FLEXIBLE INTERVALS FOR BOTULINUM TOXIN A INJECTIONS IN DISABLING SPASTICITY

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INTRODUCTION AND OBJECTIVES

- Therapy with incobotulinumtoxinA has demonstrated good clinical efficacy and tolerability in cervical dystonia when injected in flexible intervals between 6 and 20 weeks, in doses up to 240 U. There is not much information about its use at flexible shortened intervals and high doses in adult spasticity. We present here 3 related clinical cases.

METHODS

Case 1:

- A 38-year-old woman (images a and b) who suffered an ischemic stroke in November 2014 resulting in severe equinovarus foot, wrist flexion deformity, and clenched fist, with a functional ambulatory category (FAC) of 1 and modified Rankin Scale (mRS) score of 4. Therapeutic goals: gait training wearing an ankle-foot orthosis (AFO) and adaptation of a hand-wrist orthosis. First botulinum toxin A injection in June 2015: abobotulinumtoxinA 1350 U (upper limb [UL] 550 U/ lower limb [LL] 800 U). Due to limited efficacy and short-lasting effect, it was impossible to adapt a solid plastic AFO to walk. A second injection was performed in October 2015: abobotulinumtoxinA 1425 U (UL 675 U/ LL 750 U). Another AFO was adapted with success, but a disabling striatal toe caused discomfort during walking. A third injection, this time of incobotulinumtoxinA 600 U (UL 250 U/LL 350 U) was performed 8 weeks later. Both goals were achieved: independent gait with cane at level surfaces (FAC 4; mRS 3) and comfortable wrist orthosis wearing all day.

Image *a*

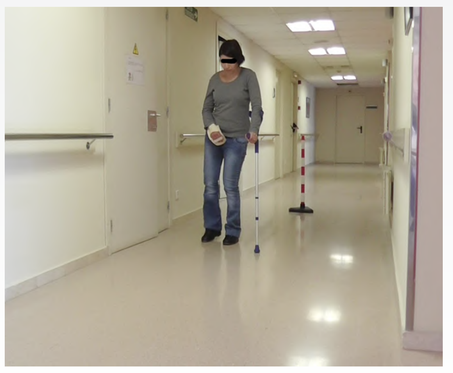
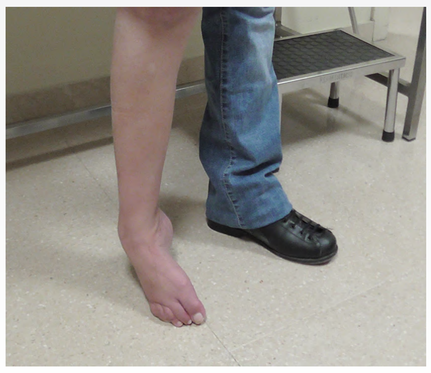


Image *b*



Case 1

	18-jun-2015	09-Oct-2015	07-Dec2015
Flexor carpi radialis	150	150	50
Flexor carpi ulnaris	150	150	50
Flexor digitotum superficialis		75	50
Brachioradialis	150		
Biceps brachii		150	
Pectoralis major	150	100	
Adductor pollicis		50	
Flexor pollicis brevis			50
Flexor pollicis longus			25
Extensor hallucis longus	150	50	50
Gastrocnemius	250	200	125
Soleus	150	200	100
Tibialis posterior	200	200	75
Tibialis anterior	150	100	25
Total dose	1350 U Abobotulinum toxin	1425 U Abobotulinum toxin	600 U Incobotulinum toxin
Disability	FAC 1 mRS 4	FAC 2 mRS 4	FAC 3 mRS 4
Goals for injection	Gait training Orthosis adaptation	Gait training Orthosis adaptation	Gait training Striatal toe

Case 2:

- A 52-year-old man who suffered severe traumatic brain injury in June 2015 was evaluated for right spastic hemiplegia in February 2016. The initial score of the Glasgow Coma Scale was 3. A brain MRI showed a type III diffuse axonal injury. Coma duration was 1 month. He was dependent for transfers, dressing, and toileting hygiene; needed aid for standing; and was unable to walk (FAC 0). The first incobotulinumtoxinA injection of 300 U dose was administered in the right UL to treat associated reaction in transfers and standing and to facilitate dressing. These goals were achieved, and he was able to pass from sitting to standing by himself and to walking with assistance (FAC 1). Twelve weeks later, striatal toe and claw toe limited gait training wearing an AFO, and upper-limb–associated reaction increased again. A second incobotulinumtoxinA injection of 580 U (UL 250 U/LL 330 U) was performed, with goals centered on gait retraining and AFO adaptation. On follow-up visit, orthotic tolerability and comfort in assisted walking improved.

Case 2

	16-Feb-2016	10-May-2016	12-Jul-2016
Flexor digitorum superficialis	35	50	
Flexor digitorum profundus	25	20	
Pronator teres	25	25	
Brachialis	75	50	50
Brachioradialis	50	50	50
Biceps brachii	90	50	50
Pectoralis major			50
Latissimus dorsi			35
Teres major			25
Extensor hallucis longus		50	35
Flexor digitorum longus		50	50
Flexor hallucis longus			50
Gastrocnemius medialis		75	
Gastrocnemius lateralis		55	
Soleus		80	
Incobotulinum toxin (total dose)	300 U	580 U	400 U
Disability	FAC 0	FAC1	FAC2
Goals for injection	Upper limb associated reaction Easy dressing	Upper limb associated reaction Gait training	Upper limb associated reaction Gait training

Case 3:

- A 50-year-old woman with cerebral palsy (image c) spastic dystonic, mixed tone Gross Motor Function Classification System (GMFCS) level IV, Manual Ability Classification System (MACS) level III was evaluated for pain in her left arm. She showed a flexed elbow dystonic posture bilaterally. The last onabotulinumtoxinA injection of 200 U she received was in July 2015. IncobotulinumtoxinA 300 U was injected for arm pain (50 U right UL/250 U left UL) in December 2015. Eleven weeks later, partial pain relief was obtained. A second 300-U incobotulinumtoxinA injection was administered to the left UL. On follow-up visit, the pain remained controlled, and elbow posture allowed relaxed arm position on armrest.

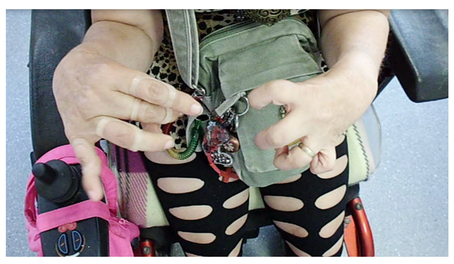


Image *c*

Case 3

	02- dec-2015	18-Feb-2016
Flexor carpi radialis	R 25	L 50
Flexor carpi ulnaris	L 50	
Flexor digitotum superficialis	L 50	
Flexor digitorum profundus	R 25	
Brachialis	L 50	L 100
Brachioradialis	L 50	L 50
Biceps brachii	L 50	L 100
Incobotulinum toxin (total dose)	300 U	300 U
Disability	GMFCS IV	GMFCS IV
Goals for injection	Pain	Pain

CONCLUSIONS

- In disabling spasticity, when there are evolving or functional goals to achieve, botulinum toxin A injections in shorter intervals than 3 months could be a useful strategy to achieve these goals.

REFERENCES

- Troung DT et al. Sustained efficacy and safety of repeated incobotulinum toxin A (Xeomin) injection in blefarospasm. *J Neural Transm*, 2013
- Evidente VGH et al. A randomized, double-blind study of repeated incobotulinum toxin A (Xeomin) in cervical distonia. *J Neural Transm*, 2013