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Biography

Peerada Eurcherdkul, M.D. is a physiatrist at the Department of Rehabilitation Medicine, Ramathibodi Hospital, Mahidol University, Bangkok, Thailand. She completed her Thai Board of Rehabilitation Medicine training in 2021 and holds a Doctor of Medicine with first-class honors. Her clinical and research interests include neurological rehabilitation, stroke recovery, transcranial magnetic stimulation, and post-stroke spasticity. She has completed specialized training in TMS and ultrasound-guided botulinum toxin injection techniques, and has published research in ASEAN Journal of Rehabilitation Medicine. Dr. Peerada is an active member of national and international neurorehabilitation societies.

The Continuity Of The Corticomotor Pathway Assessed By Transcranial Magnetic Stimulation And Upper Extremity Recovery In Subacute Stroke Patients With Impaired Hand Function: A Preliminary Study

Abstract:

This study investigated the relationship between corticomotor pathway continuity, assessed using transcranial magnetic stimulation (TMS), and upper-extremity motor recovery in subacute stroke patients with impaired hand function. Adults 1–3 months after a first-ever stroke with upper-limb motor impairment were enrolled in a prospective cohort design. Single-pulse TMS was applied to the ipsilesional and contralesional primary motor cortices, and visible contraction of the affected hand was used to determine the presence or absence of a motor response (MR). Motor thresholds and MR findings were recorded bilaterally. Motor recovery was evaluated using the Fugl–Meyer Assessment for Upper Extremity (FMA-UE), Shoulder Abduction and Finger Extension (SAFE) score, Box-and-Block Test (BBT), Barthel Index (BI), and spasticity measures at baseline, 3 months, and 6 months post-stroke. Five participants completed at least two follow-up assessments. One participant demonstrated ipsilesional MR presence during the subacute phase, while four presented with MR absence. No clear association was observed between early ipsilesional MR presence and subsequent FMA-UE scores. Three participants with initial MR absence later demonstrated MR presence approximately 3–4 months after stroke; two of these individuals showed meaningful improvement in FMA-UE, SAFE, and BBT scores. Contralesional motor thresholds showed no clear relationship with motor recovery. All participants improved in BI over time. These findings suggest that ipsilesional MR absence in the subacute phase does not necessarily indicate poor upper-extremity recovery and that late MR appearance may reflect neuroplastic reorganization. Larger studies are needed to clarify the prognostic value of TMS in the subacute period.