

A 10-year Retrospective Review of Lower Limb Botulinum Toxin Injection for Spasticity

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INTRODUCTION

Botulinum toxin is an effective and safe treatment for lower limb spasticity with positive outcomes related to reduction in muscle tone, spastic response, motor control, passive range of motion and walking velocity.¹⁻³

Clinical experience reports suggest that many patients discontinue treatment with botulinum toxin for lower limb spasticity after only 2 treatments.⁴⁻⁵ We believe that this decision may be positively influenced by appropriate goal setting, physician experience, treatment in a structure clinic and adequate follow up.

OBJECTIVES

1. To perform a retrospective review of a large institutional dataset to evaluate the impact of patient centered goal setting.
2. To assess treatment planning impact on early treatment discontinuation.

METHODS

This was a retrospective chart review of patients treated with botulinum toxin for lower limb spasticity at our center.

Convenience sample from 2008 to 2018 of nearly 700 patients treated between 3 physicians and followed over time.

Due to the selected time frame follow up time varied from 8 months to 10 years.

RESULTS

- The diagnosis of the treated population consists of stroke nearly 2/3, traumatic brain injury and adult cerebral palsy 1/3 with lesser number of patients with multiple sclerosis, spinal cord injury and various other neurological conditions Age ranged from 16 to 99 years of age. Fifty seven percent were male.
- Duration of treatment for this group: nearly 30% (206) of patients received between 4 and 11 treatments over this period of time. Of those 21% (152) received 7 or more treatments and nearly 12% (82 patients) in this group have received between 15 and 35 treatments over the 10-year review period. 407 patients (58%) receive at least 3 injections but this number may be influenced by the arbitrary time selection.
- Injections occurred an average over a span of 12 to 120 months. For 213 patients their treatment span was 24 months and 135 patients received their treatments over 25 and 110 months (mean 44).
- Most frequently identified patient centered goal selected for treatment was to (1) improve walking velocity; (2) increasing joint range of motion for the ankle and knee and (3) reduce walking effort.
- Fourth most desired goals were to improve comfort. Improving transfers (i.e. from chair to bed was the least prevalent goal selected by this patient population).
- Most frequently treated deformity was the equinus/equinovarus foot. Most frequently injected muscles in this deformity included: the gastrocnemius, soleus, tibialis posterior and flexor digitorum longus.
- Stiff knee gait was the second most common complaint. Most frequently injected muscles in this deformity included the rectus femoris, vasti, gluteus maximus and hamstrings.
- Electrical stimulation, EMG and ultrasonography were most frequently used localization method.
- Mean dose used for the ankle musculature injection was 380 (280-600) units of onabotulinumtoxinA (BOTOX, Allergan) and 1000 (800-1300) units abobotulinumtoxinA (Dysport, Ipsen). For the knee 280 (200-600) units of onabotulinumtoxinA (BOTOX, Allergan) and 800 (500-1100) units abobotulinumtoxinA (Dysport, Ipsen).

RESULTS

Figure I: Number of injection Cycles per patient over time

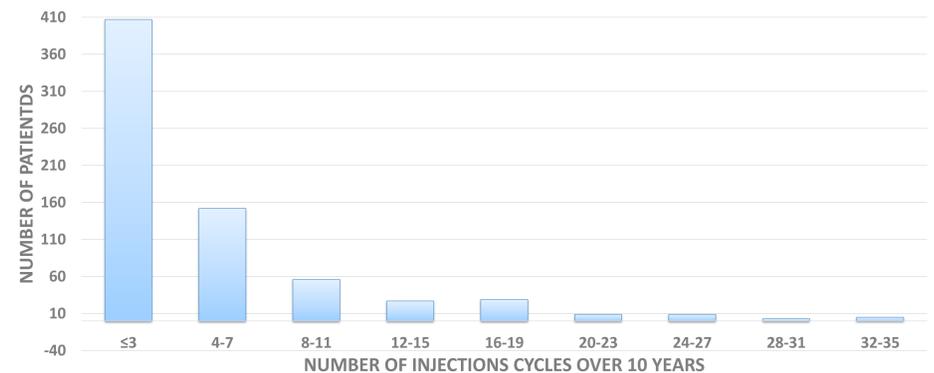


Figure II: Time Span Between First and Last Visit

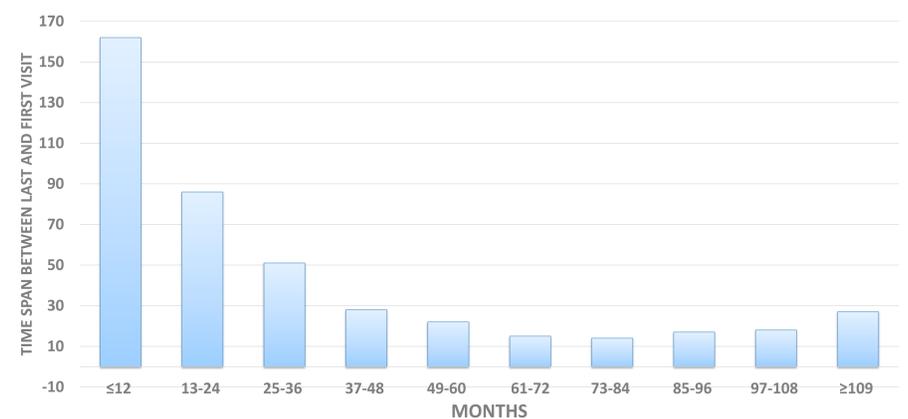
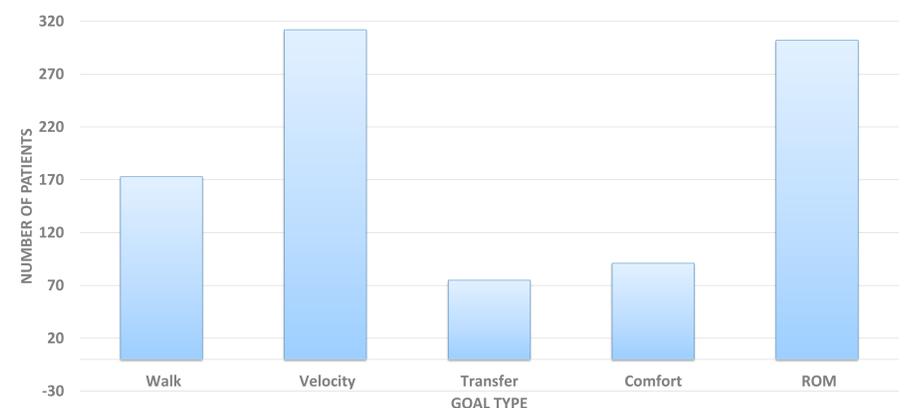


Figure III: Patient Centered Goals for the Lower Limb



CONCLUSIONS

Person centered goals can improve independence and satisfaction with care provided and help with treatment adherence. Periodic reassessment may be an important factor, that may positively impact adherence to treatment. Although it may not be clearly determined from this review but published elsewhere⁵, other factors such as dosing, injection technique, injector clinical experience and a well organized system of care play a role in patient satisfaction, treatment effectiveness and reduction in treatment discontinuation. In contrast, current general practice patterns with ill-defined outcomes that are not person centered or have a well organized system of care may result in earlier discontinuation of treatment with botulinum toxin.

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