

# INFLUENCE OF THE TIME INTERVAL BETWEEN INJECTIONS ON THE EFFICACY OF INCOBOTULINUMTOXINA (XEOMIN) FOR UPPER LIMB SPASTICITY: A PRELIMINARY STUDY

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## INTRODUCTION

Current standard treatment for patients with spasticity includes botulinum toxin infiltrations at intervals of no less than 3 months, although in clinical practice some patients would need more closely spaced treatments in order to adequately modulate spastic hypertonia and to ensure their satisfaction with treatment. In cervical dystonia and blepharospasm IncoBTXA can be administered at **flexible treatment intervals** based on the clinical needs of patients as it has been shown in several publications<sup>1,2,3</sup>.

## OBJECTIVE

The aim of this study was to investigate whether the use of flexible intervals (between 6 – 20 weeks) of IncoBTXA (Xeomin) for the treatment of upper limb (UP) spasticity after brain injury results in a clinical benefit regarding rigidity, pain, disability, quality of life (QoL) over time for these patients in comparison to the standard 3 months fixed intervals, without a rise in the frequency of adverse reactions.

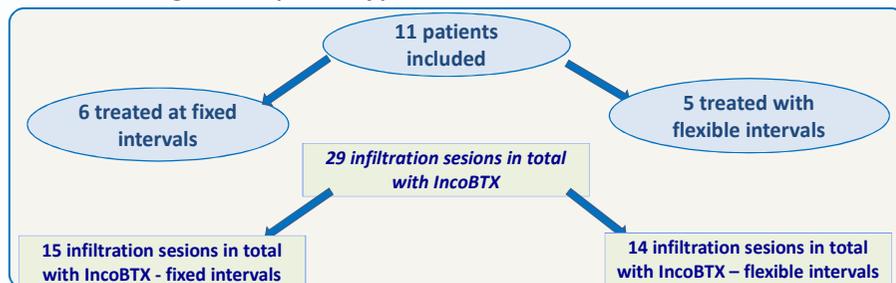
## METHODS

The review included 11 patients (60.2±9.1 years, 6 male and 5 female) with UL spasticity due to cerebral lesions and a Modified Ashworth Score (MAS) ≥ 2 who received IncoBTXA injections (Dec 2015–Jun 2016). Outcomes, assessed monthly post injection, included MAS, Barthel scale, Functional Independence Measure and Functional Ambulation Category, pain (Visual Analogue Scale; VAS), QoL (EuroQoL-5D) and Goal Attainment Scale (GAS). The disposition of subjects regarding treatment intervals is presented in Figure 1.

Table 1.- Demographic and other baseline characteristics

Baseline disease characteristics	Patients (N=11)
Causes of spasticity, n (%)	
<b>STROKE</b>	<b>10</b>
Ischaemic stroke	4
Haemorrhagic stroke	6
<b>OTHER CAUSES</b>	<b>1</b>
Brain tumour	1
Median time (range) since event leading to spasticity to first infiltration, months	23.8 (±41.7)
Median time (range) since start rehabilitation to first infiltration, months	4.9 (±4.2)

Figure 1.- Disposition of patients and administration intervals



## RESULTS

The causes of spasticity of patients included are presented in Table 1. Six patients received toxin injections (TI) at fixed 3-month treatment intervals, with a mean dose of 150U and a trend to increase for subsequent TI. Five patients received TI with flexible intervals (6–8 weeks), with a mean dose of 200U and a trend to decrease for subsequent injections. A mean of 4 muscle groups were injected in both groups. Patients with fixed TI received 2.5 (±0.6) infiltrations and patients with flexible TI received a mean of 2.8 (±0.8) infiltrations. Treatment improved muscle tone, functional scales and QoL without significant differences between flexible and fixed intervals. Pain (VAS) (Table 2), range of movement and ability to perform personal hygiene activities (GAS) were better controlled with flexible TI than fixed TI (Table 3). No treatment-related adverse effects were reported.

Table 2.- Changes with respect to Baseline

Changes respect to baseline	Fixed Intervals	Flexible Intervals
MAS	- 1.3	- 1.2
FAC Scale	+ 0.83	+ 1.2
FIM Scale	+ 8.67	+ 11.0
Barthel Scale	+ 16.67	+ 12.0
VAS Scale	- 1.2	- 3.2

Table 3.- Results in Goal Achievement Scale (GAS)

GAS: Achievement of Treatment Goals	Fixed Intervals N=6	Flexible Intervals N=5
<b>GAS: Pain</b>		
Achieved as expected	3 (50.0%)	2 (40.0%)
Achieved better than expected	3 (50.0%)	3 (60.0%)
<b>GAS: Range of Motion</b>		
Achieved as expected	2 (33.3%)	0 (0.0%)
Achieved better than expected	4 (66.7%)	5 (100.0%)
<b>GAS: Hygiene</b>		
Achieved as expected	3 (50.0%)	0 (0.0%)
Achieved better than expected	3 (50.0%)	5 (100.0%)

## CONCLUSIONS

The possibility to reduce the time between infiltrations is due to the pharmacologic properties of IncoBTXA, which is free from complexing proteins. Data from this small case series were suggestive of a trend towards an increased benefit for control level of pain, range of movement and ability to perform personal hygiene activities of IncoBTXA treatment regimens with flexible treatment intervals compared to fixed 3-month intervals for upper limb spasticity. Infiltrations administered at flexible intervals were well tolerated by patients and modulated the spasticity satisfactorily, allowing a personalized treatment according to patient needs. Nevertheless, further controlled studies in a larger population are required to verify these benefits.

1. Summary of Product Characteristics Xeomin® 2016
2. Truong D et al. Sustained efficacy and safety of repeated incobotulinumtoxinA (Xeomin®) injections in blepharospasm. J Neural Transm. 2013;120(9):1345-53
3. Evidente V et al. A randomized, double-blind study of repeated incobotulinumtoxinA (Xeomin) in cervical dystonia J Neur Trans. 2013;120:1699-1707