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Effect of Brain-Computer interface and Robot-Aided rehabilitation in stroke patients with the foot drop

Abstract:

The foot drop in stroke patients is one of the most impotent interfering factors for ambulation recovery. The objective is to explore the effect of Brain-Computer Interface (BCI) and Robot-Aided Rehabilitation on foot drop in stroke patients.53 stroke patients with foot drop were randomly assigned to the BCI group(n=27) or control group(n=26).The BCI group performed four weeks of training with BCI and a robot-aided device, and the control group received four weeks of Robot-Aided ankle stretching training. After training, two groups showed significantly within-group improvements in dorsiflexor muscle strength, dorsiflexion passive dorsiflexion ranges of motion , Modified Ashworth Scale, Assessment of Lower Extremity (FMA-LE), Berg Balance Scale (BBS), and Modified Barthel Index. The between-group comparison showed the BCI group significantly improved ankle dorsiflexion muscle strength, FMA-LE, and BBS compared with the control group. (Change Δ=Post-Pre, BCI vs the Robot-Aided training: 3.77±3.50 vs 1.69±3.00; 5.74±3.89 vs 2.65±2.31; 8.59±6.20 vs 4.69±4.13, P=0.024, 0.010, and 0.001 respectively). Compared with the Robot-Aided ankle stretching training, the BCI of the ankle provided significant improvements in the active ankle property, the motor function of lower limb, and balance post-stroke.

Biography

Yu Pan has completed her MD at the age of 32 years from Captial Medical University in Beijing. She is the director of department of Physical Medicine and Rehabilitation of Beijing Tsinghua Changgung Hospital. She has published more than 30 papers in reputed journals and has been obtained eight fundings supported.