percentage change from baseline in AIMS score was –45%; 55% of patients achieved a ≥50% response, 59% of those patients had already achieved a ≥50% response at Week 15, and 41% of those who had not achieved a ≥50% response at Week 15 but who reached Week 106 achieved a ≥50% response. At Week 132 (n=109; total daily dose: 39.7±0.97 mg), the mean percentage change from baseline in AIMS score was –61%; 55% of patients achieved a ≥50% response, 61% of those patients had already achieved a ≥50% response at Week 15, and 43% of those who had not achieved a ≥50% response at Week 15 but who reached Week 132 achieved a ≥50% response. Completer analysis suggests that long-term efficacy was not due to dose increases over time. Treatment with deutetrabenazine was generally well tolerated. There were 623 patient-years of exposure through Week 158, and exposure-adjusted incidence rates (incidence/patient-years) of adverse events of special interest were 0.01 for akathisia and restlessness, 0.07 for somnolence and sedation, 0.04 for parkinsonism, and 0.05 for depression.

CONCLUSIONS: Patients who received long-term treatment with deutetrabenazine achieved response rates that were indicative of clinically meaningful long-term benefit. Results from this open-label trial suggest the possibility of increasing benefit over time with individual dose titration of deutetrabenazine.

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Evolution of a Study of Bilateral Prefrontal Transcranial Magnetic Stimulation (TMS) to Treat the Symptoms of Mild TBI (mTBI) and PTSD

Jared S Garland, B.S.[1]*; Emilia-Marie Jaskot, B.S.*[2]*; Jerika Taylor, MA*[3]*; Kiara Buccellato, MA*[4]*; Navneet Atwal, M.D.*[5]*; and Paul F Pasquina, M.D.*[6]

[1] Clinical Research Assistant, The Henry M Jackson Foundation for the Advancement of Military Medicine, Center for Rehabilitation Sciences Research at the Uniformed Services University of the Health Sciences, Walter Reed National Military Medical Center, Bethesda, MD
[2] Clinical Research Assistant, The Henry M Jackson Foundation for the Advancement of Military Medicine, Center for Rehabilitation Sciences Research at the Uniformed Services University of the Health Sciences, Walter Reed National Military Medical Center, Bethesda, MD
[3] Program Manager, The Henry M Jackson Foundation for the Advancement of Military Medicine, Center for Rehabilitation Sciences Research at the Uniformed Services University of the Health Sciences, Walter Reed National Military Medical Center, Bethesda, MD
[4] Clinical Research Coordinator: Clinical Research Assistant, The Henry M Jackson Foundation for the Advancement of Military Medicine, Center for Rehabilitation Sciences Research at the Uniformed Services University of the Health Sciences, Walter Reed National Military Medical Center, Bethesda, MD
[5] Psychiatrist, Department of Psychiatry, Walter Reed National Military Medical Center, Bethesda, MD
[6] Chair, Center for Rehabilitation Sciences Research at the Uniformed Services University of the Health Sciences; Chief, Department of Rehabilitation at Walter Reed National Military Medical Center, Bethesda, MD

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Keywords: PTSD, mTBI, compliance, Repetitive Transcranial Magnetic Stimulation, Neuromodulation

BACKGROUND: Traumatic brain injuries (TBIs) have affected nearly 380,000 service members since 2000. Comorbid posttraumatic stress disorder (PTSD) may result from and/or exacerbate sequelae of mild TBI (mTBI) and is suspected to affect up to 65% of service members with TBI. Conventional treatments for mTBI/PTSD symptoms have limited efficacy and are associated with undesirable side effects. Repetitive transcranial magnetic stimulation (rTMS) has shown promise in treating PTSD symptoms and been identified as a potential mTBI therapy, but is untested as a therapy for comorbid mTBI/PTSD.

METHODS: This double-blinded, prospective randomized, sham-controlled study consists of 30 treatment sessions 5 weeks of daily sessions followed by a two week taper of 3 and 2 sessions, respectively. Sessions consist of 3500 pulses administered to the left dorsolateral prefrontal cortex (dlPFC) at 10 Hz and 1500 pulses to the right dlPFC at 1 Hz. Approximately 60-80 participants will be randomized to receive active or sham rTMS. Primary outcome measures are the Posttraumatic Checklist 5 and the Rivermead Post-Concussion Questionnaire.

RESULTS: The study is ongoing, and 26 participants have been recruited to date. All patients were formally diagnosed with mTBI and reported moderate to severe PTSD symptoms. Preliminary data show no participants have withdrawn due to intolerability or indicated intolerability, despite the presence of minor discomforts such as headache. The majority of participants have been able to rest quietly or sleep during sessions, indicating high tolerability. Reported pain levels are low, with average ratings of 2.84/10.00 by week 2. One limitation was a high dropout rate.

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CONCLUSIONS: This study aims to provide guidance as to whether rTMS is an efficacious therapy for comorbid mTBI/PTSD. Preliminary data indicates it to be a tolerable and safe therapy. Future research should consider decreasing the demand of the study on patients schedules, and performing a comparison to other mTBI/PTSD treatments to determine what treatment is more efficacious.

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Repetitive Transcranial Magnetic Stimulation as a Protective Measure Against Early-Onset Alzheimer's Disease: A Case Report

Jared S Garland, B.S.[1]; Megan Tsui, B.S.[2]; Emilia-Marie Jaskot, B.S.[3]; Martin Knoll, B.S.[4]; Jerika Taylor, M.A.[5]; Kiara Buccellato, M.A.[6]; Margaret Swanberg, D.O., COL (ret)[7]; and Paul F Pasquina, M.D., COL (ret)[8]

[1] Clinical Research Assistant, The Henry M Jackson Foundation for the Advancement of Military Medicine, Center for Rehabilitation Sciences Research at the Uniformed Services University of the Health Sciences, Walter Reed National Military Medical Center, Bethesda, MD
[2] Clinical Research Assistant, The Henry M Jackson Foundation for the Advancement of Military Medicine, The Brain Fitness Center, Center for Rehabilitation Sciences Research at the Uniformed Services University of the Health Sciences, Walter Reed National Military Medical Center, Bethesda, MD
[3] Clinical Research Assistant, The Henry M Jackson Foundation for the Advancement of Military Medicine, Center for Rehabilitation Sciences Research at the Uniformed Services University of the Health Sciences, Walter Reed National Military Medical Center, Bethesda, MD
[4] Clinical Research Assistant, The Henry M Jackson Foundation for the Advancement of Military Medicine, The Brain Fitness Center, Center for Rehabilitation Sciences Research at the Uniformed Services University of the Health Sciences, Walter Reed National Military Medical Center, Bethesda, MD
[5] Program Manager, The Henry M Jackson Foundation for the Advancement of Military Medicine, Center for Rehabilitation Sciences Research at the Uniformed Services University of the Health Sciences, Walter Reed National Military Medical Center, Bethesda, MD
[6] Clinical Research Coordinator, Clinical Research Assistant, The Henry M Jackson Foundation for the Advancement of Military Medicine, Center for Rehabilitation Sciences Research at the Uniformed Services University of the Health Sciences, Walter Reed National Military Medical Center, Bethesda, MD
[7] Chief, Department of Neurology, Walter Reed National Military Medical Center, Bethesda, MD
[8] Chief, Department of Rehabilitation, Walter Reed National Military Medical Center, Bethesda, MD; Chair, Department of Rehabilitation Medicine, Uniformed Services University of the Health Sciences, Bethesda, MD; Chair, Center for Rehabilitation Sciences Research at the Uniformed Services University of the Health Sciences, Bethesda, MD

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BACKGROUND: Alzheimer s disease (AD) is a progressive neurodegenerative disease leading to cognitive decline and eventually death. Degradation of cortical neuroplasticity is thought to be a major catalyst of AD-related cognitive decline. Repetitive transcranial magnetic stimulation (rTMS), which uses pulsed magnetism to stimulate neurons, increases cortical plasticity and induces long-lasting neuroplastic changes. Patients have benefited from rTMS to treat AD, especially when done in conjunction with cognitive training exercises. This case report presents a 31-year-old male who tested positive for an autosomal dominant mutation implicated in early-onset AD. rTMS and cognitive training were employed to assist in the delay of early-onset AD manifestation in two cycles.

METHODS: Prior to each treatment cycle, the patient completed questionnaires and interviews designed to test his cognitive functioning; his spouse was interviewed to provide a third-party assessment of his functioning. Following pre-treatment data collection, 30 daily rTMS/cognitive training sessions were completed in the first cycle and 35 daily rTMS/cognitive training sessions were completed in the second cycle. The bilateral dorsolateral prefrontal cortices each received 1,000 pulses (10 Hz, 110% SMT). Tolerability and side effect data were collected after each treatment. Immediately following rTMS, the patient played cognitive training games at our Brain Fitness Center. All pre-treatment assessments were repeated after completion of the 30 sessions in the first cycle and the 35 sessions in the second cycle for comparison of pre- to post-treatment cognitive functionality.

RESULTS: Pre-treatment testing indicated the patient was asymptomatic before each cycle. The patient completed 30 daily rTMS sessions in the first cycle and 35 daily rTMS sessions in the second cycle. Tolerability/side effect data showed he tolerated treatment well and experienced only minor pain. The patient also completed 30 cognitive training sessions in the first cycle and 35 cognitive training sessions in the second cycle and showed moderate improvement across all cognitive domains. Post-treatment assessments indicated no change in functioning except to note the patient s improved sleep. A third treatment cycle is scheduled to begin in February 2020.

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