Mini Review
Published: 07 Nov, 2019

Journal of Dermatology Forecast

Botulinum Toxin Injection for the Treatment of Nasal and Lip Hyperhidrosis

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Abstract

Excessive sweating on the nose/lips is sporadic rather than axillary, palmar, and plantar hyperhidrosis but is highly unfavorable for social and daily life because it is extremely visible and burdensome when applying cosmetics (Figure 1). The incidence and pathophysiology have not received much investigation, but the condition is more common in men and is likely to worsen with age. Triggering factors are temperature change, spicy food, physical activity, tension, and menopause [1]. Prevalence, cross-distribution, and association with other hyperhidrosis are not well known, and data are limited.

The options for treatment include topical and systemic agents, Botulinum Toxin (BTX) injection, and thoracic sympathectomy as a last resort. Antiperspirants can be the first-line treatment. Surgery may be considered for the resolution in the treatment of craniofacial hyperhidrosis despite high incidence of severe compensatory hyperhidrosis. BTX injection has been shown to be useful in the treatment of focal hyperhidrosis, and effects are sustained longer than with topical or oral antiperspirants [2]. However, the nose/lips are highly sensitive, and BTX injections are unpleasant and painful. Moreover, BTX injection in the nose/lips can result in asymmetrical or limited facial expression [3]. Therefore, it is critical to perform this treatment properly.

Keywords: Hyperhidrosis; Botulinum toxin; Sweat; Nose; Lip

Procedure in Brief

At the start, the skin is marked with a pen. Anesthetics are administered in the form of cream, ice, and nerve block to relieve pain before BTX injection. Numbness is checked prior to the procedure. After sterilizing the injection site, BTX is injected intradermally using a 1 ml syringe with a fine needle. Injections in deeper structures such as muscles are avoided to prevent undesirable effects. If the patient feels significant discomfort or pain during the procedure, ice should be applied immediately. Following the procedure, patients can return to their normal activities, although we recommend that they apply ice to the nose/lips to reduce potential swelling and that they avoid any vigorous rubbing activity for several days. Unless patients reach full anhidrosis within 10 days, the condition is corrected. The treatment effects last for 6-7 months [1].

Anesthetic Technique

Various techniques for controlling pain are available. These involve the use of ice, anesthetic cream, vibration anesthesia, and nerve block before injection. It is not clear if vibration anesthesia provides pain relief. Instead, ice is simpler and readily available and requires no specialized equipment, and the effects are immediately reversed. Some risks exist in using ice if the application period is prolonged or if the temperature drops below the threshold of tolerance. The nose is susceptible to frostbite. Individual or combined methods are available. Most patients feel less discomfort from the BTX injection after judicious application of ice for one and a half minutes. A single application of anesthetic cream for 60 minutes is appropriate to reduce pain. It is possible that anesthetic cream in combination with ice or nerve block may work better in sensitive patients.

A regional nerve block is often administered to ensure sufficient pain relief while minimizing risk to the patient, leading to optimal outcomes. The infraorbital nerve provides sensation to the lower lid, medial cheek, side of the nose, and upper lip. This nerve is blocked at its exit point from the infraorbital for men with 0.5 to 1 ml of anesthetic solution. The external nasal branches of the anterior ethmoidal nerve ultimately innervate skin on the lateral sides of the nose. The nerve supplies sensation to the distal aspect of the nasal dorsum and tip of the nose as well as the skin of

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Received Date: *01 Oct 2019*
Accepted Date: *01 Nov 2019*
Published Date: *07 Nov 2019*

Citation: *Kim WO, Kil HK. Botulinum Toxin Injection for the Treatment of Nasal and Lip Hyperhidrosis. J Dermatolog Forecast. 2019; 2(2): 1014.*

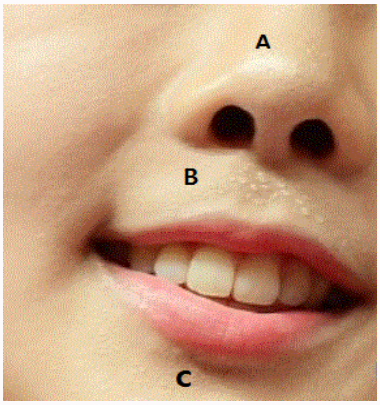

Figure 1: A: Nasal sweating, B and C: Sweating on lips.

Figure 2: Surface markings for botulinum toxin injection and nerve block site. Empty blue circle: External nasal branch of the anterior ethmoidal nerve block site. X: Botulinum toxin injection sites for nasal sweating (9 points). "At" sign: The levator labii superior is alaequenasi muscle. Blue star: Infraorbital nerve block site. Black-filled circle: Botulinum toxin injection sites for sweating of lips (5/6 points). Y: Yonsei point(a point located at the center of a triangle formed by the levator labii superioris, levator labii superioris alaequenasi, and zygomaticus minor, the three main lip elevator muscles) 1 cm lateral (1 finger width) from the nasal ala at the level of the nasal base.

the nasal ala. The external nasal branch may be blocked at the surface at its exit point with 0.5 ml of local anesthetic. The block is achieved by inserting the needle between the nasal bone and the lateral nasal cartilage, approximately 7 mm from the midline, and directed cranially through the subcutaneous tissue overlying the nasal bone (Figure 2).

BTX Injection with Precaution

Technically, BTX-A injections with a dose of 1-2 U per site and spacing 1-2 cm apart have to be intradermal, generating skin blanching and papules to activate over glands and not the muscle. Breunig et al. [4] recommend BTX injection on the nose at 7-9 sites and on the lips at 5/6 sites [3] (Figure 2). It is essential to maintain symmetry while injecting to avoid asymmetrically affecting the muscles. Care must be taken to inject beside the nasofacial groove to avoid diffusion of the toxin to the levator labii superior is, causing lip ptosis and asymmetry. The use of high doses in the nasal tip can yield an inflated opening of the nostrils and a solid rising of the tip, producing an unpleasant appearance in the anterior view. A rare but serious complication is toxin dissemination to the orbicularis oculi, which reduces the pump effect to the lacrimal sac, resulting in tearing. Spreading to the medial rectus of the eye can cause blurred vision [1]. Injecting excessive amounts of BTX or angling the needle too sharply may result in diffusion of the BTX, a situation best avoided. If BTX is injected near the orbicularis oris or the junction of the three lip elevator muscles that converge on the lateral side of the ala of the nose, drooping of the upper lip and asymmetry of the lips will occur. There is no antidote at this time; thus, it is necessary to inject in the correct sites and avoid any kind of massaging in the area after applying the toxin to prevent these complications, which are mostly caused by diffusion to neighboring muscles.

Conclusion

Sweating of the nose/lips is easily visible to the public and causes trouble when working and applying makeup. BTX injection after anesthesia is useful and effective for a sufficient amount of time while being reasonably safe. Careful injections avoid diffusion of BTX to the adjacent muscles. Clinical experiences and further study are necessary to understand nose/lip sweating. Moreover, it must be clarified whether sweating of the nose/lips is a subgroup of craniofacial/gustatory hyperhidrosis or an independent group because of its unique features and the fact that it affects a limited area of the face.

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