

From stiff to swift: Real-world effectiveness of Botulinum Toxin Type A for spasticity in brain injury patients: An observational study

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ABSTRACT

Introduction: Patients who develop spasticity following a brain injury frequently have reduced movement ability, impaired function, and distressing limb postures due to resistance from passive and active antagonist muscles. This study aimed to evaluate the effectiveness of Botulinum Toxin Type A (BTXA) in managing spasticity in individuals with brain injuries. **Materials and Methods:** This observational, prospective pre-post cohort study involved patients with spasticity resulting from brain injury (stroke or other forms of trauma) who received intramuscular injections of BTXA. The effectiveness of treatment was measured using Modified Ashworth Scale (MAS) and Modified Barthel Index (MBI). Evaluations were conducted before the injection and at 4, 12, and 24-weeks follow-up. Statistical analysis was performed using SPSS version 26. **Results:** In 97 subjects, significant improvements in the MAS scores were observed at 4 weeks [mean difference (MD) -0.80 (95% CI -0.95 to -0.64)], further enhanced at 12 weeks [MD -0.95 (95% CI -1.10 to -0.79)], and sustained through 24 weeks [MD -0.87 (95% CI -1.03 to -0.72)] post-injection. Similarly, MBI showed significant gains at 4 weeks [MD 2.27 (95% CI 0.21 to 4.33)], with continued improvement at 12 weeks [MD 4.15 (95% CI 2.17 to 6.14)] and maintained at 24 weeks [MD 5.24 (95% CI 2.77 to 7.70)]. Key predictors of MAS outcomes included the timing of the injection relative to spasticity and the location of spasticity (upper or lower limb). In 2023, RM369,539 was spent on BTXA treatments. Extending injection intervals from 3 to 6 months can achieve 100% cost-savings. **Conclusion:** BTXA treatment effectively reduces spasticity in brain injury patients, with improvements starting at 4 weeks and lasting up to 24 weeks post-injection. Extending the injection interval from 3 to 6 months not only maintains therapeutic benefits but also offers up to 100% in cost savings, optimizing resource use and increasing access to more patients.