Usefulness of botulinum toxin A in complex regional pain syndrome

T. Vogt, F. Birklein, C. Geber
University Medical Center, Mainz, Germany
E-mail address: thomas.vogt@unimedizin-mainz.de (T. Vogt).

**Purpose of study:** To demonstrate the effect of botulinum neurotoxin A (BoNT/A) in secondary dystonia due to complex regional pain syndrome (CRPS). The CRPS is determined by the criteria of the IASP and includes sensory, vasomotor and sudomotor /edema symptoms. However, not rarely, motor dysfunction like dystonia and a restricted range of motion are found additionally, which are not part of the IASP criteria. These movement disorders are generally difficult to manage and add considerably to the disease burden. There is evidence that intrathecal baclofen might be efficient in secondary dystonia, which, however, requires an invasive procedure. We present a mix of cases, where repetitive injections with BoNT/A could lower muscle tone, improve the range of motion and reduce the dosage of analgesics.

**Methods used:** The case reports of six patients who developed movement disorders in the course of CRPS are presented (1 facial dyskinesia, 3 dystonia of the upper limb and 2 with dystonia of the lower limb). Four were CRPS type I (without obvious nerve lesion). Patients were repetitively treated with injections of BoNT/A. The dosage depended on the muscles involved, and the number of injections differed enormously.

**Summary of results:** Injection of BoNT/A reduced muscle tone and relieved pain in 5/6 patients, lowering the dosage of analgesic drugs. It was, however, not possible to restore motor function completely.

**Conclusions:** BoNT/A might be partially effective in secondary dystonia in CRPS and represents a non-invasive alternative that should be tested before intrathecal baclofen is considered.

http://dx.doi.org/10.1016/j.toxicon.2012.07.167

Electroneurographic pilot study with healthy volunteers to determine the efficacy, safety and duration of action of TrapoX, a potency-optimised botulinum toxin type A-based mutant

A. Rummel a, T. Fiedler b, R. Karatschäu b, C. Clewēng b, H. Bigalke a, K. Wohlfarth b
a Institut für Toxikologie, Medizinische Hochschule Hannover, Hannover, Germany
b Klinik für Neurologie, Berufsgenossenschaftlichen Kliniken Bergmannstrost, Halle, Germany
E-mail address: kai.wohlfarth@bergmannstrost.com (K. Wohlfarth).

**Purpose of study:** This dose-ranging, electroneurographic pilot study investigated the dose equivalence (efficacy), diffusion characteristics (spread), safety and duration of action of TrapoX, a potency-optimised botulinum toxin (BoNT/A)-based mutant, versus incobotulinumtoxinA, in four healthy volunteers.

**Methods used:** Single injection of different doses (10 U, 3 U, 1 U) of botulinum neurotoxin A mutant (TrapoX) into the extensor digitorum brevis (EDB) of the healthy male authors of this study. Measurement of latency and amplitude of compound muscle action potential (CMAP) in the target muscle (EDB), abductor hallucis and abductor digitii minimi over a period of 18 month. Comparison of dose-response-curve data versus data from Wohlfarth et. al. 2007 that employed onabotulinumtoxinA and incobotulinumtoxinA.

**Summary of results:** TrapoX displayed a 3-fold higher potency in the mouse phrenic nerve hemidiaphragm assay than incobotulinumtoxinA. The onset of reduction in CMAP amplitude in the target muscle (EDB) occurred within one day after injection of TrapoX and reached its maximum around day seven. The CMAP amplitude decrease was dose-dependent with effects persisting more than 12 months in the case of the 10 U TrapoX dose. The 10 U and 3 U TrapoX doses displayed higher reductions in CMAP amplitude than the 32 U and 16 U doses of incobotulinumtoxinA,