TREATMENT PROGRAMS INCLUDING BOTULINUM TOXIN, TREATMENT GOALS, AND GOAL ACHIEVMENT FOR POSTSTROKE SPASTICITY: DOES TIME MATTER ?

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INTRODUCTION

Post stroke spasticity is estimated to affect 20 to 40% of stroke survivors. It has a negative impact on funcionality and quality of life. Botulinum toxin (BoNTA) is the first line pharmacological treatment for focal and regional post stroke spascitiicy around the world, with a high efficacy and security profile.

Longer spasticity duration is associated with poorer functional recovery and higher incidence of complications. In our clinical practice, BoNTA is routinelly used in the treatment of post stroke spasticity in different stages of the condition.

OBJECTIVES

The objectives of this study were to compare the goals and outcomes for poststroke spasticity (PSS) patients treated with botulinum toxin (BoNTA) in different stages of the disease.

MATERIAL AND METHODS

We studied the patients treated in our Botulinum Toxin Clinic in the year of 2014. Data were prospectively collected in a custom instrument designed specifically to register and evaluate BoNTA treatments in neurologic outpatients. In this instrument we have registered clinical and epidemiological data, spasticity characteristics and patterns, BoNTA formulations and doses, SMART goals agreed between patients/caregivers and health professionals as well as goal achievement.

All BoNTA treatment sessions between 2001 to 2016 were retrieved from clinical files. We investigated the following: time interval from stroke to first BoNTA, limbs treated (upper limb, UL; upper + lower limb, UL + LL; lower limb, LL), adjunctive treatments, primary goals and goal achievement.

To investigate the effect of time over the studied parameters, BoNTA treatments were divided in 3 groups regarding time elapsed between stroke and each session: < 1year, from 1to 4 years and ≥ 4 years.

DEMOGRAPHICS

There were 117 patients and 1057 BoNTA sessions. The mean age at stroke was 54 years (standard deviation [SD], 12.37). Median time from stroke to first BoNTA treatment interval was 0.9 years (range, 0.1 to 9.8). 44% of patients had left hemiparesis and 55% had right hemiparesis. The mean number of BoNTA sessions was 9 (SD, 6), and mean follow-up time was 4.2 years (SD, 3.35).

	UL-BoNTA
	N=117
Age at stroke (mean)	53,94 years (SD12,37)
Gender	
Male	56%
Female	44%
Etiology	
Ischemic	64%
Localization	
Right hemisphere	41%
left hemisphere	51%
Infratentorial	5%
Unknown	3%
Impairment	
Right hemiparesis	55%
Stroke-first BoNTA interval (mean)	0,96 years (range, 0,1 to 9,8)
Number of BoNTA sessions	9 (SD 6; range, 1-26)
Follow-up time (mean)	4,18 years (SD 3,35)

Table 1: Patients characteristic's

Out of the 1057 BoNTA treatments, 85 were done in the first year after stroke, 431 between the first and the fourth and 541 after the fourth year post-stroke (fig1) .

Abobotulinum toxin was used in 69% of the BoNTA treatments; the mean total dose was 1108 U (SD, 367). Incobotulinum toxin was used in 17%, with a mean total dose of 402 U (SD, 138). Onabotulinum toxin was used in 13%, with a mean total dose of 368 U (SD, 113).

RESULTS

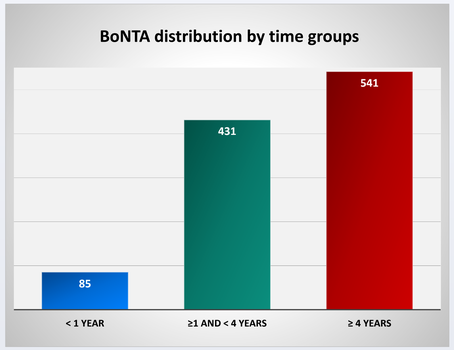

Figure 1: Distribution of BoNTA sessions by stroke-sessions interval in time groups

Along the follow-up time, UL+LL were the most frequent localization for BoNTA treatments. Overall the 1057 BoNTA treatments, UL+LL was treated in 63% of patients, UL in 28%, and LL in 9%. Patients were more likely to have injections in UL only in the first year but LL only at 4 years after stroke (*P*<0.001).

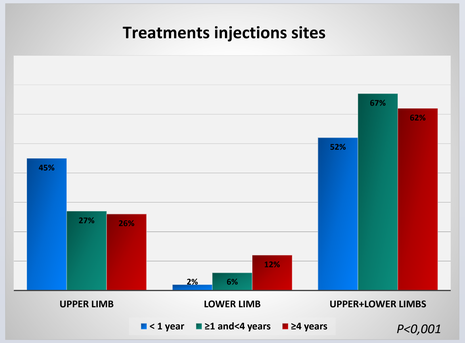

Figure 2: Distribution of BoNTA sessions by limbs treated in the stroke-sessions interval groups

Of 1057 treatment cycles, 87% were associated with physiotherapy, 31% with occupational therapy, and 40% with orthosis. Patients were more likely to have physiotherapy + occupational therapy for up to 4 years, but after the fourth year orthosis were more likely to be part of the adjunctive treatment. (*P*=0.008).

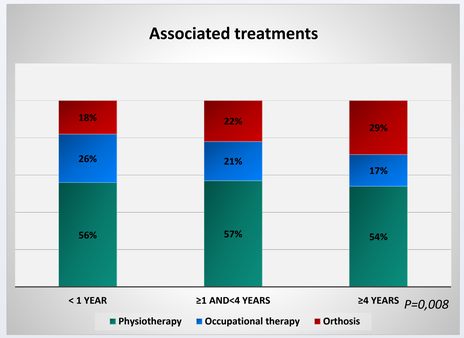

Figure 3: Distribution of the associated treatments in the three time groups

Primary goals were related to impairment/symptoms in 59% (Domain 1 – D1) and activities/function in 41% (Domain 2 – D2). Primary goal areas were not influenced by time, although there was a trend of having proportionally more D1 objectives after the 4th year than in the first 4 years (*P*=0.06)

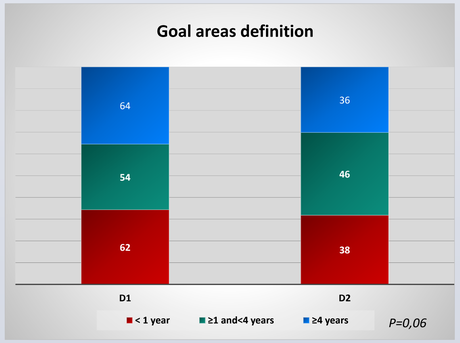

Figure 4: Distribution of the goal areas domains in the three time groups

The achievement/overachievement rates were 83% for the <1year group, 84% for the 1 to 4 years group, 73% for the ≥ 4 years post-stroke group (*P*=0.03).

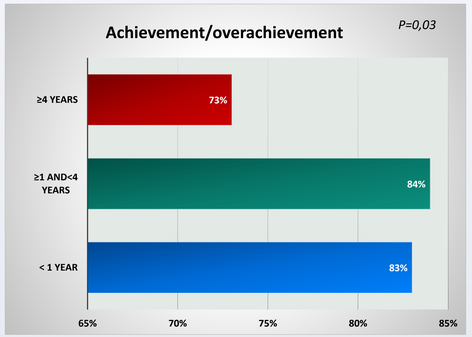

Figure 5: Distribution of achievement/overachievement rates in the three time groups

CONCLUSIONS

Our sample is young and started BoNTA relatively early but otherwise is typical of stroke patients. Broad primary goal areas were not influenced by time.

Up to 9.8 years, time since stroke seemed to influence which limbs were treated in each BoNTA session, the adjunctive therapies and the goal achievement rates. The high rate of goal achievement in our patients suggests adequate patient selection and interventions.

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