Pei Jung Kao et.al., J Nov Physiother 2018, Volume 8
DOI: 10.4172/2165-7025-C2-027

Cortical excitability in rhythmic movements with auditory cues in Parkinson's disease

Pei Jung Kao, Hsiu Yun Chang and Jer Junn Luh
National Taiwan University, Taiwan

Freezing of gait (FOG) is one of the disabling gait disturbances in patients with Parkinson's disease (PD). To alleviate the impaired gait performance, auditory cues are often used in clinical settings. However, it is still uncertain whether freezers and non-freezers can achieve equal favorable effects from auditory cues. The aim of this study was to explore the effects of auditory-cued step-in-place training (SIP) on neurophysiological changes through transcranial magnetic stimulation (TMS) and to compare if there were any differences between freezers and non-freezers. This is a cross-over study. 21 patients with PD were classified into freezer and non-freezer group according to the FOG questionnaire. Each patient executed two conditions including SIP training with AC and without NC the rhythmic auditory cues in random orders. There was a one-week wash-out period between two conditions. TMS recordings included resting motor threshold (RMT), motor evoked potential (MEP), cortical silent period (CSP), short intracortical inhibition (SICI) and intracortical facilitation (ICF). Assessments were done before and after motor training. Wilcoxon signed-rank test was used for within-group comparison and Mann-Whitney U-test was applied for between-group comparison. Results showed lengthened CSP duration (p=0.005) and decreased SICI (p=0.001) were noted only in AC condition. Enhanced inhibition of RMT and CSP duration was found in freezers but not in non-freezers. SICI and ICF were modulated in both groups under AC condition. Auditory-cued SIP training could modulate the cortical excitability for patients with PD. Freezers may achieve more benefits from this training than non-freezers.

Biography

Pei Jung Kao has graduated from National Yang-Ming University and a Major in Physical Therapy. Presently, she is pursuing Master's degree at the School and Graduate Institute of Physical Therapy, National Taiwan University and specializes in Neuronal Physiotherapy.

lisakao100@gmail.com

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