver has complaint of obsession for eating, mild dysphagia, and frequent binge eating. He experienced asphyxia due to binge eating in mealtime, recently. The patient received 10 Hz stimulation over the left dorsolateral prefrontal cortex(DLPFC) for 10 days with a daily dose of 1000 pulses. After then, total energy and macronutrient intakes were reduced, the weight of patient also reduced(Table 1). The functional status of dysphagia, assessed by the Dysphagia Outcome and Severity Scale, Functional Oral Intake Scale, modified Mann Assessment of Swallowing Ability were not changed

Conclusion

Several stroke survivors were changed the eating behaviors due to neuroanatomical changes, cognition and emotional status. These patients usually got the lower physical activities than premorbid state, and have gotten obese. These multi-dimensional reasons with eating behaviors would be a barrier for conventional treatment with medication or exercise. In our case, the high frequency rTMS for left DLPFC modified eating behavior, and induced reduction of weight and food intake. The rTMS would be a useful addition of patients with stroke, for modification of eating behaviors or weight.

Table 1. Changes in food intake and body weight.

	Baseline	Post
Total energy intake(kcal/day)	1875	1130
Carbohydrate(g/day)	303	168.3
Protein(g/day)	79.39	54.51
Fat (g/day)	39.31	25.56
Weight(kg)	92.6	87.3

Values are mean.