論 文 要 旨

Combination therapy with Repetitive Facilitative Exercise Program and Botulinum Toxin Type A to improve motor function for the upper-limb spastic paresis in Chronic Stroke: A Randomized Controlled Trial

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ABSTRACT

Study Design: An open-label, randomized, controlled, observer-blinded trial.

Introduction: Repetitive facilitative exercise (RFE) is a movement therapy to recover from hemiparesis after stroke. However, improvement is inhibited by spasticity. Recently, botulinum toxin type A (BoNT-A) injection has been shown to reduce spasticity.

Purpose: To examine the combined effect of an RFE program and BoNT-A treatment on upper-limb spastic paresis in chronic stroke.

Methods: Forty chronic stroke inpatients with upper-limb spastic paresis (Brunnstrom stage ≥III and Modified Ashworth Scale (MAS) score ≥1) were enrolled. Subjects were randomized into two groups of 20 each and received 4 weeks of treatment. The intervention group received RFE and BoNT-A injection; the control group underwent RFE only. Assessments were performed at baseline and at study conclusion. The primary outcome was change in Fugl–Meyer Assessment score for the upper extremity (FMA). The Action Research Arm Test (ARAT), active range of motion, Box and Block Test, and MAS were also evaluated.

Results: All participants completed this study. After 4 weeks, the intervention group evidenced a significantly greater increase in FMA score [median 11.0 (range 4 to 20)] than the control group [median 3.0 (range 0 to 9)] (p<0.01, r=0.79); as well as improvements in the other measures such as ARAT [median 12.5 (range 4 to 22) vs. 7 (0 to 13)] (p<0.01, r=0.6), and MAS in the elbow flexors [median –1.5 (range –2 to 0) vs. –1 (–2 to 0)] (p<0.01, r=0.45).

Discussion: A high degree of repetitive volitional movement induced by the facilitative technique with concomitant control of spasticity by BoNT-A injection might increase efficiency of motor learning with continuous movement of the affected upper-limb.

Conclusions: The combination of RFE and BoNT-A for spastic paresis might be more effective than RFE alone to improve upper-limb motor function and to lessen impairment in chronic stroke.

Keywords: stroke, rehabilitation, hemiplegia, muscle spasticity, botulinum toxin, exercise therapy