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Time to onset and duration of botulinum toxin efficacy in dystonia and sialorrhea

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Introduction: The botulinum neurotoxin (BoNT) is a valuable option in neurological patients. Time-to-onset and duration of BoNT efficacy may vary according to doses, type of toxin, injection sites, but only a few studies aimed at analyzing these aspects.

Objectives: We aimed to analyze time-to-onset and duration of BoNT efficacy in different movement disorders and the impact of different demographic and clinical features.

Methods: We enrolled 193 patients treated with BoNT for the following neurological conditions: blepharospasm, cervical dystonia, facial hemispasm, oromandibular dystonia, focal limb dystonia, sialorrhea. Patients were interviewed and answers analyzed by Kruskall-Wallis, Spearman correlation, and multivariate linear regression tests. Clinical and demographic factors taken into consideration in the model were: dosages and types of botulinum toxin type A, sex, age, and years of treatment. Dosages were compared with the assumption that 1U of OnabotulinumtoxinA corresponds to 1U of IncobotulinumtoxinA and 3U of AbobotulinumtoxinA.

Results: Overall mean time-to-onset of efficacy was 6.7 days ± 5 (range 1-30) and duration of treatment 78.8 days ± 29.4 (range 15-180). We found no significant difference in time-to-onset and duration of BoNT efficacy between different neurological diseases. Both time-to-onset and duration of efficacy were correlated to BoNT doses ($p=0.007$ and $p=0.02$). Multiple regression analysis demonstrated that sex, years of toxin treatment, type of toxin, age, and doses explained 73% of the variability of time-to-onset, with doses (beta: 0.154; $p=0,086$) and age (beta: -0.278; $p=0,001$) being the significant factors; the same variables explained 53% of the variability of the BoNT duration of efficacy, with doses (beta: -0.319; $p<0,001$) and type of toxin (beta: 0.236; $p=0,018$) being the most significant factors.

Conclusions: Our findings suggest that age, type of toxin, and especially doses may account for the variability of BoNT efficacy in terms of time-to-onset and duration.