E-Poster

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Feasibility and Efficacy of Intensive Visual Stimulation in Acute Stroke – Preliminary Study

Topic: Neurostimulation (rTMS, tDCS, etc.)

Jelka Jansa[1], Matevz Globocnik[1], Sanja Susteric[1], Katja Angleitner Narobe[1], Fajko Bajrovic[2]

[1]*Neurological Hospital, University Medical Centre Ljubljana, Ljubljana, Slovenia*
[2]*Institute of Pathophysiology, Faculty of Medicine at the University of Ljubljana, Ljubljana, Slovenia*

BACKGROUND

Upper extremity (UE) impairment is common after stroke and significantly affects activities of daily living (ADL). Upper extremity rehabilitation is a critical part of neurorehabilitation, beginning in the acute phase. While evidence supports impairment-targeted therapy, data on the feasibility and efficacy of intensive visual stimulation (IVS3), a computer-based device assisting motor planning and movement control, as an adjunct to conventional occupational therapy (OT), is limited. This preliminary study aimed to investigate the feasibility and efficacy of IVS3 in acute stroke rehabilitation.

METHODS

This non-randomized, preference-based study recruited 120 acute stroke patients admitted to the hospital and referred to OT. Eligible patients who provided consent were assigned to either the IVS3 group or the control group. All received daily neurorehabilitation, including OT, while the IVS3 group additionally participated in IVS3 sessions once able to sit independently for at least 15 minutes. Assessments occurred at three time points: Baseline (pre-OT), Discharge (upon completion hospital rehabilitation), and Follow-up (predetermined post-discharge). Outcomes were measured using the Fugl-Meyer Assessment for Upper Extremity (FMA-UE) for motor impairment, Trunk Control Test (TCT) for trunk control and the Extended Barthel index (EBI) for disability. Recovery differences were analyzed using a General Linear Model (GLM) with repeated measures analysis of variance (RM-ANOVA). The study was approved by the Medical Ethics Committee and conducted in accordance with the Declaration of Helsinki.

RESULTS

Ninety-seven patients (55 IVS3, 42 control group) completed the study. Demographic and rehabilitation-related data are presented. The average follow-up duration was 145 ± 35 days. All patients demonstrated significant improvement over time in UE motor impairment, trunk control and ADL performance ($p < .001$). Between-group comparisons using the Tests of Between-Subjects Effects revealed no statistically significant differences across all time points for FMA-UE ($p = .660$), EBI ($p = .619$), and TCT ($p = .157$). However, significant time × group interactions were observed for FMA-UE ($p = .005$), and EBI ($p = .030$), with a trend for TCT ($p = .060$), suggesting that patients in IVS3 group had a steeper recovery trajectory in motor function compared to the control group.

CONCLUSION

This preliminary study suggests that IVS3 is a feasible adjunct to conventional OT and may accelerate recovery in UE motor impairment, trunk control, and ADL performance in acute stroke patients. Further research with a larger sample and extended follow-up is required to confirm these findings.

Statement of Disclosures

None

Corresponding Author:
Jelka Jansa
Neurological Hospital, University Medical Centre Ljubljana, Ljubljana, Slovenia
Email: jelka.jansa@kclj.si

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