CASE REPORT OLGU SUNUMU

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An Iatrogenic Botulism Case After an Esthetic Use of Botulinum Toxin

Botulinum Toksininin Estetik Amaçlı Kullanımı Sonrası Oluşan İyatrojenik Botulizm Olgusu

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ABSTRACT Botulinum toxin is a highly reliable agent widely used in aesthetic dermatology for the treatment of mimic wrinkles such as glabellar wrinkles, forehead lines, and crow's feet. Inappropriate doses or the use of unlicensed products may lead to iatrogenic botulism. This may cause serious findings. The clinical picture is usually characterized by symptoms related to neuromuscular transmission disorders such as ptosis, difficulty swallowing, speech disorders, and generalized muscle weakness. In aesthetic applications, it is of great importance that botulinum toxin injections are performed by experts in the field and with reliable products. Since systemic toxin spread findings, although rare, may be life-threatening, clinicians should be careful about this complication. Here, a case of iatrogenic botulism following the use of botulinum toxin for aesthetic purposes is presented.

Keywords: Botulism; botulinum toxins; type A; esthetics

ÖZET Botulinum toksin, estetik dermatolojide glabellar kırışıklıklar, alın çizgileri ve kazayağı gibi mimik kırışıklıklarının tedavisinde yaygın olarak kullanılan, güvenilirliği yüksek bir ajandır. Uygun olmayan dozlar veya ruhsatsız ürünlerin kullanımı, iyatrojenik botulizme yol açabilir. Bu durum, ciddi bulgulara neden olabilir. Klinik tablo genellikle pitozis, yutma güçlüğü, konuşma bozukluğu ve yaygın kas güçsüzlüğü gibi nöromusküler iletim bozukluğuna bağlı semptomlarla karakterizedir. Estetik uygulamalarda, botulinum toksin enjeksiyonunun alanında uzman kişiler tarafından ve güvenilir ürünlerle yapılması büyük önem taşımaktadır. Sistemik toksin yayılımı bulguları, nadir olsa da hayati risk taşıyabileceğinden, klinisyenlerin bu komplikasyon konusunda dikkatli olması gerekmektedir. Bu çalışmada, botulinum toksininin estetik amaçlı kullanımı sonrası oluşan iyatrojenik botulizm olgusu sunulmaktadır.

Anahtar Kelimeler: Botulizm; botulinum toksinler; A tipi; estetik

Botulinum toxin, a neurotoxin is revealed by the bacterium *Clostridium botulinum*, blocking the release of acetylcholine and paralyzes skeletal muscle. Exposure to neurotoxins can cause botulism, a life-threatening condition. Apart from wound botulism, foodborne botulism, infant botulism, and adult intestinal colonization botulism, one of the neurotoxin exposure situations is through cosmetic or therapeutic transformations (iatrogenic botulism).[1] We present an iatrogenic botulism case.

CASE REPORT

A 29-year-old female patient with no known disease applied to the emergency room because of drooping of the left eyelid, difficulty swallowing, and shortness of breath 3 days after applying botulinum toxin (600-unit dose, based on the patient's report) to her forehead and neck area for cosmetic purposes (Figure 1a). According to the patient, the procedure was done by a licensed physician at a different medical center.

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FIGURE 1: a) The patient's left eyelid ptosis; **b)** Regression in ptosis on the 9th day of hospitalization

The patient herself was also a healthcare professional, who was admitted to the emergency department of our hospital. She did not have dysarthria in her neurological examination. Direct/indirect light reflexes were positive, there was no facial asymmetry. Muscle strength examination was complete. There was no sensory deficit. The diffusion magnetic resonance imaging did not reveal any acute neuropathology that would explain the swallowing dysfunction. The patient was consulted to the National Poison Consultancy Center with a preliminary diagnosis of botulism and was administered a single dose of 250 mL of botulinum antitoxin intravenously at a rate of 0.5 mL/minute. The patient, who was admitted to the inpatient service, started to consume solid food on the 5th day of her hospitalization and liquid food on the 6th day. The patient was discharged after her dysphagia improved and her ptosis regressed on the ninth day of hospitalization (Figure 1b). Informed consent was obtained from the patient.

DISCUSSION

Botulinum toxin Type A is a pharmaceutical approved by the Food and Drug Administration for use in both some cosmetic and therapeutic applications, for treating hemifacial spasm, blepharospasm, strabismus and for the treatment of glabellar lines, forehead lines, crow's feet, etc. At the same time, the Food and Drug Administration has approved the 4 formulations of botulinum toxin Type A [Prabotulinumtoxin A (Jeuveau®, Evolus Inc., United States), Onabotulinumtoxin A (ONA Botox®/Vistabel®; Allergan Inc., Dublin, Ireland), Abobotulinumtoxin A (ABO; Dysport®/Azzalure®; Ipsen, Paris, France/Galderma, Lausanne, Switzerland), Incobotulinumtoxin A (INCO; Xeomin®/Bocouture®, NT 201; Merz Pharmaceuticals GmbH, Frankfurt, Germany)] as of May 2018.[2]

The use of botulinum toxin Type A for temporary improvement in the appearance of forehead lines associated with frontalis muscle activity, as was applied in our patient, is an Food and Drug Administration-approved indication. However, it is increasingly being used off-label for a variety of aesthetic indications.[2] The use of botulinum toxin to preserve the youthful appearance of the neck is one of the off-label uses. Our patient also had botulinum toxin applied to her neck area. There are practices where botulinum toxin is injected into the platysmal band from 3-4 injection points to achieve platysmal band paralysis.[3] In literature review patients undergoing botulinum toxin injections for platysma bands, complications were reported in 15.4% of patients, none of whom required further interference.[4] Our patient's complaints of difficulty swallowing and shortness of breath, which developed three days after botulinum toxin application to the neck area, showed significant improvement with the application of botulism antitoxin. The patient's respiratory distress improved within 24 hours and she consumed solid foods

after the 5th day. Similarly, in a case of iatrogenic botulism that developed after counterfeit botox application by an unlicensed aesthetician reported in the literature, a noticeable improvement in bulbar paralysis and increasing respiratory distress was reported 24 hours after antitoxin administration.[5]

According to the patient's report, at an external facility a licensed aesthetician administered botulinum toxin using licensed materials: the forehead was treated for an approved (on-label) indication, while the neck received injections for an off-label purpose. We could not confirm the exact doses applied.

There are 2 main types of botulism antitoxins used clinically; heptavalent botulism antitoxin that is derived from horse (equine) plasma, contains antibodies against 7 botulinum neurotoxin serotypes (A, B, C, D, E, F, G) and botulism immune globulin intravenous that is human-derived, contains high-titer neutralizing antibodies primarily for serotypes A and B. Food and Drug Administration-approved indications of heptavalent botulism antitoxin are treatment of symptomatic botulism in adults and pediatric patients. The main contraindication to heptavalent botulism antitoxin is a known history of severe hypersensitivity to equine proteins, while the risk of hypersensitivity may be increased in patients with asthma, hay fever or other allergic conditions.[6,7] Heptavalent botulism antitoxin is administered as a single dose intravenous infusion according to the patient's weight. botulism immune globulin intravenous is given to infants as a single intravenous dose of 50 mg/kg as a slow intravenous infusion over 1-2 hours. Because of the risk of botulism antitoxin-induced anaphylaxis or delayed serum sickness, patients should be monitored for vital signs, oxygenation, and signs of allergic reactions, a sensitization protocol should be implemented, and emergency medications (epinephrine, antihistamines, corticosteroids) should be available.[8]

Iatrogenic botulism may result from dangerous levels of botulinum toxin exceeding the therapeutic dose, injections of counterfeit botulinum toxin or unsafe ingredients. Although iatrogenic botulism is a rare complication, the growing demand for botulinum toxin injections for aesthetic purposes highlights the need to prevent procurement from unauthorized sources and to conduct rigorous research on safety protocols, dosing guidelines, and off-label uses.[9,10] We believe that reporting such complications more frequently in the literature will increase physicians' awareness of the subject.

Source of Finance

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Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: *Sibel Altunışık Toplu, Nihal Altunışık;* ***Design:*** *Sibel Altunışık Toplu, Nihal Altunışık;* ***Control/Supervision:*** *Sibel Altunışık Toplu, Nihal Altunışık;* ***Data Collection and/or Processing:*** *Ezgi Erdal Karakaş, Elif Beyza Ünal Ecer;* ***Analysis and/or Interpretation:*** *Sibel Altunışık Toplu, Nihal Altunışık;* ***Literature Review:*** *Sibel Altunışık Toplu, Nihal Altunışık;* ***Writing the Article:*** *Sibel Altunışık Toplu, Nihal Altunışık;* ***Critical Review:*** *Sibel Altunışık Toplu, Nihal Altunışık.*

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