Case Report

Botulinum Toxin for Scalp Dysesthesia

Kevin Phan, Matthew James Lin[1]

St George Dermatology and Skin Cancer Centre, Kogarah, Australia, [1]Department of Dermatology, Mount Sinai Hospital, New York, USA

Abstract

Scalp dysesthesia is characterized by abnormal cutaneous sensations such as burning, stinging, or itching of the scalp. This condition is particularly challenging to manage as there is a lack of well-established treatments. By limiting release of neurotransmitters such as substance P, glutamate, and calcitonin gene-related peptide, botulinum toxin may have a role in ameliorating neuropathic pain. We report a unique case in which botulinum toxin was used in the management of scalp dysesthesia.

Keywords: Botox, botulinum toxin, injectables, intralesional, scalp dysesthesia

Background

Scalp dysesthesia is characterized by abnormal cutaneous sensations such as burning, stinging, or itching of the scalp, with no other associated dermatological features.[1] This condition is particularly challenging to manage as there is a lack of well-established treatments. Current treatments include physical therapies as well as systemic neurotropic medications such as amytriptiline and pregabalin.[1]

Laboratory studies have shown that botulinum toxin may help relieve dystonia and spasticity by blocking the release of acetylcholine from presynaptic nerve terminals.[2,3] Some studies have demonstrated that it has independent analgesic properties which inhibit neurogenic inflammation. By limiting release of neurotransmitters such as substance P, glutamate, and calcitonin gene-related peptide, botulinum toxin may have a role in ameliorating neuropathic pain.[2,4] We report a unique case in which botulinum toxin was used in the management of scalp dysesthesia.

Clinical Vignette

A 59-year-old man presented with a 3-year history of scalp dysesthesia affecting the entire scalp. He had a history of a traumatic neck injury 8 years prior, without any ongoing neurological deficit. Previous treatments included topical therapies (menthol, corticosteroid, calcineurin inhibitor, capsaicin, lidocaine), physical therapies (acupuncture, massage, ice, vibration devices), and systemic agents (amytriptiline, pregabalin).

His baseline McGill Pain Score[5] for bilateral scalp hemispheres was 31/78. Baseline VAS Pain Score[6] for bilateral scalp hemispheres was 4/10.

The subject was blinded and received intradermal onabotulinumtoxin A (1.0 mL = 40 U) in one scalp half and intradermal saline (1.0 mL) in the other scalp half. Injection was performed with a 30-gage half inch needle with 0.05 mL injected subcutaneously in a 3 cm grid pattern with 20 injection points to each scalp hemisphere. The patient experienced injection site pain during the injection, but it was otherwise well tolerated without other adverse effects. Specifically, there was no residual injection site pain, bruising, facial asymmetry, or ptosis.

At 8 weeks after treatment, the patient reported significant improvement in symptoms in both scalp hemispheres. In the treated hemisphere, the McGill Pain Score was 25/78, and the VAS Pain Score improved to 2/10. The placebo hemisphere had a McGill Pain score of 28/78 and a VAS pain score of 3/10. The patient reported the pain symptoms to be significantly less on the treated side, specifically a

Address for correspondence: Dr. Matthew J. Lin,
Department of Dermatology,
Mount Sinai School of Medicine, New York, USA.
Email: matthew.lin@mountsinai.org

Access this article online

Quick Response Code:

Website: www.jcasonline.com

DOI: 10.4103/JCAS.JCAS_197_20

How to cite this article: Phan K, Lin MJ. Botulinum toxin for scalp dysesthesia. J Cutan Aesthet Surg 2022;15:95-6.

reduction in shooting quality of pain as well as discomfort associated with pressure.

At 16-week follow-up, the patient reported worsening of symptoms in both scalp hemispheres with similar symptoms to baseline. The McGill Pain score was 29/78 bilaterally, and the VAS pain score was 4/10 bilaterally.

Discussion

Botulinum toxin has been used to treat neuropathic pain because it has a focal analgesic effect independent of its effect on muscle tone, possibly because it acts on neurogenic inflammation.[3,7]

Our case reports a potential novel indication for botulinum toxin in neurogenic symptoms of scalp dysesthesia. In the present case, intradermal botulinum toxin was associated with considerable improvement in pain symptoms at 8-week follow-up; however, this effect was attenuated at the 16-week follow-up. At 8-week follow-up, both the VAS score and McGill Pain score were significantly lower in the treated side for the patient. Specifically, we noted a reduction in shooting quality of pain as well as discomfort associated with pressure. Similar findings were also observed in a study by Ranoux *et al.*[7] who studied 29 patients with focal painful neuropathies and mechanical allodynia treated with BTX-A. The authors suggest that BTX-A may produce analgesic effects by targeting pathways involved in neuropathic pain, which is independent of its effects on muscle tone.

In another case by Trimboli and Trioisi,[8] they described a 25-year-old female patient who presented with 18-month history of trichodynia, following bleaching and hair coloring treatment. Her symptoms were refractory despite use of topical steroids, pregabalin and amitriptiline, and duloxetine. The authors injected three courses of 200 U of BTX-A, 3 months apart. The patient had marked improvement after the first cycle of injections and became asymptomatic after two cycles of injections.

Our case and the above reports support the studies from animals and healthy human subjects that BTX-A may act on nociceptive afferents in order to modulate central transmission and reduce central sensitization.[2,4] It may also inhibit further release of neuropeptides, leading to reduction in neuropathic pain.[2]

In our case, the effects of BTX-A for scalp dysesthesia appear to peak at 8-week follow-up and become attenuated at 16-week follow-up, suggesting that further maintenance injections are required to continue ongoing analgesic effect. Larger controlled studies are required to confirm the findings in this report.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Laidler NK, Chan J. Treatment of scalp dysesthesia utilising simple exercises and stretches: A pilot study. Australas J Dermatol 2018;59:318-21.
2. Aoki KR. Review of a proposed mechanism for the antinociceptive action of botulinum toxin type A. Neurotoxicology 2005;26:785-93.
3. Restivo DA, Tinazzi M, Patti F, Palmeri A, Maimone D. Botulinum toxin treatment of painful tonic spasms in multiple sclerosis. Neurology 2003;61:719-20.
4. Matak I, Tékus V, Bölcskei K, Lacković Z, Helyes Z. Involvement of substance P in the antinociceptive effect of botulinum toxin type A: Evidence from knockout mice. Neuroscience 2017;358:137-45.
5. Melzack R. The Mcgill Pain Questionnaire: Major properties and scoring methods. Pain 1975;1:277-99.
6. Crichton N. Visual analogue scale (VAS). J Clin Nurs 2001;10:706-6.
7. Ranoux D, Attal N, Morain F, Bouhassira D. Botulinum toxin type A induces direct analgesic effects in chronic neuropathic pain. Ann Neurol 2008;64:274-83.
8. Trimboli M, Troisi L. Refractory trichodynia treated with onabotulinumtoxin-A. Pain Medicine 2020;22:1-2.