Treatment of symptomatic epidermolysis bullosa simplex with botulinum toxin in a pediatric patient

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INTRODUCTION

Botulinum toxin has been used to treat plantar blistering and pain in 7 epidermolysis bullosa simplex patients, including one child, with excellent but transient success (Table I). Most of these patients were treated with abobotulinumtoxinA, including the indexed pediatric patient. We recently investigated the use of onabotulinumtoxinA to treat epidermolysis bullosa simplex (EBS) symptoms in a pediatric patient, making this successful treatment unusual. Dose equivalence ranging from 2:1 to 4:1 abobotulinumtoxinA to onabotulinumtoxinA, respectively, has been suggested for the treatment of glabellar wrinkles and axillary hyperhidrosis, but further evidence is needed to determine the appropriate dose for management of EBS symptoms in both pediatric and adult patients.[3] Additionally, the relative importance of the toxin's role in hyperhidrosis reduction and on local neurotransmitter release in neuropathic pathways deserves exploration.

CASE REPORT

A 6-year-old African-American boy with a history of EBS presented with painful blisters on the plantar aspect of both feet. The hyperhidrosis was fairly well controlled during the winter months with glycopyrrolate, 1 mg daily. However, he noted continued exacerbations of plantar blistering, hyperhidrosis, tenderness, and malodor with warmer temperatures. Given the recalcitrance to other interventions and after informed consent, the patient was administered 50 U of onabotulinumtoxinA in 4 mL preserved normal saline under general anesthesia in the operating room in January 2013. Injections were intradermal and placed 1.5 to 2 cm apart, 1 U per site on the weight-bearing areas of the plantar surface: sole, ball, and heel of each foot, excluding the arch. A second onabotulinumtoxinA treatment of 100 U, 2 U per site, was given 4 months after the first administration. The patient tolerated both procedures well without complication He experienced decreased pain, bullae, malodor, and less hyperhidrosis, first noted approximately 2 weeks after each treatment. The patient continued to have baseline pain along the plantar surface of his feet, especially with increased physical activity. However, overall pain was decreased, which was attributed to fewer and smaller bullae. The patient's symptoms were noted to recur approximately 3 months after each onabotulinumtoxinA injection. He received 2 further treatments using the same dosing regimen and denied any additional side effects. Of note, he is able to stay involved with sports activities, including football, in the summer and fall because of his improvement.

Abbreviation used:

EBS: epidermolysis bullosa simplex

DISCUSSION

EBS results from mutations in either *KRT5* or *KRT14*, encoding partner keratins 5 or 14. The

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Table I. Reported cases of EBS symptoms treated with botulinum toxin

Study	Age, y	Location	Dosing regimen*	Time to effect	Total treatments	Duration of effect	Course
Abitbol and Zhou[1]	43	Right foot	Botox (100 U to 1 foot)	2 wk	1	Unknown	Reduction in blistering and surface area involvement
Swartling et al[2]	7	Feet	Dysport (170-250 U)	Unknown	3	4 mo	Improvement in callosities/pedal pain; blister formation unchanged
Swartling et al[2]	46	One foot	Dysport (300 U)	Unknown	1	3 mo	Improvement in callosities/pedal pain/blister formation
Swartling et al[2]	30	One foot	Dysport (300 U)	Unknown	1	—	No response to treatment
Swartling et al[2]	46	Feet	Dysport (576-600 U)	Unknown	3	3 mo	Callosities/blister formation/pedal pain much improved
Swartling et al[2]	33	One foot	Dypsort (315 U)	Unknown	1	3 mo	Callosities/blister formation improved; pedal pain not improved
Swartling et al[2]	24	Feet	Dysport (580-700 U)	Unknown	4	3.5 mo	Blister formation/pedal pain improved; callosities not improved
Current study	6	Feet	Botulinum toxin (50 U; 100 U total)	2 wk	2	3 mo	Significant improvement with fewer, smaller blisters/decreased pedal pain and odor

*Botox is manufactured by Allergan, Parsippany, NJ. Dysport is manufactured by Galderma, Fort Worth, TX.

resultant increase in keratinocyte fragility leads to bullae, compensatory hyperkeratosis, plantar pain, and a decreased quality of life.[4] Treatment is supportive and consists primarily of wound care, avoidance of mechanical stress, and minimizing excessive skin warmth and sweating, which are both recognized triggers.[1,5,6]

REFERENCES

1. Abitbol R, Zhou L. Treatment of epidermolysis bullosa simplex, weber cockayne type, with botulinum type A. *Arch Dermatol*. 2009;145:13-15.
2. Swartling C, Karlqvist M, Hymnelius K, Weiss J, Vahlquist A. Botulinum toxin in the treatment of sweat-worsened foot problems in patients with epidermolysis bullosa simplex and pachyonychia congenita. *Br J Dermatol*. 2010;163:1072-1076.
3. Karsai S, Raulin C. Botox and Dysport: is there a dose conversion ratio in dermatologyand aesthetic medicine. *J Am Acad Dermatol*. 2010;62:346-347.
4. Horn H, Tidman M. Quality of life in epidermolysis bullosa. *Clin Exp Dermatol*. 2002;27:707-710.
5. Sprecher E. Epidermolysis bullosa simplex. *Dermatol Clin*. 2010;28:23-32.
6. Pai S, Marinkovich M. Epidermolysis bullosa: new and emerging trends. *Amer J Clin Dermatol*. 2002;3:371-380.