



## Combined Effect Of Botulinum Toxin And Splinting On Motor Components And Function Of People With Stroke

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**Background and objective:** Spasticity is one of the problems following stroke. Due to this increase in muscle tone, patients are confronted to problems in motor control and difficulties in activities of daily living and complications such as shortness and contracture. The aim of this study was to examine the effects of Simultaneous use of both splint and botulinum toxin-A (BTX-A) injection on spasticity, range of motion and upper extremity function in a 3-month period.

**Methods:** The design of this study was a comparison between 3 groups of interventions, conducted in rehabilitation clinics in Tehran. Sixty people with chronic stroke were recruited. Based on the inclusion criteria, a total of 39 stroke patients after completing the consent forms were entered to intervention groups; splint or botulinum toxin injection or combined splint/botulinum toxin injection. They were followed up about 3 months and the evaluations were done monthly. Goniometry was the method to measure range of motion, and Modified Ashworth scale was used to examine the spasticity and the upper extremity function was scored based on Fugl-Meyer assessment. Statistical analysis was done using SPSS 17. And ANOVAs was used for comparison between groups and times. Significance was set at 0.05.

**Results:** All outcome measures improved within each group but the differences between splint group and BTX-A group and the BTX-A-splint group was not significant in most outcomes during 3 periods (first evaluation until end of the first month, the end of first month until the end of second month, the end of second month until the end of the third month) ( $p > 0.05$ ). The results also showed that the changes in elbow's spasticity ( $p = 0.05$ ) and wrist's spasticity ( $p = 0.007$ ) and upper extremity function ( $p = 0.04$ ) were obvious between the three groups over the 3-months and the difference in the group of combined use of botulinum toxin and splint was more than other groups.

**Conclusion:** In this study, the effects of botulinum toxin injection and Volar-Dorsal Wrist/Hand Immobilization splint and the combined use of botulinum injection and splint were obvious in all groups but was not significantly different between the interventions in a 3-month follow-up.

**Key words:** splinting, botulinum toxin, stroke, hand function



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