Oral Communication

OC-133

Resting-EEG Theta Power Increase Following Rehabilitation in Chronic MCA Stroke Patients With Upper-Limb Impairment

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. The objective was to identify potential resting-EEG parameters changes after a rehabilitation treatment that shows statistical and clinical significant improvement in upper limb function Fugl-Meyer upper-extremity assessment (FM-UE) in chronic middle cerebral artery (MCA) stroke patients.

METHODS

Nine chronic MCA stroke patients with upper-limb impairment underwent a rehabilitation treatment to enhance upper limb function. In all cases the treatment consisted of occupational therapy (30 minutes / 2 times a week, 15 sessions in total). The only difference between subjects was that six of them received standard occupational therapy and in three of them the therapist used an augmented-reality device (Mindmotion Go) to guide the therapy. Results have been analyzed together to explore potential significant changes in the resting-EEG parameters and the FM-UE scale. Chronic FM-UE was collected before and after treatment. Electroencephalography data were analyzed using MATLAB, EEGLAB, focusing on resting-EEG parameters. Non-parametric W de Wilcoxon for related measures was used, $p < 0,05$ stablishing significance.

RESULTS

Relative theta (rtheta) value post treatment showed a post treatment incrementation mean pre-post treatment: (mean 0,14 SD 0.7 and 0.19 DS 0.08), the others resting measures remained not statistically significative. FM-UE scores showed upper limb function improvement statistically and clinically significant for the scale. Median pre/post treatment (39,50 [p25 18,50 p75 66,00] - 52,00 [p25 26,00 p75 58,50].

CONCLUSION

After a rehabilitation treatment that showed a clinically and statistically significant improvement in the upper-limb function of these chronic MCA stroke patients, rtheta showed a significant power augmentation.

Statement of Disclosures

None

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Doi: 10.5606/archisprm.2026.OC-133