Mycobacterium abscessus cutaneous infection secondary to botulinum toxin injection: A report of 2 cases

Xi Chen, MD,[a] Yan Jin, MD,[a] Kara Melissa T. Torres, MD,[b] Bo Li, MD,[a] Fenglin Zhuo, MD,[c] Xiaolan Ding, MD,[a] Lin Cai, MD,[a] Jianzhong Zhang, MD,[a] and Cheng Zhou, MD[a]
Beijing, China; and Manila, Philippines

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INTRODUCTION

Mycobacterium abscessus is a rapidly growing nontuberculous mycobacterium existing extensively in water, soil, and dust that causes infections of skin, soft tissue, respiratory, and central nervous system by direct contact with contaminated material or water.[1] The incidence of cutaneous *M abscessus* infection has increased in the past decade. Most reported cases were associated with trauma, surgery, or cosmetic procedures, including autologous fat injection, mesotherapy, tattooing, and even hair transplantation.[2,3] We report 2 cases of *M abscessus* infection associated with facial injection of botulinum toxin (BTX) in patients who were immunocompetent.

Abbreviations used:

BTX:	botulinum toxin
M abscessus:	Mycobacterium abscessus

CASE REPORTS

Patient 1

A 32-year-old woman presented with a 2-month history of multiple painful nodules and abscesses on her forehead and periorbital areas (Fig 1, *A*) after a BTX-A injection performed by a nonmedical staff member in a nonhospital institution. The lesions initially started as erythematous papules and nodules on all of the injection sites 1 week after the BTX-A injection and gradually developed abscesses with ulceration and crusting.

She was then treated as a case of an allergic reaction with secondary impetiginization with oral prednisone 30 mg/d and intravenous azithromycin, with unsatisfactory results. Lesions recurred 1 week after prednisone was discontinued.

A skin biopsy specimen showed dense mixed infiltration of lymphocytes, histiocytes, plasma cells, eosinophils, and neutrophils. Ziehl-Neelsen staining of pus was positive for acid-alcohol–resistant bacilli. *M abscessus* was confirmed by acid-fast bacilli culture and restriction fragment length polymorphism analysis by sequencing for polymerase chain reaction product of *hsp65*. The lesions resolved completely with 3 months of treatment with clarithromycin 250 mg twice daily, rifampicin 450 mg once daily, and ethambutol 250 mg thrice daily, with subsequent hyperpigmentation and atrophic scarring (Fig 1, *B*).

Patient 2

A 34-year-old woman presented multiple tender, fluctuant, and painful papules and nodules on her lower jaw, malar, and temple regions (Fig 2, *A*) after BTX was injected over her masseter muscle by a nonlicensed physician who worked in a cosmetic institute. The patient went scuba diving within 48 hours after the injection. Painful erythematous papules and nodules developed at all injection sites 10 days later. The lesions failed to respond to intralesional corticosteroids combined with oral penicillin and gentamicin and débridements.

From the Department of Dermatology, Peking University People's Hospital, Beijing[a]; the Department of Dermatology, Jose R. Reyes Memorial Medical Center, Manila[b]; and the Department of Dermatology, Beijing Friendship Hospital.[c]

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Correspondence to: Cheng Zhou, MD, Department of Dermatology, Peking University People's Hospital, No. 44 Xizhimen South St, Xicheng District, 100044 Beijing, China. E-mail: chengzhou@live.cn.

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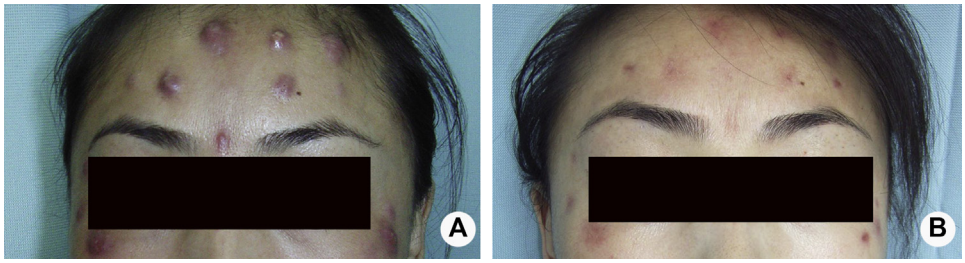

Fig 1. Erythematous papules, nodules, and abscesses over the BTX injection sites (**A**). There was clinical resolution after three months of treatment leaving hyperpigmentated and atrophic scars (**B**).

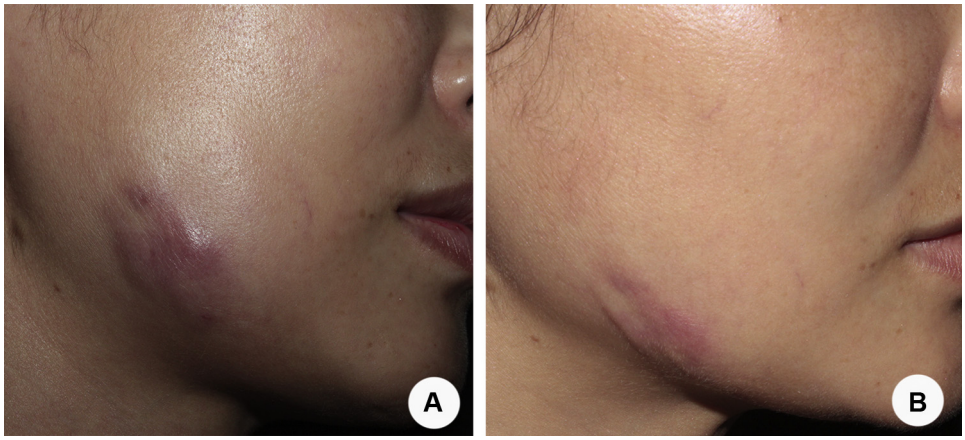

Fig 2. Erythematous plaques and nodules over the BTX injection sites (**A**). There was partial resolution of the lesions after 40 days treatment (**B**) with complete resolution after 6 months (not shown).

Results of routine blood tests were within normal ranges, and cranial ultrasound revealed findings of mixed echoes within the soft tissue. Ziehl-Neelsen staining was positive for acid-fast bacilli. Culture of the pus yielded growth of acid-fast bacilli identified as *M abscessus* after 4-weeks' incubation with chromogenic and fluorogenic media. The patient was treated with clarithromycin 250 mg twice daily and rifampicin 450 mg daily for nearly 6 months. The lesions resolved with post-inflammatory hyperpigmentation and hypertrophic scarring.

DISCUSSION

BTX is a neurotoxic protein produced by the bacterium *Clostridium botulinum*. It prevents the release of the neurotransmitter acetylcholine from terminal axons at the neuromuscular junction, thus causing temporary muscle paralysis. BTX injection is one of the most popular nonsurgical cosmetic procedures to combat wrinkling. It has also been used to control excessive sweating, migraine, and some muscular, bladder, and bowel disorders. Common adverse effects are temporary and self-limiting; these include pain, redness, swelling, bruising, and infection over the injection sites and muscle stiffness/weakness. On the basis of our experience, infections, particularly nontuberculous mycobacteria and fungal etiologies, should be the primary consideration when erythema, nodules, and abscesses appear over the injection sites within several weeks after the BTX injection.

To the best of our knowledge, infection of *M abscessus* after BTX injection has never been reported before. Although the vacuum-package of BTX and minimal cutaneous infiltration of the injection ensure safety, cosmetic procedures conducted in nonmedical environments and by nonmedical professionals pose a high risk of infection because of nonstandard sterilization processes. Unqualified BTX from unknown sources sold illegally may also be contaminated during production, transportation, or storage, thus contributing to the problem. The exposure of seawater with high pressure during diving should also be considered as a potential risk factor, since the association to hot spring spa exposure has been reported to be responsible for multiple cases.[4]

Cutaneous *M abscessus* infection in patients who are immunocompetent is usually localized. The typical cutaneous manifestations are nodules, plaques, cellulitis, ulceration, fistula formation, and cystic changes, with tenderness or fluctuation. Ziehl-Neelsen staining shows variable positive results. The diagnosis is sometimes difficult to make with a negative routine bacterial culture, thus culture for acid-fast bacilli with chromogenic and fluorogenic media is necessary. Restriction fragment length polymorphism analysis and polymerase chain reaction sequencing (*hsp65* sequence) may prove to be helpful.[1]

Although there is no standard treatment for cutaneous *M abscessus* infection, macrolide antibiotics, such as clarithromycin combined with other antibiotics according to drug sensitivity testing, are recommended to be the initial therapy for at least 4 months.[5] Additional surgical intervention may be necessary with incision and drainage in some refractory cases.[3,5]

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