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Case Report

Successful Treatment of Facial Neurotic Excoriations with Onabotulinumtoxina and Updated Review of Cosmetic and Non-Cosmetic Uses

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Keywords

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Abstract

Neurotic excoriations are repetitive self-inflicted lesions caused by skin picking and scratching that occurs in the absence of a known physical pathology. They are usually associated with a psychological or medical condition that causes dysesthesia or psychological distress. This case describes a 36-year old man with neurotic excoriations associated with tension headaches, who had failed a trial of behavioral coaching and antidepressant medication. He was treated with onabotulinumtoxinA (BoNT) injections to the glabella and forehead, which caused resolution of his headaches and eliminated his excoriating behaviors. He has remained in remission with a combination of antidepressants and maintenance injections of BoNT. This is the first case to our knowledge to report successful treatment of facial neurotic excoriations with BoNT injections, which highlights one of many non-cosmetic uses for BoNT. Along with non-cosmetic utility, many reports of successful "off-label" (non-Food and Drug Administration (FDA) approved) treatments with BoNT exist in the medical literature, which were compiled for this brief review.

ABBREVIATIONS

BoNT: onabotulinumtoxinA; FDA: Food and Drug Administration

INTRODUCTION

Neurotic excoriations are self-induced skin lesions that are caused by compulsive picking or scratching of the skin. They often occur with an underlying psychiatric disorder, but can also be seen as a response to an associated medical condition [1]. OnabotulinumtoxinA (BoNT) has been reported as a successful treatment for tension and migraine headaches, in addition to many other neuromuscular and psychiatric conditions [2]. We report the successful treatment of facial neurotic excoriations with BoNT injections.

CASE PRESENTATION

A 36-year old Caucasian man presented to dermatology with multiple crusted excoriations on his face and scalp (Figure 1). They were secondary to him picking at what he described as "hairs" coming out of his skin that would coil and pull when he twisted his body. He also described frequent tension headaches and inability to "relax". Laboratory values were within normal limits. He was initially treated for folliculitis and given wound care instructions, with reassurance that there were no pathogenic "hairs" on his skin. Subsequent visits focused on shifting focus away from these sensations and explored other concerns he had regarding his physical health. He was started on citalopram to

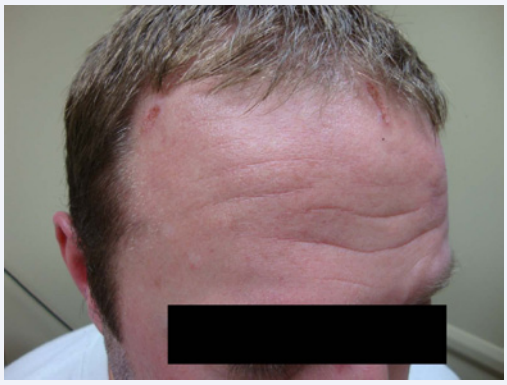

Figure 1 A 36-year old Caucasian man presented to dermatology with neurotic excoriations on his face and scalp before treatment with OnabotulinumtoxinA injections.

a goal of 60 mg a day, which decreased his somatic complaints except recurrent headaches. Despite these improvements, he continued to excoriate his scalp and face. BoNT (56 units) was therapeutically injected into the glabella and forehead in an attempt to relieve his headaches. At his 3-week follow-up, the patient experienced complete resolution of his headaches. He noted that his need to scratch had resolved, and all of his wounds had completely healed. He has remained symptom-free for over 17 months, with no headaches or excoriating behaviors (Figure 2). He continues to receive citalopram and follow-up injections of BoNT for maintenance.

DISCUSSION

It has been postulated that at least one third of patients seen in dermatology clinics present with a problem with a significant psychological association [3]. In order to diagnose neurotic excoriations, other systemic and local causes of skin lesions or pruritus must be ruled out. Some medical causes of excoriation include hepatic disease, delirium, hyperthyroidism, and xerosis. [4]. Many psychiatric illnesses can lead a patient to excoriate the skin, including anxiety, obsessive-compulsive disorder, hypochondriasis, delusions of parasitosis, trichotillomania, and borderline personality disorder [4].

The etiology of neurotic excoriations has yet to be elucidated, though many postulations have been described. Depression, anxiety and obsessive-compulsive disorder (OCD) are the psychiatric diagnoses most commonly associated with patients who have neurotic excoriations [4]. Psychosocial stressors have been reported to precede neurotic excoriations in 33%-98% of patients [5]. It has been reported that up to one third of these patients also have tension or migraine headaches and/or gynecologic symptoms related to menstruation, indicating a possible underlying somatization disorder [5].

Current therapy for neurotic excoriations focuses on treating the underlying psychiatric disturbance with psychotherapy or medications such as antidepressants, opioids, anti-histamines or anxiolytics [4,6]. Prognosis has been shown to be better when the lesions were present for less than one year and worse when other physical complaints such as tension headaches are also present [5]. Some studies suggest that up to 40% of young people may continue to pick their skin for the rest of their lives [7-8]. Treatment is generally difficult and patient relapse is common, especially under stress [9].

Figure 2 A 36-year old Caucasian man with successfully resolved neurotic excoriations after treatment with OnabotulinumtoxinA injections.

Table 1: Cosmetic uses of Onabotulinumtoxin A.

	References
Age prevention[1]	10
Chemical brow lift	12
Dermatochalaisis	13
Enhancing effect on surface procedure[2]	14-16
Facial flushing	17
Hyperkinetic facial lines:	
Bunny lines	18
Lateral canthal lines (crow's feet)[3]	19
Dimpled chin	18
Forehead	12
Glabella (frown line)[3]	12
Lip and perioral	20
Nasolabial fold	21
Neck (platysmal band)	22
Nefertiti lift	23
Supraciliary wrinkles	24
Hypertrophic scars	25
Medical rhinoplasty[4]	26
Oral commissure elevation	27
Rosacea	28
Treating of gummy smile	29

[1]Resting tone decreases to slow down muscle shortening and consequently structural aging
[2]May optimize and prolong the effect of the surface procedures, as lasers, peels, and fillers and continuing maintenance therapy with BoNT postoperatively may optimize results.
[3]US Food and Drug Administration (FDA) approved
[4]For patients with hyperactivity of the depressor septinasi muscle

BoNT (Botox ®, Allergan) is widely used in cosmetic dermatology (Table 1) [10-29]. The mechanism of action blocks acetylcholine release at the neuromuscular C-fiber nerve endings, preventing neuronal firing. This decreases contracture of the muscle and over time relaxes hyperkinetic lines created by those muscles [30]. BoNT is Food and Drug Administration (FDA) approved for cosmetic use of treating hyperkinetic facial lines of the glabella and lateral canthal lines (crow's feet) [11,12,19] More recently, BoNT has been reported to be useful in the treatment of hypertrophic scars, medical rhinoplasty, rosacea, diminishing a gummy smile, dermatochalaisis, facial flushing, and is also used for as enhancement for surface procedures age prevention (Table 1)[10,25-26,28-29].

BoNT has been shown to be efficacious for many other non-cosmetic conditions, some which are clearly related to its mechanism of action and others that have an unclear direct relationship. Non-cosmetic uses for BoNT include treatment of chronic migraines, blepharospasms, hyperhidrosis, strabismus, overactive bladder, and urinary incontinence associated with neurologic conditions [11]. BoNT has also been reported to be beneficial in numerous other neuromuscular conditions including spastic and secretory disorders (Table 2) [31-42,30,43-78]. Non-muscular acetyl-cholinergic junctions are also affected by BoNT. The most well described utilization of this mechanism

Table 2: Non-Cosmetic uses of OnabotulinumtoxinA.

Itch	References
Intractable localized pruritus	29
Brachioradial pruritus	30
Lichen Simplex	31
Notalgiaparaesthetica	32
Psychiatric	
Depression	33,34
Pain	
Back pain	35
Chronic migraine[1]	2
Morton neuroma	36
Myofascial pain syndrome	36
Neurogenic thoracic outlet syndrome	38
Planter Fasciitis	39
Polyneuropathies	40
Post-herpetic neuralgia	41
Tension Headache	42
Temporomandibular joint	43
Trigeminal Neuralgia	44
Neuromuscular/Movement	
Blepharospasm[1]	45,46
Bruxism	47
Cricopharyngeal achalasia	48
Dystonia	49
Fasciculations	50
Gastroparesis	51
Myoclonus	52
Neurogenic muscle hypertrophy	51
Spasm (anismus)	53
Spasmodic dysphonia	49
Spasticity (post-stroke, cerebral palsy)	54
Synkinesis	54
Toe walking	56
Tremor (Essential, Parkinsonian)	57
Secretory	
Allergic Rhinitis	58
Granulosisrubranasi	59
Frey's Sydrome	60
Hyperhidrosis[1]	61,62
Hailey–Hailey	63
Sialorrhea	64
Ophthalmologic disorders	
Duanne's eye-retraction syndrome	65
Nystagmus	66
Oscillopsia	67
Strabismus[1]	68
Therapeutic ptosis (corneal protection)	69
Genitourinary disorders	
Detrusor-sphincter dyssynergia	70
Overactive bladder[1]	70
Urinary incontinence associated with neurologic conditions[1]	70
Vaginismus	71
Other	
Eccrineangiomatous	72
Eccrinepolyhidrocystoma	73
Epidermolysisbullosa simplex	74
Inverse psoriasis	75
Obesity	76
Pachyonichia congenital	77
Raynaud's phenomenon	78
[1]US Food and Drug Administration (FDA) Approved	

is the effect on decreasing eccrine gland activity; a treatment for hyperhidrosis (Table 2) [61,62]. The "itch-scratch" cycle may also be mediated, at least in part, by the blockage of acetylcholine [31]. Other studies have suggested that BoNT reduces histamine-induced itch and vasomotor responses in human skin, which may help explain the successful use of BoNT for several pruritic conditions [79,80].

The overlap between itch and pain sensations is complex and the mechanism underlying the success of BoNT to treat pain syndromes is poorly understood [6,79]. The afferent sensory nervous system may be affected in addition to the known effect on efferent motor functions [79]. Some theories suggest that the toxin may have an actual analgesic effect that may be independent from its effect on muscle tone [81]. It is plausible then that BoNT treatment for headaches may work by decreasing pain stimuli as well as decreasing muscle tone and tension. New reports of antidepressant effects following facial BoNT injections suggest that input from the periphery to the brain can influence mood [33,34]. It is unknown at this time if a psychiatric component is related to a known effect of BoNT or is related to a yet unknown mechanism [34].

This report described a patient suffering from tension-type headaches. Although tension headaches are rarely impairing, they may be associated with significant psychological comorbidity [82]. Studies have suggested that psychological and emotional problems are risks factors that may produce a hyperalgesic effect on pathways that have been previously sensitized in individuals with chronic tension-type headaches [83]. The resolution of neurotic excoriations after BoNT injections in this patient is likely multi-factorial. Tension headaches may have been a trigger for his picking response, and thus eliminating the headaches may have resulted in a suppression of his urges to pick. BoNT may also have reduced ahyperalgesic state by either eliminating the headaches or by a direct analgesic effect on the afferent nerves. Manipulation of other mediator's of pain and itch pathways may have also contributed to a decreased urge to excoriate the areas that were injected. Finally, it is possible that BoNT also played a role in treating his underlying depression in association with

his antidepressant medication. Any of these mechanisms may be playing an important role in this condition and further studies are warranted to investigate specific pathways. Importantly, identifying and treating any contributory medical or psychiatric disorder is paramount in the treatment of neurotic excoriations.

CONCLUSION

Neurotic excoriations are often caused by dysesthesia that drive scratching and picking of the skin. Although the cause is often difficult to discern, treatment of the underlying sensory or psychological stress or may help to break the compulsive cycle. This case exhibits a successful treatment using BoNT for neurotic excoriations on the face and scalp.

CONFLICT OF INTEREST

Jason Reichenberg, MD reports that his wife has been a consultant for allergan, the maker of onabotulinumtoxinA.

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