

Introduction

Botulinum toxin (BoNTA) injection is one the most effective treatments for post stroke spasticity, in particular for focal/regional spasticity.

Definition of goals for every BoNTA injection session can help in choosing the key muscles to inject, adjunctive treatment (such as physical or occupational therapy, orthosis, etc.) and to evaluate the success of the therapy as well as defining new strategies when the goals are not met.

Although stroke represents a non evolving lesion, its sequelae, such as spasticity, are not static, arising the possibility of changing goals and therefore need for changes in muscles and dosages to inject in BoNTA treatments along the evolution of this condition.

Objectives

To assess differences in goals set in patients with post stroke spasticity in 10 botulinum toxin consecutive injection sessions, the success in goal achievement and interval between injections

Methods

Observational retrospective study. Data were collected prospectively and retrieved from clinical files of outpatients treated with BoNTA in 2014 for post stroke spasticity, including all of their BoNTA treatments (2001-2016). Patients with at least 10 BoNTA injections were classified according to age, gender and etiology. Primary goals set, outcomes and adjunctive treatment, at 1st (T1), 5th (T5) and 10th (T10) sessions. Goals were classified in the following categories: symptoms/impairment, activities/function and the subcategories described in tables 2 and 3. The success in achieving treatment goals set was measured by the Goal Attainment Scale (GAS) score. Interval between injections was assessed during T1-T5 and T5-T10.

Results

DEMOGRAPHICS

From 117 outpatients injected in 2014, 45 had at least 10 injections to date. Table 1 summarizes their characteristics

Age (years)	52,3 (SD 11,9)
Gender	
Male	57,8%
Female	42,2%
Etiology	
Ischemic	62,2%
Hemorrhagic	37,8%
Time since stroke at T1 (median)	14 months
Stroke localization	
Right hemisphere	42,2%
Left hemisphere	53,3%
Sub hemispheric	4,5%

Table 1: Sample demographic characterization (n=45 patients)

GOAL CATEGORIES AND GOAL CHANGES

Primary goals were properly set and recorded in 53% at T1, 49% at T5, and 73% at T10 and were assessed in 79% at T1, 82% at T5 and 67% at T10. Achieved /overachieved in 89% at T1, 78% at T5 and 91% at T10, as shown on Fig. 1.

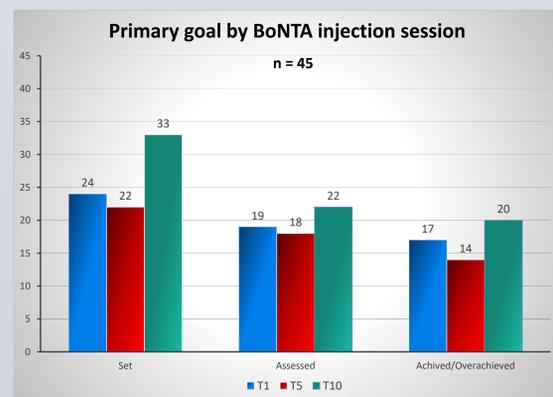


FIG 1: Primary goal setting, assessment and achievement/overachievement in 1st, 5th and 10th BoNTA injection (n=45)

Primary goals in the symptoms/impairments domain was most frequent at T1, while at T5 and T10 the distribution between that domain and the activities/function was more even, as shown in Fig. 2.

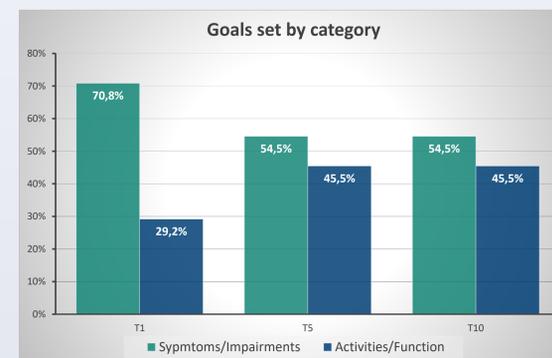


Fig 2: Primary goal setting by category at 1st, 5th and 10th BoNTA injection

In the symptoms/impairments domain involuntary movements were more common at T1, while pain/discomfort was more frequent at T5 and T10.

	Pain/Discomfort	Range of motion	Involuntary movements
T1	8%	8%	54%
T5	18%	9%	27%
T10	18%	15%	21%

Table 2: Primary goals set by subcategories in symptoms/impairments domain at T1, T5 and T10

In the activities/function domain, passive function prevailed at T1, mobility was predominant at T5 and T10.

	Passive function	Active function	Mobility
T1	21%	0%	8%
T5	5%	5%	36%
T10	3%	12%	30%

Table 3: Primary goals set by subcategories in activities/function domain at T1, T5 and T10

BETWEEN INJECTION INTERVALS

Time between BoNTA injection sessions between T1 and T5 were longer than during the period between T5 and T10 (216 ± 128 vs 170 ± 99 days).

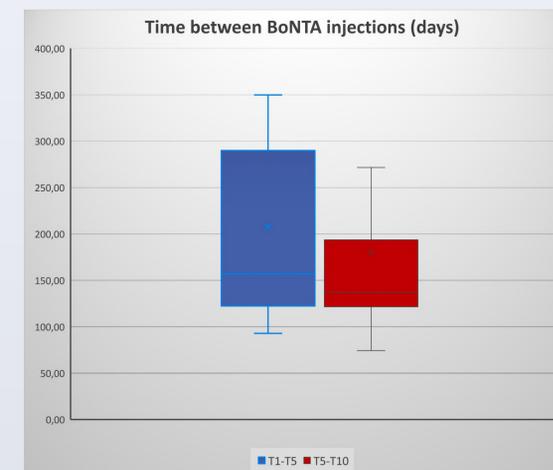


Fig 3: BoNTA injection interval between T1 and T5 and between T5 and T10 (outliers excluded)

ADJUNCTIVE THERAPIES

Most patients had physical therapy after all sessions of BoNTA (over 85% at T1, T5 and T10) but the frequency of Occupational Therapy decreased as Fig. 4 shows.

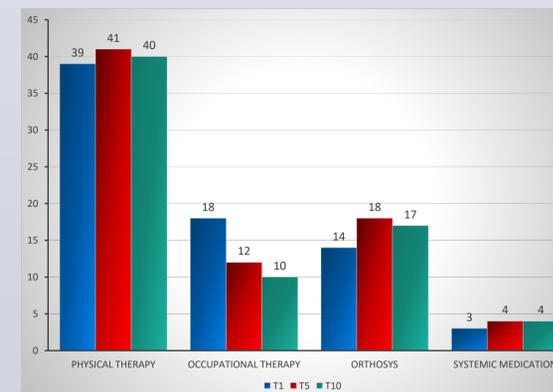


Fig 4: Adjunctive therapies used after each BoNTA injection

Conclusions

According to our data, goals set for BoNTA treatment tend to change during consecutive treatments.

In first injections, primary goals were more frequently related to symptoms or impairment, particularly involuntary movements, and, when activities or functions were the aim, goals related mostly to passive function. We relate these findings to the fact that the time since stroke upon first treatment was 14 months (median), i.e. a chronic population.

In the follow-up, at T5 and T10, although involuntary movements are still a frequent goal, other symptoms/impairments such as pain or discomfort also become relevant. In the activities/function domain, mobility becomes the main target goal category for treatment.

Interval between injections decreased from the first period (T1 -T5) to the second (T5-T10), probably due to more confidence on the part of the clinicians (following the safety shown by recent studies using shorter intervals between injections), as well as due to a progressive fine-tuning of dose/time/benefit for each patient.

Bibliography

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