Unilateral Double Eyelid Formation after Botulinum Toxin A Injection: A Case Report

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Summary: Botulinum toxin injection has been widely used for facial rejuvenation, with high rates of efficacy and patient satisfaction. In this article, we describe a reproducible phenomenon of unilateral double eyelid formation with the treatment of upper facial rhytides using botulinum toxin. A 38-year-old man was given onabotulinum toxin A injections in the frontal stria and glabellar lines. The procedure was repeated after 6 months. Unilateral double eyelids were noted twice on the right side about 7 days after each injection. The maintenance time for each procedure was about 1 month. The rhytides improved about 3 days after each injection and were maintained for about 4 months. No adverse effects were observed. This rare phenomenon could be due to the compensatory increased strength of the levator palpebrae superioris muscle and the anatomical structure of the patient’s right eyelid. (Plast Reconstr Surg Glob Open 2022;10:e3972; doi: 10.1097/GOX.0000000000003972; Published online 18 February 2022.)

CASE REPORT

A 38-year-old man presenting with moderate frontal lines and glabellar lines was treated with onabotulinum toxin A injections. The patient provided written informed consent to participate in the study. The patient had bilateral single eyelids. Preoperative examination showed moderate frontal stria and glabellar lines. The mobility of the levator palpebrae superiosis muscle was 5 mm. Lyophilized onabotulinum toxin A (100 Unit vial) was reconstituted with 2.0 mL of saline. Injection to the frontal stria was done 1.8 cm above the eyebrow. Subcutaneous injections were performed at six different points, with two units per point.

The injection dose for the glabellar lines was as follows: the injection dose was 2 units, 2 units, and 1 unit at three different points on each side (Fig. 1). The patient was treated with onabotulinum toxin A injections twice, with an interval of 6 months. Unilateral double eyelids appeared on the right side about 7 days after each injection, and single eyelids were recovered one month later (Fig. 1). Seven days after the injection, the mobility of the levator palpebrae superioris muscle was 6 mm. The rhytides improved about 3 days after each injection and were maintained for about 4 months. No adverse effects were observed.

DISCUSSION

Botulinum toxin type A injection is one of the most common cosmetic procedures globally. Botulinum toxin is produced by blocking the release of acetylcholine at the site of the motor endplate, leading to muscle paralysis and to correcting wrinkles and laxity. However, the excessive doses of the drug and its dispersion to other sites can cause adverse effects, which both interested individuals and doctors pay close attention to. Complications associated with botulinum toxin injection at the upper face include blepharoptosis, persistence of eyebrow asymmetry post-touch-up, eyebrow ptosis, diplopia, dry eyes, and eyelid edema. There is a rare and interesting phenomenon without adverse complications and discomfort. This phenomenon is thought to be related to the patient’s physiological structure. The first factor is dynamic. Patients were observed to have a habit of raising eyebrows when opening their eyes before injection, and causing the formation of more forehead lines. When the frontal muscle relaxed with onabotulinum toxin A injection, the muscle strength of the levator palpebrae superioris muscle was

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correspondingly increased. The second factor is anatomic. We observed that the soft tissue of the right upper eyelid was thinner than that of the left upper eyelid. Therefore, a fibrous structure connecting the aponeurosis of the levator palpebrae superioris muscle and the skin-orbicularis oculi muscle of the upper eyelid is more likely to exist. Before injection, due to the great strength of the frontalis muscle, it contracts and raises the eyebrow and the skin-orbicularis oculi muscle of the upper eyelid when the eyes are open. In addition, the function of the levator palpebrae superioris muscle is relatively weak; so it cannot form the fold of the upper eyelid when opening the eyes. After the injection, the upper eyelid skin and the orbicularis oculi muscle were no longer lifted, and the strength of the levator palpebrae superioris muscle was enhanced. The skin-orbicularis oculi muscle connected to the aponeurosis of the levator palpebrae superioris muscle is pulled, forming a double eyelid.

This case presented a rare phenomenon caused by botulinum toxin A injection in the upper face. It suggests that there is a synergistic effect between the frontalis muscle and the levator palpebrae superioris muscle. Whether it can be combined with botulinum toxin A injection to consolidate the effect in patients with mild blepharoptosis requires further verification. The Global Aesthetics Consensus Group recommendations demonstrate a paradigm shift toward neuromodulation rather than toward paralysis, including lower dosing for the upper face, more frequent combination treatment with hyaluronic acid fillers, and intracutaneous injection, which limits the depth and degree of action.5

**CONCLUSIONS**

Double eyelid formation is a rare phenomenon of botulinum toxin A injection for upper facial rejuvenation. The anatomical structure of the patients’ upper eyelids is a possible cause. The synergistic effect between the frontalis muscle and the levator palpebrae superioris muscle could also be the cause.

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