

Development of a Protocol for Treatment of Crocodile Tears Syndrome with Botulinum Toxin

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INTRODUCTION: Crocodile tears syndrome (CTS) is a synkinesis-type sequela seen after facial paralysis. CTS is characterized by hyperlachrymation while feeding.^{1,2} Botulinum toxin A (BTxA) has been used as a treatment for CTS patients. The BTxA mechanism of action in the lacrimal gland is the presynaptic blockade of acetylcholine release at cholinergic nerve endings, thereby reducing the stimulus on the gland activity. This mechanism is similar to that observed in the treatment of hyperhidrosis (sweat glands) and sialorrhea (salivary glands).³ The purpose of the present study was to determine the incidence of crocodile tears syndrome in patients with long-lasting facial paralysis, and to establish a treatment protocol with BTxA applied into the lacrimal gland.

MATERIALS AND METHODS: In a series of 405 patients with facial paralysis, 18 were diagnosed with CTS. Seventeen of them presented other synkinesis in the paralyzed side. They underwent a total of 31 BTxA applications to the lacrimal gland. Seven treatments were performed with a single percutaneous injection point, 13 with two percutaneous injection points and 11 received a single point into the lacrimal gland by direct vision (trans-conjunctival approach), after a slight eversion of the lateral portion of the upper eyelid with the patient looking inferonasally.⁴ The treatment success was assessed by the improvement of tearing reported by the patient: complete improvement of symptoms (grade 2), partial improvement (1), no improvement (0) and worsening of symptoms (-1).

RESULTS: An average of 2.28 units-volume of BTxA was used (1 unit-volume corresponds to 1U onabotulinumtoxinA or 2.5U abobotulinumtoxinA per 0.02ml of solution⁵). Trans-conjunctival approach presented a slightly non-significant better outcome (55% complete improvement, 45% partial improvement) than percutaneous approach (45% complete improvement, 50% partial improvement). One patient had mild ptosis (spontaneous recovery after 15 days) after percutaneous approach and one patient had severe ptosis after trans-conjunctival approach. Only one patient (percutaneous approach) reported no improvement of tearing. The patients who underwent both techniques in different sessions (n=3) reported a better result after trans-conjunctival injection.

CONCLUSION: This study determined CTS prevalence after facial palsy (4.44%). Treatment should balance improvement of symptoms avoiding side effects. We propose a protocol beginning with 2 units-volume of BTxA in the lacrimal gland through trans-conjunctival approach. Complementary transcutaneous points can be added, according to the patients' response.

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