

ANTISPASMODIC MEDICATIONS IN TREATMENT CEREBRAL PALSY IN CHILDREN



NEUROLOGY DEPARTMENT

DEFINITION

- *Cerebral palsy (CP) is an umbrella term encompassing a group of non-progressive non-contagious motor conditions that cause physical disability in human development, chiefly in the various areas of body movement.*

CALPES

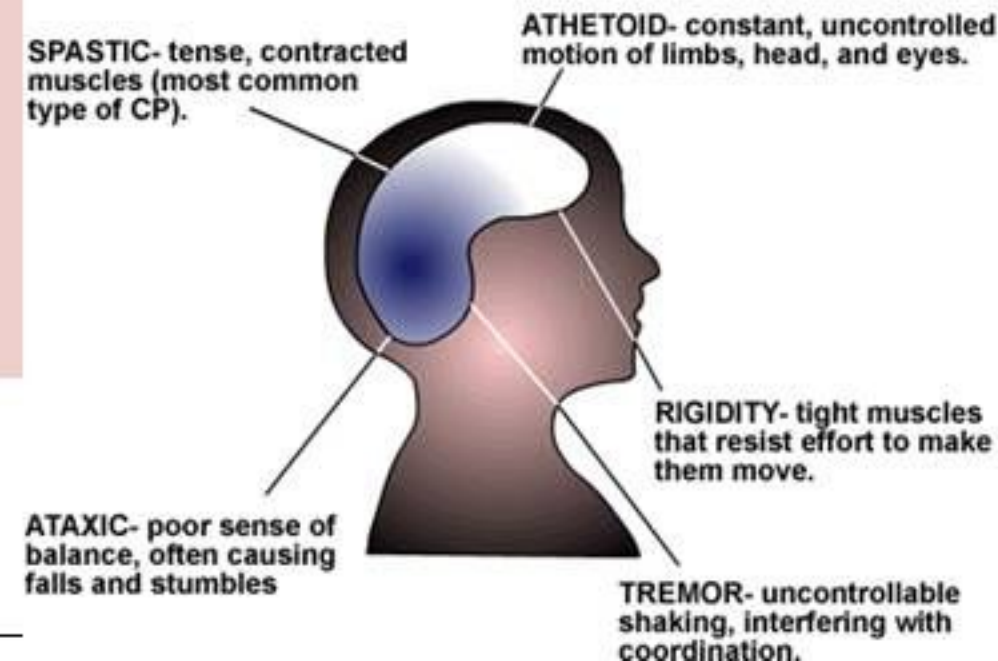
Damage to the motor control centers of the developing brain and can occur during :

- 1) Pregnancy
- 2) During childbirth or
- 3) After birth up to about the age of three.

CEREBRAL PALSY

SPASTIC	ATAXIC	ATHETOID
<ul style="list-style-type: none"> 80% of all cases Hypertonic and neuromuscular mobility impairment Neuron lesion in the brain: corticospinal tract or the motor cortex. 	<ul style="list-style-type: none"> 10% of all cases Motor skills might be affected, as well as balance, especially while walking. Damage to the cerebellum 	<ul style="list-style-type: none"> 10% of all cases Mixed muscle tone both hypertonia and hypotonia

TYPES OF CEREBRAL PALSY



SPINA BIL PARALYSIS

ARM AND LEG ON ONE SIDE (HEMIPLEGIC)

arm bent; hand spastic or floppy, often of little use

this side completely or almost normal

She walks on tiptoe or outside of foot on affected side.



BOTH LEGS ONLY (PARAPLEGIC) or with slight involvement elsewhere (DIPLEGIC)

upper body usually normal or with very minor signs

Child may develop contractures of ankles and feet.



BOTH ARMS AND BOTH LEGS (QUADRIPLEGIC)

When he walks, his arms, head, and even his mouth may twist strangely.

Children with all 4 limbs affected often have such severe brain damage that they never are able to walk.

The knees press together.

legs and feet turned inward



TREATMENT

- *Physical therapy*
- *Antispasmodic medications: botox, baclofen*
- *Neurosurgery known as a selective dorsal rhizotomy (SDR)*

INTRODUCTION OF THIS REVIEW

- Quality Standards Subcommittee of the American Academy of Neurology and the Practice Committee of the Child Neurology Society, Delgado M.R., Kintz D., Aisen M., Ashworth S., Fehlings DL, McLaughlin J., Morrison LA, Prasher MW, Tilton A, Vargas-Adams J. Practice parameter: pharmacologic treatment of spasticity in children and adolescents with cerebral palsy (an evidence-based review): report of the Quality Standards Subcommittee of the American Academy of Neurology and the Practice Committee of the Child Neurology Society. Neurology. 2010 Jan 26;74(4):336-43.
- A multidisciplinary panel systematically reviewed relevant literature from 1966 to July 2008.
- A total of 978 abstracts were initially found. From these, 528 were identified as potentially pertinent and reviewed in full. Finally, 218 articles were selected that fulfilled the inclusion/exclusion criteria.

BOPTIFNUM TOLINA

Treatment of localized or segmental spasticity.

- *A total of 148 studies using BoNT-A to reduce spasticity in children with CP met eligibility criteria.*
- *Five of these studies assessed the effect of BoNT-A in the upper extremity; the rest assessed only the lower extremity.*
- *A total of 573 children received BoNT-A. The majority of the studies included children as young as 2 years of age. Spasticity was measured using the AS or the MAS in 13 of the 20 studies.*

BOPILENMOLIN-A

- *Adverse events.* Specific adverse events (AEs) were reported in 17 studies (table e-1). All were transient and did not require hospitalization. The most common AEs were localized pain, excessive weakness, unsteadiness and increased falls, and fatigue. Urinary incontinence was reported in 5 patients and dysphagia in 2 patients. No deaths were reported.

BOPTIFNUM TOLIN-A

Conclusions.

- For children with CP, BoNT-A is established as an effective treatment to reduce spasticity in the upper and lower extremities (Class I and II evidence), but there is conflicting evidence regarding functional improvement.
- The available evidence suggests that BoNT-A is generally safe in children with CP. However, severe generalized weakness may occur.

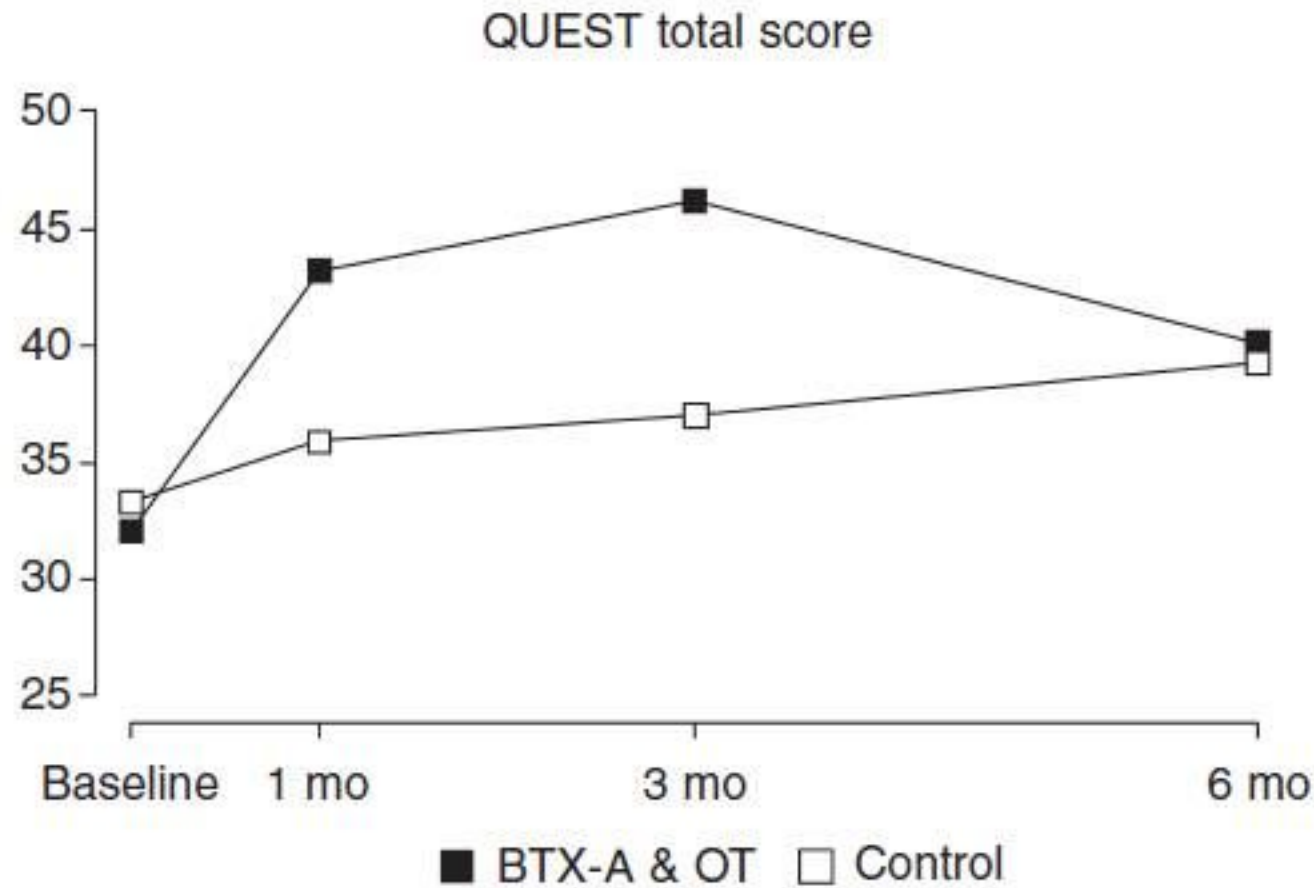


Figure 1: *QUEST change over 6 months. QUEST, Quality of Upper Extremity Skills Test; BTX-A, botulinum toxin A; OT, occupational therapy.*

Louis H, Novak F, Conick A. Low-dose high-concentration localized botulinum toxin A improves upper limb movement and function in children with hemiplegic cerebral palsy. Dev Med Child Neurol. 2006 Mar;48(3) 170-5.

BOPILEN-AMTOLIN-A

Recommendations:

- *For localized/segmental spasticity in the upper and lower extremities of children with CP that warrants treatment, BoNT-A should be offered as an effective and generally safe treatment (Level A). There is insufficient evidence to support or refute the use of BoNT-A to improve motor function in this population (Level U).*
- *There is insufficient evidence to support or refute the use of BoNT-B, phenol, and alcohol injections as a treatment for spasticity in children with spastic CP (Level U).*

BACLOFEN

Treatment of generalized spasticity

- *Two Class II studies 7, and 1 Class IV study met selection criteria. The Class II studies showed conflicting results. A double-blind crossover trial in 20 children 2–16 years old receiving a dose of 10–60 mg/day found a reduction in spasticity by means of the AI ($p < 0.001$)*

BACLOFEN

Conclusions:

- *There is conflicting Class II evidence regarding the effectiveness of oral baclofen in reducing spasticity and improving function in children with CP.*
- *Systemic toxicity was found in some patients.*

BACLOFEN

- *Recommendation:*

There is insufficient evidence to support or refute the use of oral baclofen for the treatment of spasticity or to improve motor function in children with CP (Level U).

DIAZEPAM

Treatment of generalized spasticity

- *Regarding diazepam treatment, we identified 1 Class I study, 2 Class II studies, 1 Class III study, and 1 Class IV study (table e-2). The doses and regimens used varied from 0.5 mg a day to 5 mg TID.*

DIAZEPAM

Conclusions:

- *Diazepam is probably effective for the short-term treatment of spasticity in children with CP (1 Class I study and 1 Class II study).*
- *None of the studies formally addressed whether diazepam improved motor function. Ataxia and drowsiness were identified in the side-effect profile of most studies*

DIAZEPAM

Recommendations:

- *Diazepam should be considered as a short-term antispasticity treatment in children with CP (Level B).*
- *There is insufficient evidence to support or refute the use of diazepam to improve motor function in this population (Level U).*

R&F F&F R&F R&F N&S

- <http://www.neurology.org/content/74/4/335.full.html>

THANKS FOR YOUR ATTENTION

