

World Journal of *Clinical Cases*

World J Clin Cases 2023 October 6; 11(28): 6670-6973



MINIREVIEWS

- 6670 Neurotransmitters regulate β cells insulin secretion: A neglected factor
Kong CC, Cheng JD, Wang W

ORIGINAL ARTICLE

Case Control Study

- 6680 Factors influencing the surveillance of re-emerging intracranial infections in elective neurosurgical patients: A single-center retrospective study
Wang JL, Wu XW, Wang SN, Liu X, Xiao B, Wang Y, Yu J

Retrospective Study

- 6688 Clinical value of chemiluminescence method for detection of antinuclear antibody profiles
Xiang HY, Xiang XY, Ten TB, Ding X, Liu YW, Luo CH
- 6698 Value of ultrasound guided biopsy combined with Xpert *Mycobacterium tuberculosis*/resistance to rifampin assay in the diagnosis of chest wall tuberculosis
Yan QH, Chi JY, Zhang L, Xue F, Cui J, Kong HL
- 6707 Research on the intelligent internet nursing model based on the child respiratory and asthma control test scale for asthma management of preschool children
Pei CF, Zhang L, Xu XY, Qin Z, Liang HM
- 6715 Effects of different doses of long-acting growth hormone in treating children with growth hormone deficiency
Xia W, Wang T, Pan JY
- 6725 Efficacy and anti-inflammatory analysis of glucocorticoid, antihistamine and leukotriene receptor antagonist in the treatment of allergic rhinitis
Qiu C, Feng D
- 6733 Subchondral fatigue fracture of the femoral head in young military recruits: Potential risk factors
Yang JZ, Chen P, Chen BH, Zhao B
- 6744 Anemia status of infants and young children aged six to thirty-six months in Ma'an Shan City: A retrospective study
Wang XM, Wang QY, Huang J
- Observational Study
- 6754 Impact of coronary artery bypass grafting surgery on the chorioretinal biomicroscopic characteristics
Shahriari M, Nikkhah H, Mahjoob MP, Behnaz N, Barkhordari S, Cheraqpour K

Prospective Study

- 6763** Effects of humanized nursing care on negative emotions and complications in patients undergoing hysteromyoma surgery
Liu L, Xiao YH, Zhou XH

Randomized Controlled Trial

- 6774** Randomized controlled trial on the efficacy and safety of autologous serum eye drops in dry eye syndrome
Zheng N, Zhu SQ

SYSTEMATIC REVIEWS

- 6782** Primary adrenal Ewing sarcoma: A systematic review of the literature
Manatakis DK, Tsouknidas I, Mylonakis E, Tasis NP, Antonopoulou MI, Acheimastos V, Mastoropoulou A, Korkolis DP

CASE REPORT

- 6792** Pulmonary artery aneurysm protruding into the bronchus as an endobronchial mass: A case report
Li M, Zhu WY, Wu RR, Wang L, Mo MT, Liu SN, Zhu DY, Luo Z
- 6797** Rare rectal gastrointestinal stromal tumor case: A case report and review of the literature
Dong RX, Wang C, Zhou H, Yin HQ, Liu Y, Liang HT, Pan YB, Wang JW, Cao YQ
- 6806** Bilateral retinal nerve fiber layer thickness reduction in a 9-year-old myopic boy suffering from unilateral optic neuritis: A case report
Zhao FF, Yao SQ, Wang Y, Li TP, Yang JF, Pang CP, Cen LP
- 6812** Application of negative pressure wound therapy after skin grafting in the treatment of skin cancer: A case report
Huang GS, Xu KC
- 6817** Diagnosis and treatment of McCune-Albright syndrome: A case report
Lin X, Feng NY, Lei YJ
- 6823** Paraneoplastic myopathy-related rhabdomyolysis and pancreatic cancer: A case report and review of the literature
Costantini A, Moletta L, Pierobon ES, Serafini S, Valmasoni M, Sperti C
- 6831** Multi-organ hereditary hemorrhagic telangiectasia: A case report
Chen YL, Jiang HY, Li DP, Lin J, Chen Y, Xu LL, Gao H
- 6841** Hyperprogression after anti-programmed death-1 therapy in a patient with urothelial bladder carcinoma: A case report
Yang HY, Du YX, Hou YJ, Lu DR, Xue P
- 6850** Effectiveness of antidepressant repetitive transcranial magnetic stimulation in a patient with refractory psychogenic dysphagia: A case report and review of literature
Woo CG, Kim JH, Lee JH, Kim HJ

- 6857** Entrapment neuropathy of common peroneal nerve by fabella: A case report
Lin JC, Tsai MH, Lin WP, Kuan TS, Lien WC
- 6864** Importance of accurate diagnosis of congenital agenesis of the gallbladder from atypical gallbladder stone presentations: A case report
Sun HJ, Ge F, Si Y, Wang Z, Sun HB
- 6871** Dorsal approach for isolated volar fracture-dislocation of the base of the second metacarpal: A case report
Kurozumi T, Saito M, Odachi K, Masui F
- 6877** Rotationplasty type BIIIb as an effective alternative to limb salvage procedure in adults: Two case reports
Chen ZX, Guo XW, Hong HS, Zhang C, Xie W, Sha M, Ding ZQ
- 6889** Primary cutaneous anaplastic large cell lymphoma with over-expressed Ki-67 transitioning into systemic anaplastic large cell lymphoma: A case report
Mu HX, Tang XQ
- 6895** Confusing finding of quantitative fluorescent polymerase chain reaction analysis in invasive prenatal genetic diagnosis: A case report
Chen C, Tang T, Song QL, He YJ, Cai Y
- 6902** Testicular mixed germ cell tumor: A case report
Xiao QF, Li J, Tang B, Zhu YQ
- 6908** Leukemic transformation during anti-tuberculosis treatment in aplastic anemia-paroxysmal nocturnal hemoglobinuria syndrome: A case report and review of literature
Xiu NN, Yang XD, Xu J, Ju B, Sun XY, Zhao XC
- 6920** Pancreatic arteriovenous malformation treated with transcatheter arterial embolization: Two case reports and review of literature
Shin SH, Cho CK, Yu SY
- 6931** Cecal duplication cyst in an infant presenting as shock: A case report
Kim SM, Lee SH, Park GY, Kim SS, Lee CG, Jin SJ
- 6938** Pulmonary reversed halo cycles and consolidations after immunotherapy: A case report
Suo H, Shi YJ, Huang ZD, Xu K, Huang H
- 6943** Unusual case of emphysematous cystitis mimicking intestinal perforation: A case report
Kang HY, Lee DS, Lee D
- 6949** Malignant proliferative ependymoma of the neck with lymph node metastasis: A case report
Wang K, Wen JZ, Zhou SX, Ye LF, Fang C, Chen Y, Wang HX, Luo X
- 6955** Wandering spleen torsion with portal vein thrombosis: A case report
Zhu XY, Ji DX, Shi WZ, Fu YW, Zhang DK

- 6961** Intracranial infection and sepsis in infants caused by *Salmonella derby*: A case report
Yu JL, Jiang LL, Dong R, Liu SY
- 6967** Large gastric hamartomatous inverted polyp accompanied by advanced gastric cancer: A case report
Park G, Kim J, Lee SH, Kim Y

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Effectiveness of antidepressant repetitive transcranial magnetic stimulation in a patient with refractory psychogenic dysphagia: A case report and review of literature

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Abstract

BACKGROUND

Dysphagia is a common condition in older as well as young patients, and a variety of treatments have been reported depending on the cause. However, clinicians are challenged when the cause is unclear. This is the case with psychogenic dysphagia, which has typically been treated with supportive psychotherapy, medication, swallowing exercise, and dysphagia rehabilitation therapy. Here, we aimed to relieve the symptoms of a patient with refractory psychogenic dysphagia, who was unresponsive to conventional swallowing therapy, with repetitive transcranial magnetic stimulation (rTMS).

CASE SUMMARY

A relatively calm-looking 35-year-old female patient presented with a 2-year history of dysphagia. She showed little improvement with conventional swallowing treatments over the past 2 years. She was relatively compliant with in-hospital dysphagia therapy, but uncooperative with home exercise and medication. In particular, since she was resistant to drug treatment, we had to take a different approach than the treatment she had been receiving for the past 2 years. After much deliberation, we decided to initiate antidepressant rTMS treatment with her consent (IRB No. 2023-05-021). Antidepressant rTMS treatment was

performed twice weekly for a total of 20 sessions over 10 wk. The results showed improvement in subjective symptoms and video fluoroscopic swallowing study findings. To the best of our knowledge, this is the first report of symptomatic improvement using antidepressant rTMS protocol for refractory psychogenic dysphagia.

CONCLUSION

This case demonstrates that rTMS with antidepressant protocol can be used to improve swallowing in patients with refractory psychogenic dysphagia.

Key Words: Deglutition disorder; Depression; Health; Rehabilitation; Transcranial magnetic stimulation; Case report

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Core Tip: This case report describes the use of repetitive transcranial magnetic stimulation (rTMS) to improve swallowing in a patient with refractory psychogenic dysphagia. The patient had not responded to conventional swallowing therapy for the past two years. Interviews with her reveal that she appears calm but is very depressed. Therefore, rTMS with antidepressant protocol was deemed appropriate and applied for 10 wk. After the treatment, the patient's swallowing symptoms improved, and the effect was maintained for 1 mo. This case shows that antidepressant rTMS treatment can be a good alternative for patients with psychogenic dysphagia who do not respond to conventional swallowing therapy.

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INTRODUCTION

Dysphagia impairs not only activities of daily life but also quality of life (QoL)[1]. Even if the cause is known, treating dysphagia requires a substantial amount of time and effort[2-4]. Worse yet, if the cause is unclear, clinicians face challenges in treating the condition. One example of this is psychogenic dysphagia. Psychogenic dysphagia is defined as dysphagia caused in the absence of organic or neurological abnormality, and a gold standard for diagnosis is still lacking [5,6]. For this reason, diagnosis of psychogenic dysphagia is difficult, which delays treatment and increases the likelihood of the condition becoming chronic, prolonging the patient's suffering. Even if the diagnosis of psychogenic dysphagia is made later on, the condition cannot be completely cured. The traditional treatments for psychogenic dysphagia include supportive psychological therapy, exercise therapy, and pharmacological treatment. Supportive psychological therapy and exercise therapy cannot be effective without the patient's and family's cooperation and effort. While pharmacological treatment is effective to some degree, the complete remission rate remains low at 50%, and the effectiveness of the treatment declines with poor medication adherence[7].

Repetitive transcranial magnetic stimulation (rTMS) has long been used as a treatment option for dysphagia. However, in most cases, it was combined with the traditional dysphagia treatment modalities and was rarely used independently. In addition, the general rTMS protocol for treating dysphagia specifies the supplementary motor area (SMA) as the target site[8-10]. To the best of our knowledge, our case is the first case to demonstrate improvement of symptoms of refractory psychogenic dysphagia through rTMS alone using the dorsolateral prefrontal cortex (DLPFC) as the target in a patient who has not responded to the traditional dysphagia treatment for an extended period.

CASE PRESENTATION

Chief complaints

A 35-year-old woman presented to the outpatient clinic for dysphagia that has not responded to various treatment modalities in the past 2 years.

History of present illness

The patient first presented to the hospital with dysphagia that slowly developed around December 2020. The patient had no underlying diseases or any special events that might have triggered dysphagia symptoms. The patient had severe difficulty swallowing food after chewing, with the problem more evident with solid foods. The physician who examined the patient at the time ordered blood test, brain magnetic resonance imaging (MRI), and nerve-motor function test, but the findings were unremarkable. Subsequently, the patient underwent conventional dysphagia treatment for approximately 2 years with neither marked improvements nor exacerbation, and the patient eventually presented to our outpatient clinic. The patient seemed relatively calm considering the tremendous stress she has had for not being able to

eat normally for a prolonged period. The patient had been taking nutrients by swallowing the liquid form after chewing and spitting out the remaining solids and by drinking liquid food during gastrointestinal tube feeding. At the time of initial presentation 2 years before treatment initiation, the patient had a normal weight and body mass index (BMI) (48.0 kg, BMI 20.0 kg/m²) but was underweight at the time of presentation to our clinic (42.7 kg, BMI 17.8 kg/m²).

History of past illness

There was no illness in previous medical history.

Personal and family history

No abnormalities.

Physical examination

The patient first underwent otolaryngological testing and gastroscopy, and the findings were within normal limits. The basic neurological test findings, including cognition, limb strength, balance, and cranial nerve examination, were also within normal limits. However, the patient exhibited laryngeal elevation and some hesitancy in swallowing.

Laboratory examinations

In the videofluoroscopic swallowing study (VFSS), severe oral phase delay was observed in all types of food boluses. Particularly, solid food boluses were unable to progress to the pharyngeal phase. Fortunately, the patient was able to swallow liquid boluses without aspiration, although in small amounts. No neuromuscular or structural causes that could result in transfer dysphagia were identified. Blood tests were performed to investigate for any possible abnormal findings, anemia, hypoproteinemia, or trace element deficiencies, but all results were within normal limits.

The patient had no restrictions of activities of daily living (ADLs) due to physical problems, as evidenced by a modified Rankin scale score of 0 and modified Barthel Index of 100. However, she scored lower than the normal ranges in assessments that consider psychological aspects in ADLs[11-14], such as Montgomery and Asberg Depression Rating Scale, Hamilton Depression Inventory, Beck Depression Inventory, EuroQol five-dimension questionnaires, and Patient Health Questionnaire. Additionally, the patient reported discomfort and difficulty with most forms of diet in a survey inquiring about subjective discomfort with dysphagia using a four-point scale (0, no difficulty; 1, mild difficulty; 2, moderate difficulty; 3, severe difficulty)[15].

Imaging examinations

Brain MRI and c-spine anterior-posterior/lateral X-ray findings were unremarkable.

FINAL DIAGNOSIS

Based on the patient's medical history, neurological exam findings, physical examination, VFSS results, and depression and QoL assessments, psychogenic dysphagia was diagnosed in collaboration with psychiatrists.

TREATMENT

Over the past 2 years, the patient had undergone swallowing rehabilitation to treat dysphagia, including Shaker's exercise and vital-stim therapy. Although selective serotonin reuptake inhibitor (SSRI) therapy was also attempted, symptoms did not improve owing to poor medication adherence. Additionally, conventional exercises and occupational rehabilitation therapy for dysphagia did not show significant improvement. Therefore, we decided to use a different treatment approach. After careful consideration and obtaining the patient's consent, we decided to proceed with rTMS using the Food and Drug Administration-approved protocol for refractory depression (10 Hz frequency, 120% of the derived motor threshold, 3000 pulses per session over the left DLPFC)[16,17]. However, the patient could not make frequent hospital visits, so the treatment schedule had to be slightly modified. The modified treatment schedule was two sessions per week for a total of 20 antidepressant rTMS sessions over a 10-wk period. The treatment flowchart of this case is shown in Figure 1.

OUTCOME AND FOLLOW-UP

Depression and QoL-related assessments performed upon the conclusion of the 10-wk (20-session) rTMS treatment regimen showed improvements compared to those before rTMS treatment (Table 1). Furthermore, VFSS and subjective discomfort from dysphagia survey scores obtained 1 mo after the conclusion of rTMS treatment also were improved (Figure 2). During follow-up, the improvements in dysphagia symptoms were still retained 1 mo after the conclusion of rTMS treatment, and the patient's body weight increased to 43.9 kg (BMI, 18.3 kg/m²). We plan to continue to monitor whether the effects of rTMS are retained.

Table 1 Survey results related to depression and quality of life after antidepressant repetitive transcranial magnetic stimulation therapy

Survey item	Before rTMS	After rTMS	Improvement (%)
Depression			
MADRS	30	18	40
HDI	16	9	44
BDI	40	25	38
QoL			
EQ-5D	8	6	25
PHQ-9	7	5	29

QoL: Quality of life; rTMS: Repetitive transcranial magnetic stimulation; MADRS: Montgomery and Aasberg Depression Rating Scale; HDI: Hamilton Depression Inventory; BDI: Beck Depression Inventory; EQ-5D: EuroQoL five dimensions; PHQ-9: Patient Health Questionnaire.

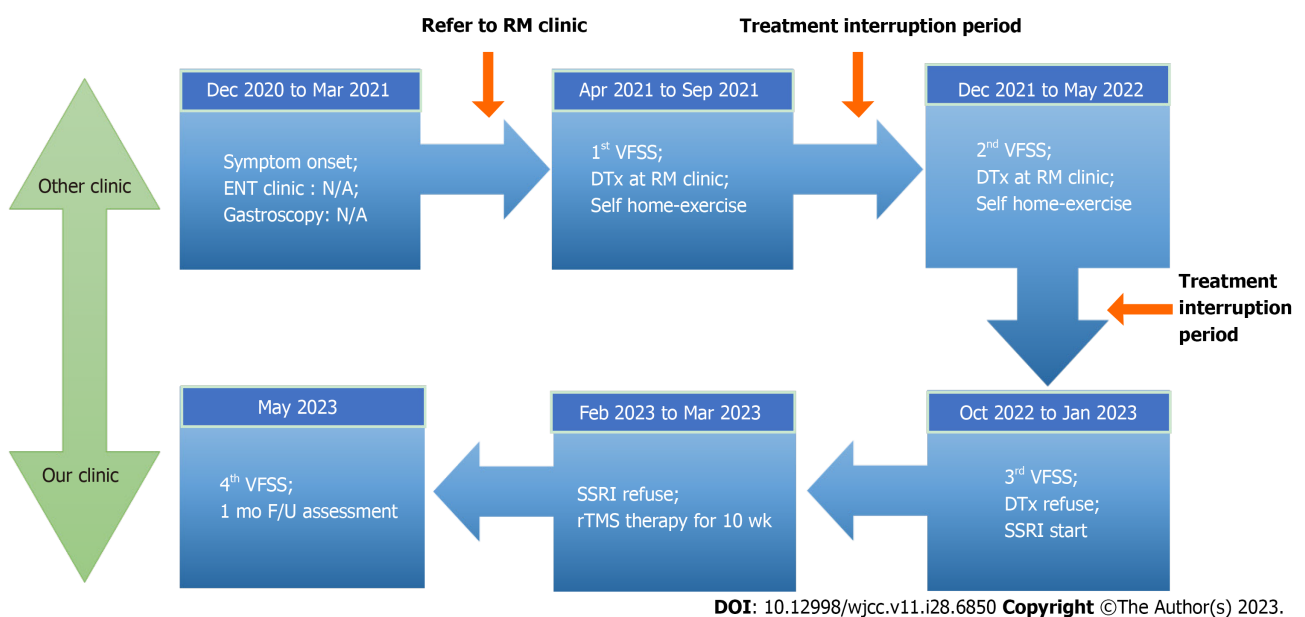


Figure 1 Treatment flowchart. ENT: Ear-nose-and-throat department; N/A: No abnormality; RM: Rehabilitation medicine department; DTx: Dysphagia therapy; SSRI: Selective serotonin reuptake inhibitor; rTMS: Repetitive transcranial magnetic stimulation; F/U: Follow-up; VFSS: Videofluoroscopic swallowing study.

DISCUSSION

Psychogenic dysphagia is also referred to as phagophobia, globus hystericus, hysterical dysphagia, and pseudodysphagia, and some view it as a symptom of conversion disorder[18-23]. Although the condition is referred by various names and the cause is often unclear, one common feature is swallowing difficulty in the oral phase[19-22], which is not explained neurologically by physical, laboratory, or imaging tests[23,24]. Symptoms can occur unintentionally and, in rare cases, can persist for a prolonged period[25].

A 35-year-old female had developed symptoms without any special cause 2 years ago and presented for rehabilitation medicine after an otolaryngologist and gastroenterologist could not find any specific abnormalities. Subsequently, the patient underwent conventional swallowing rehabilitation with SSRI therapy, but showed no improvement. In particular, the patient was unable to adhere to the prescribed SSRI pills because of difficulty in swallowing and eventually refused drug therapy. In addition to the pills, she complained of more severe dysphagia while consuming solid foods such as meat and rice, and her body weight decreased by 5.3 kg in 2 years. Compared with the severity of her symptoms, the patient presented with calm facial expressions. However, inconsistent with her appearance, she was found to be severely depressed, with substantial QoL impairment in the self-report depression and QoL questionnaires. These results indicated psychogenic dysphagia. Thus, we initiated rTMS with an antidepressant protocol to improve symptoms in this patient with depression who refused pharmacological treatment.

rTMS is widely used to treat migraines, depression, and motor dysfunctions[16,17,26,27]. Moreover, several reports have suggested that rTMS is effective for dysphagia, and most of these studies targeted the middle SMA, an area involved in motor function[8-10]. However, we determined that the Food and Drug Administration-approved rTMS protocol for major depressive disorder (MDD) would be more effective for psychogenic dysphagia without organic

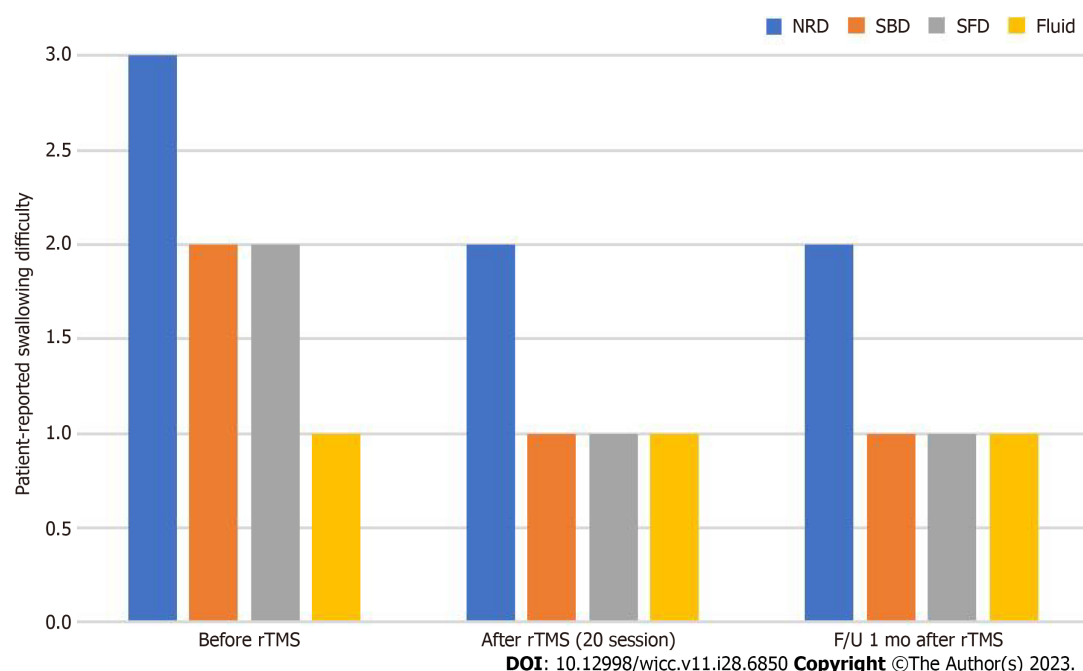


Figure 2 Changes of subjective dysphagia scale (4-point scale) after antidepressant repetitive transcranial magnetic stimulation therapy.

The 4-point scale consists of patient subjective reports of dysphagia ranging from 0 (no difficulty) to 3 (severe difficulty). rTMS: Repetitive transcranial magnetic stimulation; NRD: Normal regular diet; SBD: Soft blended diet; SFD: Soft fluid diet; F/U: Follow-up.

causes, as seen in our patient[16,17]. As no previous studies have reported the use of rTMS with the left DLPFC as the target, we explained this to the patient and obtained informed consent. However, the patient could not make frequent hospital visits owing to the distance of her residence from the hospital, and we revised the treatment regimen to two sessions per week for 10 wk; fortunately, the patient's symptoms improved substantially. The subjective dysphagia scale (4-point scale) score obtained immediately after the conclusion of the 20-session rTMS improved for all diets. Furthermore, VFSS performed 1 mo after the conclusion of the rTMS regimen confirmed a smooth oral phase transition. Thus, we determined that the effects of the antidepressant rTMS regimen on psychogenic dysphagia were retained for at least 1 mo, which is consistent with the results of previous studies on the retention of the effects of rTMS treatment for MDD[28-31]. Another notable outcome was that the patient showed improvement in all aspects of the self-reported depression and QoL measurements, with a more remarkable improvement in depression. Despite the unclear mechanism underlying psychogenic dysphagia[5,6], these results suggest a link between psychogenic dysphagia and MDD. During follow-up, the improvements in dysphagia symptoms were retained 1 mo after the conclusion of rTMS treatment; further monitoring is required to ascertain whether the effects of rTMS are retained.

CONCLUSION

The antidepressant rTMS protocol may be an effective alternative treatment for patients with psychogenic dysphagia who do not respond to conventional treatments.

FOOTNOTES

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REFERENCES

- McHorney CA, Robbins J, Lomax K, Rosenbek JC, Chignell K, Kramer AE, Bricker DE. The SWAL-QOL and SWAL-CARE outcomes tool for oropharyngeal dysphagia in adults: III. Documentation of reliability and validity. *Dysphagia* 2002; **17**: 97-114 [PMID: 11956835 DOI: 10.1007/s00455-001-0109-1]
- Lind CD. Dysphagia: evaluation and treatment. *Gastroenterol Clin North Am* 2003; **32**: 553-575 [PMID: 12858606 DOI: 10.1016/S0889-8553(03)00024-4]
- Wilkinson JM, Codipilly DC, Wilfahrt RP. Dysphagia: Evaluation and Collaborative Management. *Am Fam Physician* 2021; **103**: 97-106 [PMID: 33448766]
- Terré R. [Oropharyngeal dysphagia in stroke: diagnostic and therapeutic aspects]. *Rev Neurol* 2020; **70**: 444-452 [PMID: 32500523 DOI: 10.33588/rn.7012.2019447]
- Ford CV, Folks DG. Conversion disorders: an overview. *Psychosomatics* 1985; **26**: 371-374, 380 [PMID: 2581282 DOI: 10.1016/S0033-3182(85)72845-9]
- Espay AJ, Goldenhar LM, Voon V, Schrag A, Burton N, Lang AE. Opinions and clinical practices related to diagnosing and managing patients with psychogenic movement disorders: An international survey of movement disorder society members. *Mov Disord* 2009; **24**: 1366-1374 [PMID: 19425106 DOI: 10.1002/mds.22618]
- de Lucas-Taracena MT, Montañés-Rada F. [Swallowing phobia: symptoms, diagnosis and treatment]. *Actas Esp Psiquiatr* 2006; **34**: 309-316 [PMID: 16991019]
- Li L, Huang H, Jia Y, Yu Y, Liu Z, Shi X, Wang F. Systematic Review and Network Meta-Analysis of Noninvasive Brain Stimulation on Dysphagia after Stroke. *Neural Plast* 2021; **2021**: 3831472 [PMID: 34777497 DOI: 10.1155/2021/3831472]
- Wang T, Dong L, Cong X, Luo H, Li W, Meng P, Wang Q. Comparative efficacy of non-invasive neurostimulation therapies for poststroke dysphagia: A systematic review and meta-analysis. *Neurophysiol Clin* 2021; **51**: 493-506 [PMID: 34535361 DOI: 10.1016/j.neucli.2021.02.006]
- Kim L, Chun MH, Kim BR, Lee SJ. Effect of repetitive transcranial magnetic stimulation on patients with brain injury and Dysphagia. *Ann Rehabil Med* 2011; **35**: 765-771 [PMID: 22506204 DOI: 10.5535/arm.2011.35.6.765]
- Hudgens S, Floden L, Blackowicz M, Jamieson C, Popova V, Fedgchin M, Drevets WC, Cooper K, Lane R, Singh J. Meaningful Change in Depression Symptoms Assessed with the Patient Health Questionnaire (PHQ-9) and Montgomery-Åsberg Depression Rating Scale (MADRS) Among Patients with Treatment Resistant Depression in Two, Randomized, Double-blind, Active-controlled Trials of Esketamine Nasal Spray Combined With a New Oral Antidepressant. *J Affect Disord* 2021; **281**: 767-775 [PMID: 33261932 DOI: 10.1016/j.jad.2020.11.066]
- Bagby RM, Ryder AG, Schuller DR, Marshall MB. The Hamilton Depression Rating Scale: has the gold standard become a lead weight? *Am J Psychiatry* 2004; **161**: 2163-2177 [PMID: 15569884 DOI: 10.1176/appi.ajp.161.12.2163]
- Richter P, Werner J, Heerlein A, Kraus A, Sauer H. On the validity of the Beck Depression Inventory. A review. *Psychopathology* 1998; **31**: 160-168 [PMID: 9636945 DOI: 10.1159/000066239]
- Balestroni G, Bertolotti G. [EuroQol-5D (EQ-5D): an instrument for measuring quality of life]. *Monaldi Arch Chest Dis* 2012; **78**: 155-159 [PMID: 23614330 DOI: 10.4081/monaldi.2012.121]
- Haynes SN. Electromyographic biofeedback treatment of a woman with chronic dysphagia. *Biofeedback Self Regul* 1976; **1**: 121-126 [PMID: 990340 DOI: 10.1007/BF00998695]
- O'Reardon JP, Fontecha JF, Cristancho MA, Newman S. Unexpected reduction in migraine and psychogenic headaches following rTMS treatment for major depression: a report of two cases. *CNS Spectr* 2007; **12**: 921-925 [PMID: 18163038 DOI: 10.1017/s1092852900015716]
- Perera T, George MS, Gammner G, Janicak PG, Pascual-Leone A, Wirecki TS. The Clinical TMS Society Consensus Review and Treatment Recommendations for TMS Therapy for Major Depressive Disorder. *Brain Stimul* 2016; **9**: 336-346 [PMID: 27090022 DOI: 10.1016/j.brs.2016.03.010]
- Feinstein A. Conversion Disorder. *Continuum (Minneapolis)* 2018; **24**: 861-872 [PMID: 29851882 DOI: 10.1212/CON.0000000000000601]
- Finkbine R, Miele VJ. Globus hystericus: a brief review. *Gen Hosp Psychiatry* 2004; **26**: 78-82 [PMID: 14757307 DOI: 10.1016/S0163-8343(03)00089-6]
- Ciyiltepe M, Türkbay T. Phagophobia: a case report. *Turk J Pediatr* 2006; **48**: 80-84 [PMID: 16562793]
- Shapiro J, Franko DL, Gagne A. Phagophobia: a form of psychogenic dysphagia. A new entity. *Ann Otol Rhinol Laryngol* 1997; **106**: 286-290 [PMID: 9109717 DOI: 10.1177/000348949710600404]
- Barofsky I, Fontaine KR. Do psychogenic dysphagia patients have an eating disorder? *Dysphagia* 1998; **13**: 24-27 [PMID: 9391226 DOI: 10.1007/PL00009545]
- Stone J, Vuilleumier P, Friedman JH. Conversion disorder: separating "how" from "why". *Neurology* 2010; **74**: 190-191 [PMID: 20083794 DOI: 10.1212/WNL.0b013e3181cb4ea8]
- Boffeli TJ, Guze SB. The simulation of neurologic disease. *Psychiatr Clin North Am* 1992; **15**: 301-310 [PMID: 1603725]
- Couprie W, Wijdicks EF, Rooijmans HG, van Gijn J. Outcome in conversion disorder: a follow up study. *J Neurol Neurosurg Psychiatry*

- 1995; **58**: 750-752 [PMID: [7608683](#) DOI: [10.1136/jnnp.58.6.750](#)]
- 26 **Moisset X**, Pereira B, Ciampi de Andrade D, Fontaine D, Lanteri-Minet M, Mawet J. Neuromodulation techniques for acute and preventive migraine treatment: a systematic review and meta-analysis of randomized controlled trials. *J Headache Pain* 2020; **21**: 142 [PMID: [33302882](#) DOI: [10.1186/s10194-020-01204-4](#)]
- 27 **Zhang L**, Xing G, Fan Y, Guo Z, Chen H, Mu Q. Short- and Long-term Effects of Repetitive Transcranial Magnetic Stimulation on Upper Limb Motor Function after Stroke: a Systematic Review and Meta-Analysis. *Clin Rehabil* 2017; **31**: 1137-1153 [PMID: [28786336](#) DOI: [10.1177/0269215517692386](#)]
- 28 **O'Reardon JP**, Solvason HB, Janicak PG, Sampson S, Isenberg KE, Nahas Z, McDonald WM, Avery D, Fitzgerald PB, Loo C, Demitrack MA, George MS, Sackeim HA. Efficacy and safety of transcranial magnetic stimulation in the acute treatment of major depression: a multisite randomized controlled trial. *Biol Psychiatry* 2007; **62**: 1208-1216 [PMID: [17573044](#) DOI: [10.1016/j.biopsych.2007.01.018](#)]
- 29 **Janicak PG**, Nahas Z, Lisanby SH, Solvason HB, Sampson SM, McDonald WM, Marangell LB, Rosenquist P, McCall WV, Kimball J, O'Reardon JP, Loo C, Husain MH, Krystal A, Gilmer W, Dowd SM, Demitrack MA, Schatzberg AF. Durability of clinical benefit with transcranial magnetic stimulation (TMS) in the treatment of pharmacoresistant major depression: assessment of relapse during a 6-month, multisite, open-label study. *Brain Stimul* 2010; **3**: 187-199 [PMID: [20965447](#) DOI: [10.1016/j.brs.2010.07.003](#)]
- 30 **Mantovani A**, Pavlicova M, Avery D, Nahas Z, McDonald WM, Wajdik CD, Holtzheimer PE 3rd, George MS, Sackeim HA, Lisanby SH. Long-term efficacy of repeated daily prefrontal transcranial magnetic stimulation (TMS) in treatment-resistant depression. *Depress Anxiety* 2012; **29**: 883-890 [PMID: [22689290](#) DOI: [10.1002/da.21967](#)]
- 31 **Solvason HB**, Husain M, Fitzgerald PB, Rosenquist P, McCall WV, Kimball J, Gilmer W, Demitrack MA, Lisanby SH. Improvement in quality of life with left prefrontal transcranial magnetic stimulation in patients with pharmacoresistant major depression: acute and six month outcomes. *Brain Stimul* 2014; **7**: 219-225 [PMID: [24332384](#) DOI: [10.1016/j.brs.2013.10.008](#)]



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