Successful Treatment of Notalgia Paresthetica With Botulinum Toxin Type A

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Notalgia paresthetica is a chronic condition that, while not life threatening, produces symptoms that are incessant and onerous to many patients. To date, there has been no effective, long-lasting, noninvasive treatment for this condition, which decreases the patient's quality of life.

REPORT OF CASES

CASE 1

A 52-year-old white woman presented with a 2- to 4-year history of pruritus of her upper back, which she described as a 7 on a severity scale of 1 to 10. She reported scratching her back twice a day. She had tried moisturizers and topical corticosteroids with no improvement. She recalled that her father had had a similar itch on his back for years that induced him to repeatedly scratch his back on a doorpost. Her medical history was remarkable only for gastroesophageal reflux disease, which was responsive to ranitidine, and for rosacea, for which she used topical metronidazole. She had no drug allergies. On physical examination, there was a 4 x 4-cm hyperpigmented patch on her right mid to upper back. Her presentation was consistent with notalgia paresthetica.

CASE 2

A 39-year-old white woman presented with a 20-year history of pruritus of her upper back. She described the itch as a 5 on a severity scale of 1 to 10 and reported scratching her back on a doorpost 3 to 4 times a day. She also described an altered sensation in the area when it was touched. Previous treatments, including topical class I steroids, pramoxine hydrochloride cream, 1%, and doxepin hydrochloride cream, 1%, had provided only minimal temporary relief. On physical examination, there was an approximately 4 x 7-cm hyperpigmented patch on her right mid upper back consistent with the area of pruritus. Her medical history was significant only for bilateral de Quervain tendinitis of the wrist, status post surgical repair; her only medication was a multivitamin. She had no drug allergies. She had been treated previously with botulinum toxin type A in the forehead and glabella for facial rhytids without adverse reaction but without improvement in her pruritus. Her history and physical examination were indicative of notalgia paresthetica.

Common treatments for notalgia paresthetica that have provided variable relief to patients include local anesthetics, topical corticosteroids, and topical capsaicin; however, results with these treatments have been inconsistent at best.1 With capsaicin, many patients reported burning, tingling, and pain with treatment, and most patients experienced a relapse of symptoms within a month.2 Oxcarbazepine was reported to reduce the severity of symptoms in a few cases; however, these patients reported only an improvement in their symptoms but not resolution of them.3 One patient with a severe case of notalgia paresthetica was treated successfully with paravertebral nerve blocks, with bupivacaine and methylprednisolone acetate injected into the T3-T4 and T5-T6 intervertebral spaces.4 She remained symptom-free 1 year after treatment. To date, there is no effective, long-lasting, noninvasive treatment for patients with notalgia paresthetica.

SOLUTION

The patients described in this article were treated with intradermal injections of botulinum toxin type A using a method similar to that used for postherpetic neuralgia.5 Specifically, the area to be treated was demarcated based on questioning and physical examination. Injection points were marked 2 cm apart, and 4 U of botulinum toxin type A was injected superficially into each point, using a 3-mL dilution with preserved (0.9%) saline. The first patient was treated with a total of 16 U. She remains completely symptom-free to date (more than 18 months following treatment), and the hyperpigmentation on her back is barely perceptible. The second patient was treated with 24 U and had a considerable improvement in symptoms after her first...
treatment. Although prior to treatment she had been scratching her back on a doorpost 3 to 4 times every day, after 3 months she reported scratching her back only twice a day. After 18 months she reported that she was not even scratching her back every day; however, she still felt some intermittent pruritus. At that time, a second treatment of 48 U was given. Within a week she was symptom free and has remained so. The hyperpigmentation on her back decreased in size and color (Figure) but was still evident 1 month after the second treatment.

**Figure.** Case 2. A, Before second treatment with botulinum toxin type A. Note hyperpigmentation as well as erythema and recent scratch marks on her right mid upper back. B, One month after second treatment with botulinum toxin type A. Although there is some residual hyperpigmentation on the right mid upper back, the area of involvement is much smaller and somewhat faded. Erythema and scratch marks are absent.

**COMMENT**

Notalgia paresthetica is a sensory neuropathy that can include symptoms of pruritus, tenderness, burning pain, and hyperalgesia. It is unilateral and usually occurs on the mid to upper back. There is often a hyperpigmented patch over the affected area. Other names for this condition have included puzzling posterior pigmented purpuric patches, hereditary localized pruritus, and puncta pruritica (itchy points). Patients often describe symptoms ranging from mild itching to severe, relentless itching that drives them to rub their backs on doorposts and walls when they cannot reach the area of skin to scratch. The cause of notalgia paresthetica is unknown. One study demonstrated an increase in the density of intradermal nerves in a biopsy sample of involved skin. Another study suggested that nerve root impingement may be causative because several patients had degenerative changes of the vertebral corresponding with the affected dermaphere.

A genetic basis has been suggested. Treatment options to date have been unsatisfactory.

Botulinum toxin type A is a purified protein that inhibits acetylcholine release at the neuromuscular junction by cleaving SNAP-25 (synaptosomal-associated proteins of 25 kDa). This leads to paresis of muscle by chemical denervation or blocked glandular secretion of the exocrine glands. In the laboratory, botulinum toxin type A has also been found to affect several neurotransmitters involved in nociception. It has been found to inhibit release of substance P from cultured embryonic dorsal root ganglion neurons and to reduce stimulated release of calcitonin gene-related peptide from cultured trigeminal ganglia neurons. Substance P is released by primary nociceptive afferent C fibers, and calcitonin gene-related peptide colocalizes with substance P in most sensory ganglia neurons. Botulinum toxin type A was also found to suppress the release of glutamate and noradrenaline.

Although the mechanism of the effect of botulinum toxin type A on pain and itch signals in human beings has not been completely elucidated, botulinum toxin type A has been shown clinically to be effective for several pain syndromes, including postherpetic neuralgia and trigeminal neuralgia. It has also been reported to be effective for the pruritus of lichen simplex chronicus. For postherpetic neuralgia, injections of 2 to 5 U every 1 to 2 cm have been found to relieve patients' pain. Up to 4 sessions, 1 to 4 weeks apart, may be necessary to achieve complete pain relief. A similar technique has been used for the treatment of painful scars, such as sternotomy scars, and for treatment of reflex sympathetic dystrophy. For lichen simplex chronicus, 20 U was injected into each lesion.

Interestingly, although the muscle paresis and blocked glandular secretion induced by botulinum toxin type A wear off after 3 to 6 months, the effect of botulinum toxin type A injection on these pain syndromes seems to be long term. It has been hypothesized that botulinum toxin type A alters feedback loops leading to changes in pain signaling. This may also be true for the pruritus of lichen simplex chronicus, but follow-up beyond 4 months was not reported in the literature.

Patients who develop notalgia paresthetica describe often vexing and relentless symptoms that interfere with their daily lives. Given the lack of effectiveness of topical treatments and the invasiveness of paravertebral nerve block, injection of botulinum toxin type A has provided these patients with a comparatively safe and effective, as well as durable, treatment for their notalgia paresthetica. Given the duration of their symptom improvement—more than 18 months—further research should be conducted to confirm the effectiveness of this treatment.

**Accepted for Publication:** October 16, 2006. **Correspondence:** Pamela Kirschner Weinfeld, MD, Division of Dermatology, Newton-Wellesley Hospital, 2000 Washington St, Newton, MA 02462 (pweinfeld@partners.org).

**Financial Disclosure:** None reported.
Additional Contributions: Allergan Inc, Irvine, California, provided the botulinum toxin type A used in this study.

REFERENCES


Submissions

Clinicians, residents, and fellows are invited to submit cases of challenges in management and therapeutics to this section. Cases should follow the established pattern. Manuscripts should be prepared double-spaced with right margins nonjustified. Pages should be numbered consecutively with the title page separated from the text (see Instructions for Authors [http://archderm.ama-assn.org/misc/auinst_crit.pdf] for information about preparation of the title page). Clinical photographs, photomicrographs, and illustrations must be sharply focused and submitted as separate JPG files with each file numbered with the figure number. Material must be accompanied by the required copyright transfer statement (see authorship form [http://archderm.ama-assn.org/misc/auinst_crit.pdf]). Preliminary inquiries regarding submissions for this feature may be submitted to George J. Hruza, MD (ghruza@aol.com). Manuscripts should be submitted via our online manuscript submission and review system (http://manuscripts.archdermatol.com).