E-Poster

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Analysis and Correlation Between Motor Task-Related Brain Oscillations, and FM-UE in Chronic Left MCA Ischemic Ctroke Patients: An exploratory Study

Topic: Physiology

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BACKGROUND

Stroke is a leading cause of upper-limb functional impairment. Rehabilitation aids recovery, but measuring neural deficits is challenging. Electroencephalography (EEG) detects cortical activity changes post-stroke, with slow/fast brain activity ratios linked to functional outcomes and recovery potential. The objective was to identify and correlate motor-task brain oscillations differing between chronic middle cerebral artery (MCA) stroke patients and healthy controls with Fugl-Meyer upper-extremity assessment (FM-UE).

METHODS

Ten chronic MCA stroke patients with upper-limb impairment and seven healthy controls underwent motor-task EEG recordings. Chronic FM-UE was collected. EEG data were analyzed using MATLAB, EEGLAB, focusing on event-related desynchronization/event-related synchronization (ERD/ERS) metrics. U de Mann-Whitney, W de Wilcoxon et Z, avec $p<0,05$ were used to explore differences between groups. Spearman correlations were conducted to examine EEG-parameters and clinical scales relationship.

RESULTS

Controls showed ERD in ipsilateral beta oscillations during motor-imagery ($p<0.001$) and motor tasks ($p<0.002$) which was absent in stroke patients. In contrast, stroke patients showed ERD in alpha oscillations in both ipsilateral and contralesional hemispheres during motor-imagery. Chronic FM-UE scores were negatively correlated with alpha and beta oscillations in both hemispheres during motor tasks.

CONCLUSION

Patients exhibited altered dynamic and resting-state brain activity compared to controls, which correlate negatively with functional scale scores. Dynamic EEG measures correlate with FM-UE, and could potentially add value in the functional evaluation of chronic ACM stroke patients.

Statement of Disclosures

None

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