E-Poster

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Rehabilitation of Traumatic Brain Injury Patient With Repetitive Transcranial Magnetic Stimulation: A Case Report

Topic: Neurostimulation (rTMS, tDCS, etc.)

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BACKGROUND

Traumatic brain injury (TBI) leads to motor deficits and impaired balance and gait, significantly impacting patients' quality of life. Repetitive Transcranial Magnetic Stimulation (rTMS) aims to increase recovery by modulating cortical plasticity.

CASE DESCRIPTION

A male patient in his late 20s, known to have TBI, presented to the outpatient department (OPD) with difficulty standing and walking following a traumatic brain injury in 2020. The patient was initially admitted to the intensive care unit of a tertiary health center following RTA, NCCT of the brain was performed, and he was diagnosed with subdural hematoma with diffuse axonal injury. In August 2023 he reported with his caregiver to the OPD. He was tetraplegic due to traumatic brain injury and was assessed by the FIM-FAM Scale (Functional Independence Measure and Functional Assessment Measure scale) (score-113/210) and Fugl-Meyer Assessment scale (FMA) and he had difficulty maintaining balance with fall risk as assessed by the Berg Balance Scale (BBS) 15 (score-2/56), and then r-TMS was given in both the cerebral hemispheres via a figure of 8 coil with 100% MEP for 10 days (5 days/week, Monday to Friday for two weeks) at the primary motor cortex (M1) over the right hemisphere (Mode-1 Hz, 10 pulses over 10 seconds, total of 1200 pulses) and left hemisphere (Mode 5Hz, 10 pulses over 10 seconds total 150 pulses). Immediately after the rTMS session, the patient performed 45 minutes of neuromotor training.

DISCUSSION

The FMA and BBS demonstrated significant improvements post-treatment: the FMA score increased by 25.76% and 20.5% for the upper and lower limbs, respectively, and the BBS score was increased by 37.5%. Post-treatment, the patient was able to walk with minimal support. The FIM-FAM scale showed a 17.6% improvement, reflecting enhanced activities of daily living (ADL) and independence. Our study revealed that 10 days of repetitive transcranial magnetic stimulation combined with neuromotor rehabilitation significantly improved both upper and lower limb motor functions and balance even 4 years after TBI. Post-treatment, the patient could walk with minimal support (with a single elbow crutch support). Modulation in the cerebral cortex (primary motor cortex) helps to facilitate further motor recovery and balance.

CONCLUSION

Repetitive transcranial magnetic stimulation in traumatic brain injury may help improve upper and lower limb function, activity of daily living, and balance and coordination and helps in improving activity of daily living even after threee years of brain trauma. Further studies are warranted in terms of RCTs.

Statement of Disclosures

None

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