ASSESSMENT OF THE EFFECT OF INCOBOTULINUMTOXINA ON MUSCLE TONE IN CHILDREN WITH SPASTIC DIPLEGIC OR TETRAPLEGIC CEREBRAL PALSY

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Introduction

Cerebral palsy (CP) is a heterogeneous group of non-progressive neurological disorders caused by damage to either the fetal or the infant brain, affecting the development of posture and movement. CP is the most common cause of physical disability in children, affecting 2.5 children for every1000 children being born. CP causes variances in the level of motor function, from ambulatory children to nonambulatory children that depend on full-time assistance (1). One of the most common musculoskeletal problems caused by CP in children is spasticity. Botulinum toxin therapy is considered a safe and effective treatment for the reduction of muscle tone in children with CP in the hands of experienced injectors (2). We present our experience with incobotulinumtoxinA (IncoBoNTA, Xeomin®) on muscular tone in children with spastic diplegic or tetraplegic CP.

Objectives

The objective of this work is to provide our experience on the tolerability and effectiveness of IncoBoNTA (Xeomin®), for lower-limb spasticity treatment in children with diplegic or tetraplegic CP.

Methods

This retrospective chart review included 11 patients with CP. Seven children had spastic quadriplegic CP and 4 had spastic diplegic CP. They received bilateral intramuscular injections of IncoBoNTA, mainly in lower limbs, performed under sedation or anesthesia. Ultrasound was used to guide injection as it provides rapid and reliable identification of target muscles, even deep-seated ones such as the iliopsoas (3, 4). Also, there is good acceptance of the technique in young children and in sedated patients (5). Doses and muscles injected were registered. Modified Ashworth Scale (MAS) was used for grading muscles spasm. MAS is simple and reproducible in the assessment of muscle spasticity. Assessments were performed before and 6 to 8 weeks after IncoBoNTA injections. A telephone contact was made 1 week after injections. Wilcoxon paired simple test was used for the statistical analysis.

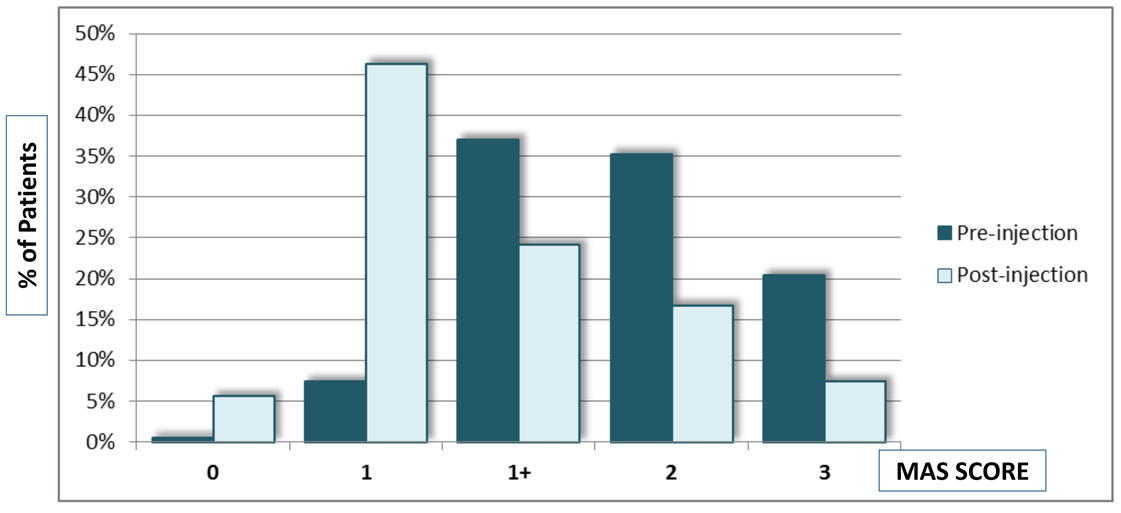
Table 1: Mean IncoBoNTA doses (U) injected in the different muscles

Muscles	Mean doses U (DE) / muscle
Iliopsoas	48,3 (4,1)
Adductors	46,0 (5,5)
Hamstrings	50,5 (9,6)
Gastrocnemius	40,8 (21,5)

Results

Mean age (standard deviation [SD]) was 7.9 (3.2) years. The mean (SD) dose per muscle was 47.0 (12.0) IncoBoNTA units. A total of 54 muscles were injected, representing a mean of 4.9 muscles/patient. The muscles most frequently injected were hamstrings in 10, gastrocnemius and iliopsoas in 6, and adductors in 5 patients, respectively. The mean total dose per patient was 230.9 (66.7) U. Table 1 shows the mean dose (SD) injected in each muscle. An improvement in muscle tone was observed in 75.9% of injected muscles, with a mean reduction of -1.0 (95% confidence interval: -1.1-0.7; P<0,001) points in MAS 6-8 weeks after treatment. The reductions in MAS score were as follows: Before injection, 7.4% of muscles had a score of 1, 37.0% of 1+, 35.2% of 2 and 20.4% of 3. Six-eight weeks after injection 5.6% had a score of 0, 46.3% of 1, 24.1% of 1+, 16.7% of 2 and 7.4% of 3 (Figure 1). No adverse effects were reported.

Figure 1: Mean MAS Score before and 6-8 weeks after IncoBoNTA



Conclusions

These results suggest that in children with spastic diplegia and quadriplegia, IncoBoNTA is effective and well tolerated at the doses used for the reduction of muscular tone and spasticity. The improved purity and low antigenicity of IncoBoNTA may be particularly important for the treatment of children with more severe hyperactivity conditions.

References

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