Research Article

Evaluation of Botulinum toxin (BT) injection in patients with spasticity

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Abstract
Introduction: Hypertonia, is defined as resistance greater than expected to lengthening of a relaxed muscle is observed in a variety of neurological conditions. **Aim of the work:** This study aims at studying spasticity and the role of Botulinum toxin injection in its treatment and improvement of function, in Neurology out-patient clinic in Minia University hospital.
Patients and Methods: This prospective study was approved by Medical Research Ethical Committee. The study has been held in the period from October 2016 to July 2017. **Results:** The results will be presented as following: Demographic data: (Age and Sex distribution). Clinical data of selected patients: (Diagnoses, distribution of spasticity and distribution of injected muscles). **Discussion:** Spasticity is a motor disorder characterized by a velocity-dependent increase in tonic stretch reflexes (muscle tone) with exaggerated tendon jerks, resulting from hyper-excitability of the stretch reflex, as one component of the upper motor neuron syndrome.**Summary:** The aim of this study was to study spasticity and the role of Botulinum toxin injection in its treatment and improvement of function, in Neurology out-patient clinic in Minia University hospital.
KeyWords: ADL: Activity of daily living, BT E: Botulinum toxin Type E, FCR: Flexor carpi radialis

Introduction
Hypertonia, is defined as resistance greater than expected to lengthening of a relaxed muscle is observed in a variety of neurological conditions (Calame and Singer, 2015).

Hypertonia results from rheologic changes within the muscle, as well as muscle overactivity due to disordered neural control (Singer et al., 2001).

Spasticity is defined as:
"a motor disorder characterised by a velocity-dependent increase in tonic stretch reflexes (muscle tone) with exaggerated tendon jerks, resulting from hyper excitability of the stretch reflex, as one component of upper motor neuron syndrome" (Lance et al., 1980).

Although the exact incidence of spasticity is unknown, it is likely that it affects more than half a million people in the United States alone every year, and more than 12 million people worldwide. Following stroke, approximately 65% of individuals develop spasticity (McGuire and Harvey, 1999).

Inspite of the improvement in the acute stroke management, which means that mortality is reduced, the recovery of post stroke spasticity has not changed much for decades and its implications clinically are still poorly described (Mally et al., 2008).

Various techniques for the management of spasticity have been proposed, including positioning, cryotherapy, splinting and casting, biofeedback, electrical stimulation, and education on causative factors, most of which have little evidence to support their application (Barnes, 2001).

Aim of the work
This study aims at studying spasticity and the role of Botulinum toxin injection in its treatment and improvement of function, in Neurology out-patient clinic in Minia University hospital.

Patients and Methods

This prospective study was approved by Medical Research Ethical Committee. The study has been held in the period from October 2016 to July 2017.

Patients:

Thirty four patients (15 males, 19 females) were included. Their age ranges from 6 to 62 years suffering from upper motor neuron syndrome (UMNS) based on clinical and radiological data. They were recruited from the neuropsychiatric outpatient clinic in Minia University hospital.

The patients diagnoses include (stroke, cerebral palsy (CP), hereditary spastic paraparesis (HPS) and miscellaneous (multiple sclerosis "MS"–post encephalitic).

Inclusion criteria:

- Patients with spasticity.
- Age > 5 years
- Both sexes.

Exclusion criteria:

1. Rapidly progressive disorder.
2. Age < 5 years.
3. Extrapyramidal movements.

Age and duration of illness

Table: Age and duration of illness

	Mean±SD	Minimum	Maximum
Age	18.69±15.35	3.5	62
Duration of illness	9.91±7.45	0.5	28

Results

The results will be presented as following:

Demographic data: (Age and Sex distribution)

Clinical data of selected patients: (Diagnoses, distribution of spasticity and distribution of injected muscles)

Data analysis with the following scales:

- Modified Ashworth Scale
- Barthel Index
- Cochin Scale

Comparison of improvement in spasticity as following:

- Males versus females
- Adults versus Children
- Upper limb versus Lower limb

Hereditary spastic paraparesis versus Cerebral palsy

1- Demographic data:

Thirty four patients (15 males and 19 females)with mean age of 18.69 (±15.35) years, ranging between 6 to 62 years old were included. The duration of illness ranges from 6 months to 28 years.

Discussion

Spasticity is a motor disorder characterized by a velocity-dependent increase in tonic stretch reflexes (muscle tone) with exaggerated tendon jerks, resulting from hyper-excitability of the stretch reflex, as one component of the upper motor neuron syndrome.

Various techniques for the management of spasticity have been proposed, including positioning, cryotherapy and splinting, most of which have little evidence to support their application. Medical management via pharmacological agents, however, has been implemented and more extensively researched, one of these is Botulinum toxin (BTX).

Summary

The aim of this study was to study spasticity and the role of Botulinum toxin injection in its treatment and improvement of function, in Neurology out-patient clinic in Minia University hospital.

The patients diagnoses were including (stroke, cerebral palsy (CP), hereditary spastic paraparesis (HPS) and miscellaneous (multiple sclerosis "MS" – post encephalitic).

Thirty four patients (15 males, 19 females) were included. Their age ranges from 6 to 62 years suffering from upper motor neuron syndrome (UMNS) based on clinical and radiological data. They were recruited from the neuropsychiatric outpatient clinic in Minia University hospital.

This prospective study was approved by Medical Research Ethical Committee. The study has been held in the period from October 2016 to July 2017.

We found a statistically significant functional improvement after botulinum toxin injection in all cases of different diagnoses.

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