Similarly, a significantly higher proportion of patients demonstrated significant clinical benefit, according to PGA scale, was also observed.

Conclusions

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CO36-007-e

Muscle structure assessment after botulinum neurotoxin A injection. Literature review

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Keywords: Spastic muscle; Botulinum neurotoxin; Atrophy; Stiffness; Literature review

Background. Botulinum neurotoxin A manages spasticity disorders in neurological central diseases. But this treatment may induce muscular modifications. Methods. We made a literature review in order to explore the structural and passive biomechanical properties of the musculotendinous unit after injections in healthy animal muscles and in spastic human muscles, as well as the methods of evaluation of these properties.

Results. Twenty articles have been selected. Histological analyses have been carried out especially on animals. A neurogenic atrophy systematically occurs. In humans, one year after a single injection, the histological recovery is incomplete. The passive biomechanical analysis of muscle stiffness shows on the short term, a modulus elastic decrease. In healthy animal muscles and in spastic human muscles, as well as the methods of evaluation of these properties.

Conclusions. Very little data exists. The muscle changes need to be taken into account when seeking functional improvement. The protocols are inconsistent. 2D US and Sonoelastometry should be developed in long term monitoring.

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OnabotulinumtoxinA improves spasticity related pain in post-stroke patients: Findings from a randomized controlled trial

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Keywords: Stroke; Spasticity; Pain; Rehabilitation; OnabotulinumtoxinA

Background. Patients with upper motor neuron syndrome often experience spasticity-related pain due to increased muscle tone and flexor/extensor spasms. Methods. A total of 274 post-stroke patients with upper and lower limb spasticity were randomized to OnabotulinumtoxinA (BOTOX®) + standard of care (SC) or saline + SC in the BOTOX® Economic Spasticity Trial’s double blind phase. Spasticity-related pain was measured using an 11-point pain numeric rating scale (0 to 10). Change in pain from baseline and proportion of patients with ≥30% improvement were compared between treatment groups using Wilcoxon rank-sum and chi² or Fisher’s exact tests.

Results. Patient’s mean age was 61 years (SD: 11.4); 41% were female. Of 273 patients that received treatment, 202 experienced baseline spasticity-related pain with the majority (64%) having pain intensity ≥4. Among patients with baseline pain, the mean change in pain at week 12 among OnabotulinumtoxinA + SC and saline + SC groups were –1.24 (95% CI: –1.8, –0.7) and –0.31 (–0.9, 0.3), respectively (P < 0.01). The proportion of patients with ≥30% improvement was 51% (37/73) for OnabotulinumtoxinA + SC versus 28% (18/65) for saline + SC (P < 0.01).

Conclusions. This is the first large RCT showing statistically significant and clinically meaningful improvement in spasticity-related pain syndromes from OnabotulinumtoxinA treatment.

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Central effects of botulinum neurotoxin A: Spinal plasticity in stroke patients after injection in ankle plantarflexors

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Keywords: Botulinum neurotoxin A; Reciprocal inhibition; Stroke Background. BoNT-A depresses recurrent inhibition of lumbar motoneurons likely due to its retrograde transportation. Because Renshaw cells control group Ia interneurons mediating reciprocal inhibition between antagonists, we tested whether this inhibition particularly affected after stroke could recover after BoNT-A.

Methods. Effect of posterior tibial nerve stimulation (PTN) on tibialis anterior electromyogram was investigated in 13 stroke patients during treadmill walking before and 1 month after BoNT-A injection.

Results. After injection, the PTN induced reciprocal facilitation in la motoneurons during all the swing phase was depressed at the beginning of swing and reversed into inhibition in midswing.