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CASE REPORT
Cosmetic

Periorbital Swellings Associated with Neurotoxin Injections

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Summary: Complications due to facial injectables such as neurotoxin injections can commonly occur and are underreported. Those complications may result from poor injection techniques, lack of proper knowledge about the anatomy, improper patient selection, and the use of counterfeit products. The lack of regulations, along with improper awareness, may jeopardize the quality of the aesthetic treatment provided to the patients. This case report helps in raising awareness about possible complications arising from the use of counterfeit products in the aesthetic industry.
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Botulinum toxin is a well-known drug produced by a gram-positive anaerobic bacterium called *Clostridium botulinum*.[1] This drug has several applications in medicine, both for therapeutic and cosmetic use. Those applications include treatment for hyperhidrosis,[2] strabismus,[3] acne,[4] rosacea,[5] open pores,[6] scars,[7] and many other conditions. Despite the benefits associated with those procedures, they may carry a risk of adverse effects, which can be local or systemic, depending on the dose, brand of neurotoxin, route of administration, and injection technique. The following case report presents a series of patients who developed a periorbital edema (eye swelling) that was associated with neurotoxin injections.

CASE 1

A female patient was referred to us for consultation after having a neurotoxin touch-up session with five units for the forehead wrinkles and lateral orbital wrinkles. There were no complications during the first session; however, after 1 week, when she went to have her second session, the "touch-up" session, she received two units just right above the eyebrow. She developed swelling and erythema at the injection points 3 hours after the procedure, and then the swelling started to increase in size the next day after treatment, extending to the cheeks. This swelling was not associated with hotness; however, she felt pain upon pressing on the swelled area. The doctor who referred the patient to us used a brand called Neuroxin. It is worth mentioning here that the doctor used an antiseptic to wipe the skin, all instruments were completely sterile, and the saline was free of preservatives.

We prescribed the following for the patient: antihistaminic Telefast, a single shot of dexamethasone intramuscular injection, and a 10-day taper of Solupred. A dose of 60 mg was prescribed on the first day, followed by 50 mg on the second day, 40 mg on the third day, 30 mg on the fourth day, 20 mg on the fifth day, 10 mg on the sixth day, 10 mg on the seventh day, 5 mg on the eighth day, and 5 mg on the tenth day. We also instructed the patient to do a lymphatic massage for her periorbital area and the whole face, to do warm compressions, and to blink frequently. The patient started to show marked improvement on the fourth day after the injection, with complete resolution thereafter (Fig. 1).

CASE 2

A male patient was referred to us with severe orbital swelling after having a neurotoxin injection for the forehead and glabellar wrinkles during a touch-up session. The swelling occurred the day after the touch-up session. It is worth mentioning that the patient did not develop any swelling after the first session. The neurotoxin dose given at the touch-up session was 10 units. The doctor who referred her patient to us used a brand called Xeomin. Our approach was to prescribe steroids to the patient; however, the patient refused to take any medications because he had liver and spleen malfunction. Therefore, we advised the patient to do warm compressions, to perform lymphatic massage, and to blink frequently. The patient showed complete resolution of the swelling after 2 days of following these instructions (Fig. 2).

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Fig. 1. Image showing the periorbital swelling on the next day after the neurotoxin touch-up session. Case 1 patient.

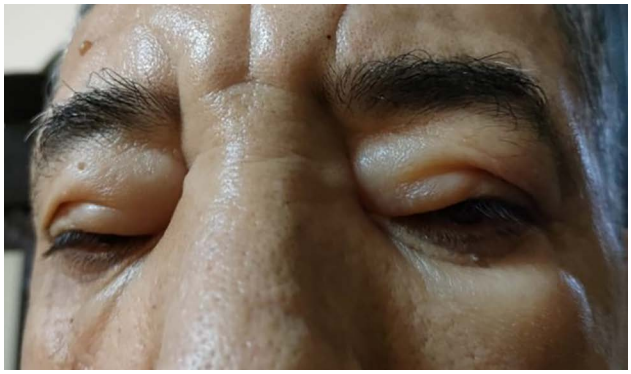

Fig. 2. Image showing the swelling on the next day after the neurotoxin touch-up session. Case 2 patient.

CASE 3

A female patient was referred to us for an online consultation with edema in her eyelids and nose after 2 hours of having a neurotoxin injection in her forehead, glabella, and lateral wrinkles of the eyebrow. She received a total dose of 20 units. The same patient had a neurotoxin injection 5 months before the session of concern and did not develop any complications from it. The doctor who injected her used a brand called Neuronox. We advised the patient to take a single shot of dexamethasone intramuscular injection, and she showed a complete resolution of the symptoms within 2 days of the steroid injection (Fig. 3).

DISCUSSION

Allergic reactions and complications after neurotoxin injection have been reported in the literature.[8–10] In our presented cases, there were three different scenarios. The first patient (case 1) used to receive neurotoxin injections for a long time and did not develop any serious

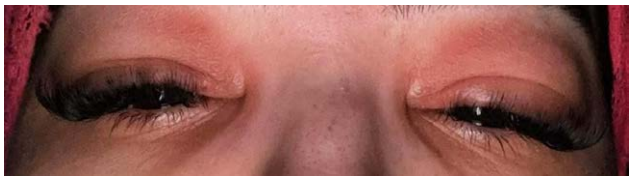

Fig. 3. Image showing the swelling at 3 hours after the neurotoxin injection. Case 3 patient.

complications. However, she experienced eye edema, which progressed to her cheeks upon a touch-up session with a brand called Neuroxin. We assumed that this could be due to a delayed allergy upon secondary sensitization to an unknown ingredient in the used vial, and that is why it responded well to the use of steroids.

The patient in case 2 also developed periorbital edema after a touch-up session using the brand Xeomin. We would suspect that this could be due to compromised lymphatic drainage because of an improper diagnosis of the patient and poor patient selection, as over-weakening of the muscles surrounding the eye could contribute to this condition during the touch-up session, especially because the patient showed a complete resolution of the condition without any medications. On the other hand, the patient in case 3 could have possibly developed a delayed hypersensitivity reaction to the brand used (Neuronox). It is worth mentioning that all the cases mentioned in this case series experienced periorbital edema during the touch-up session, which would highly suggest a scenario of T-cell-mediated allergy to produce cytokines that mediate inflammation upon secondary sensitization or compromised lymphatic drainage.[8,9]

We all know that the immune system is very complex, and that we cannot accurately predict how the body would respond to a certain material, and why a body chooses not to respond to a material upon primary exposure, but makes a marked response on secondary exposure. Furthermore, we noticed in some patients a delayed reaction to certain brands of neurotoxins such as Refinex, Botulax, and Neuroxin, which could be caused by a certain constituent in those vials. That is why we propose that the use of non-FDA-approved products (or products that did not receive CE approval in Europe, those that are not approved by the Korean Ministry of Food and Drug Safety and the National Medical Products Administration of China) and un-labeled products could put the patient at a great risk, especially when some of the constituents inside the vial are unknown and could trigger a negative immune response.

We strongly recommend raising awareness among clinicians and patients, where clinicians should always seek high-quality approved products that have been scientifically proven to provide safe and predictable results. On the other hand, patients should always do their research on which brands to trust and the clinician's experience and degree of education, and should seek treatments that provide quality results, not cheap treatments that can be easily afforded. Furthermore, we noticed that the selling process of neurotoxins and fillers could be unregulated

in some regions such as the Middle East, South Asia, and Africa. Therefore, healthcare providers must seek official distributors to guarantee the safety profile of the product.

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DISCLOSURE

The author has no financial interest to declare in relation to the content of this article.

PATIENT CONSENT

The patients provided written consent for the use of their images.

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