Facial Hyperhidrosis: Best Practice Recommendations and Special Considerations

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Facial hyperhidrosis (HH) is more difficult to diagnose than other forms of focal HH because many secondary causes must be considered. Pharmacologic treatment with botulinum toxin type A (BTX-A) would be appropriate for patients with severe facial HH that limits their lifestyle (eg, blurred vision from sweating, distressed with their appearance). The main concern with administering BTX-A for facial HH is aesthetics, such as facial asymmetry or brow ptosis. This article describes best practice techniques for BTX-A (Botox®) in patients with facial HH, including suggested dilution and syringe selection, injection technique, dose and injection grid, and anesthesia recommendations. Special considerations and navigating the insurance reimbursement process also are discussed.

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Facial hyperhidrosis (HH) can substantially affect and restrict an individual's lifestyle. Patients with facial HH can experience debilitating limitations (eg, sweat dripping into the patient's eyes can hinder activities, cause personal discomfort, and arouse self-consciousness about his/her appearance). This article presents specific guidance on using botulinum toxin type A (BTX-A; Botox®) for the treatment of facial HH. Note that gustatory HH, or Frey syndrome, will not be addressed in this article. Glaser et al[1] review general BTX-A recommendations and insurance reimbursement guidance. (See the Glaser et al[1] article in this supplement.)

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Diagnosis and Detection

The patient population for facial HH tends to be older—20% of patients in this subgroup develop symptoms after 20 years of age —and the prevalence of this condition may be higher than previously recognized. In a recent study of 508 patient records, 23% of patients seeking treatment had excessive facial HH or scalp sweating. From our collective experience, it appears that men may be affected by facial HH more often than women, which is supported by Lear et al.[2] Of the various forms of focal HH, facial HH is the most difficult to diagnose because many secondary causes must be ruled out and a more intensive medical evaluation is required. Diabetes mellitus, menopause, endocrine conditions, and certain medications may cause facial HH. The International Hyperhidrosis Society Web site provides a list of all medications associated with diaphoresis. Common medications most likely known to cause diaphoresis include desipramine hydrochloride, nortriptyline hydrochloride, pilocarpine hydrochloride, protriptyline hydrochloride, trace metals, and zinc supplements.[3]

Facial HH, excluding Frey syndrome, is bilateral and generally involves only the forehead. However, facial HH also may involve the scalp and temporal regions, and less frequently the nose, chin, posterior neck, and cheeks. A patient presenting with unilateral facial HH should be evaluated for neurologic defects. The Minor starch-iodine test is useful in the diagnosis of facial HH because it assists in determining symmetry. Asymmetric facial HH should be evaluated for other potential causes, such as central nervous system or peripheral nervous system insult.

We believe there are 4 main patterns of facial HH: (1) ophiasis; (2) diffuse or whole scalp; (3) upper lip; and (4) Frey syndrome. Ophiasis seems to be the most common pattern. This article will discuss treatment of facial HH with BTX-A, excluding treatment recommendations for Frey syndrome.

Initial Treatment Algorithm for Facial HH

Lifestyle modifications may be sufficient in managing facial HH caused by triggers such as warm beverages or spicy foods. If the condition is more severe and occurs during leisurely walking, rest, or unavoidable daily activities, pharmacologic treatment may be necessary.

As with palmar and plantar HH, facial HH usually is initially treated with a topical agent (eg, aluminum chloride). Topical therapy is the least invasive treatment that may produce an acceptable degree of efficacy. Most insurance companies require a trial with a topical agent before approving other treatment options. Two weeks of treatment usually are sufficient to determine a topical agent's efficacy; however, some insurance companies may require a 6-month trial. One drawback to the use of topical agents is the messiness and staining of clothing associated with application. The cosmetic aspect particularly should be considered because the white sheen that topical medications leave behind is found to be unappealing by most patients. Topical treatments also can irritate the eyes; thus, they are not often used as a mainstay to control facial HH.

As with axillary HH, tap water iontophoresis is not a feasible treatment option for facial HH because logistically the forehead cannot be treated. In our experience, oral anticholinergic agents may need to be tried and can sometimes result in satisfactory levels of improvement of facial HH; however, the typical systemic side effects of these agents are a concern.[4,5] If topical and oral agents fail or are deemed unsatisfactory by the physician or patient, BTX-A is a reasonable treatment alternative. Although more invasive than the other 2 treatments, many of us have found that BTX-A is safer and associated with fewer adverse effects than oral medications. Endoscopic transthoracic sympathectomy is not a treatment option for facial HH.

Best Practice Techniques

Administering BTX-A to treat facial HH requires skill and precision. In patients with palmar and plantar HH, muscle weakness and pain are the main concerns; the chief issue for facial HH is aesthetics. Cosmetic damage or physical injury are rare when treating the axillae; treating palmar HH sometimes may result in muscle weakness, but weakness generally is mild, transient, and not limiting. However, treatment of facial HH with BTX-A is more complicated because of the vast musculature in the face and the variability in the size, shape, and extent of the focal HH area. Improper injections may result in unwanted, albeit temporary, cosmetic changes. Each treatment must be individualized and carefully performed.

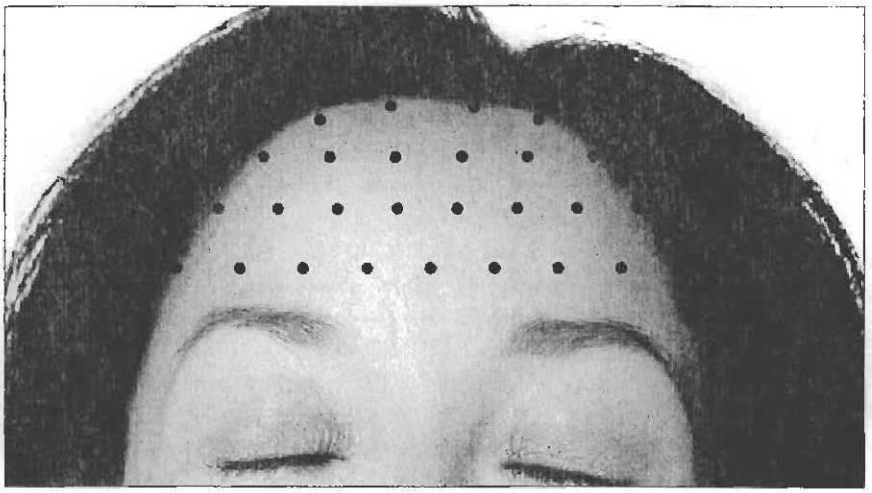
Dilution and Syringe Selection—The full prescribing information for BTX-A (Botox) recommends reconstituting the vial of BTX-A with 2.5 mL of 0.9% nonpreserved saline, which is the standard dilution for cosmetic use.[6] This dilution allows the drug to be drawn up in five 0.5-cc syringes, enabling 2 or 4 U BTX-A to be injected in volumes of 0.05 or 0.1 mL, respectively. This dilution volume generally is sufficient to cover the treatment area, but other volumes may be used when treating the face and scalp. It also has been suggested that preserved saline can be used to dilute the drug without affecting efficacy and may cause less injection pain than dilutions with nonpreserved saline.[7]

Plastic single-use syringes are recommended, and many physicians prefer using insulin syringes because there is no space at the hub, where the drug may be wasted. A 30-gauge needle is standard,[8] but several experts have reported reduced patient pain with a 31- or 32-gauge needle.[9] A permanently attached needle allows for less waste, but it can become dull after several injections. If the syringe allows for an interchangeable needle, it is recommended to select a syringe that uses a luer lock connection. Ultimately, the choice of syringe and needle depends primarily on the physician's preference.

Injection Technique—The desired injection depth is the deep dermis, at or near the junction with the subcutaneous tissue, which is where the sweat glands are located.[10] Ideally, the injections should be intradermal, depositing the BTX-A deep in the dermis to minimize the risk of affecting musculature. The risks and complications for treating facial HH with BTX-A are the same as for cosmetic BTX-A treatments.

Injections may cause bleeding and extrusion of BTX-A. To minimize loss of drug, we suggest injecting at an oblique angle to create a longer injection track. Another way to minimize BTX-A extrusion is to remove one's thumb from the plunger of the syringe and allow a few seconds to pass so that the pressure normalizes between the needle and tissue before withdrawing the needle. With each injection, a small amount of blanching is expected when the drug is correctly injected intradermally.

Dose and Injection Grid—The total dose and number of injection sites required to treat facial HH vary, depending on the pattern of sweating. The average total dose is 40 U BTX-A (Botox) for the forehead alone but may range from 33 to 100 U, administered



Injection grid for facial hyperhidrosis.

with a series of 20 to 30 injections approximately 2 cm apart. We recommend doses of 3 to 5 U BTX-A per site to avoid brow ptosis and diffusion of BTX-A into the musculature. Thus, we agree that injection-site doses should remain between 0.05 and 0.1 mL. Ideally, the goal is to create confluent overlapping anhidrotic spots with multiple intradermal injections close to the sweat glands to achieve maximum treatment outcomes. These doses are recommended by us and have been reported in previously published trials[11,12]; they are not strict limitations to the dose that may be used. It is more important that the entire affected area be treated with a minimum of 2 to 3 U BTX-A per site, spaced approximately 2 cm apart to ensure overlapping BTX-A halos for overall coverage.

Because sweating patterns are more varied for facial HH, there is no standard injection grid. The Figure provides a basic example. Most of us prefer to inject non–hair-bearing skin, but depending on the patient's expectations and response, injections in the scalp may be required. The treating physician should avoid the caudal strip 1 to 2 cm above the eyebrows to prevent drooping of the eyelid. Treating the area just above the anterior hairline is helpful in many patients. Affected areas of the cheeks also should be injected carefully because an aesthetically altered expression could result. If treating the entire craniofacial area, including the back of the neck, caution should be used to avoid injection-associated neck weakness. In our collective experience, most patients are satisfied with treatment of the forehead and scalp line so that sweat does not fall forward and interfere with their activities. They usually are more tolerant of sweat at the back of their neck.

Anesthesia—The efficacy and adequacy of topical anesthesia when performing BTX-A injections has been proven with cosmetic use of BTX-A.[9] The standard is a eutectic mixture of local anesthetics or topical lidocaine 4%, which is applied before treatment. Following application, the patient should sit and wait at least 20 minutes to one hour to ensure adequate anesthesia is achieved before beginning treatment.

Special Considerations

Prior to treatment for facial HH, patients should be counseled about the potential for asymmetry of the brow. When brow asymmetry occurs, it usually is transient, lasting only a few weeks, whereas the effect on sweat reduction lasts much longer. Minor muscle weakness that usually manifests as an inability to frown or furrow the forehead also has been reported.[11,13] This effect possibly can be avoided by giving multiple injections of smaller volumes. Otherwise, BTX-A (Botox) has a good safety and tolerability profile, as proven in its widespread use for cosmetic applications.[9]

Generally, patients receive 2 to 3 treatments per year for facial HH because the treatment effect has been reported to last a minimum, on average, of 5 months.[11-13] The duration of efficacy is longer than that observed with cosmetic BTX-A (Botox).[9] Some of us have hypothesized that this longer duration of efficacy may be the result of less active sprouting of nerve fibers in sweat glands than in muscles.

Impact on Quality of Life

Most patients with facial HH complain about the inability to easily and safely carry out activities of daily living because of sweat constantly blurring their eyesight and complicating their professional activities. Patients with facial HH noted the following limitations caused by the disease:

- "She [an operating room nurse] had [HH] of the forehead and was transferred to a medical floor because sweat from her forehead dripped into the sterile operative field."
- "She was a shy, reticent teenager who after [BTX-A] treatment became a spokesperson for IIH and was a contestant in the Miss Teen Virginia pageant."

Many patients have reported marked improvement in their functional status at work with

treatment. In a study by Tan and Solish,[13] subjects treated with BTX-A (Botox) for facial HH experienced a significant improvement in quality of life as measured by the Dermatology Life Quality Index ($P<.03$). Kinkelin and colleagues[11] found that 90% of subjects (9/10) reported that they were satisfied or extremely satisfied with BTX-A (Botox) treatment, and all patients expressed a desire to receive the treatment again. On a scale of 0 (not at all) to 10 (very much), their annoyance with frontal sweating decreased from a score of 9.5 to 2.9 with treatment.[11]

Insurance Reimbursement

Glaser et al[1] provide a more thorough description of the insurance reimbursement process and coding for focal HH diagnosis, evaluation, management, and treatment with BTX-A. (See the Glaser et al[1] article in this supplement.) This article only highlights codes specific to facial HH.

Since October 2004, HH has been recognized as a primary diagnosis with International Classification of Diseases, Ninth Revision, Clinical Modification codes 705.21 and 705.22 for primary and secondary focal HH, respectively.[14] Another recent development is the designation of CPT® (*Current Procedural Terminology*) codes for chemodenervation of eccrine glands (eg, BTX-A therapy).[15,16] The code for facial HH is 64653, which applies to chemodenervation of eccrine glands in areas other than the axillae (eg, scalp, face, neck). According to the American Medical Association, providers must "report the specific service in conjunction with code(s) for the specific substance(s) or drug(s) provided."[16] Although there is great potential for abuse of this code for cosmetic procedures, it has not been more difficult to obtain insurance reimbursement for facial HH than other forms of HH.

Comment

Facial HH can cause marked daily limitations (eg, sweat dripping into the patient's eyes hindering activities, discomfort, self-consciousness about his/her appearance), resulting in reduced personal and emotional quality of life. Topical agents and tap water iontophoresis are inconvenient and/or impractical for treating facial HH. Thus, it is important that physicians are aware of BTX-A as a treatment option for facial HH and understand the proper techniques for BTX-A (Botox) injections to achieve successful clinical outcomes and maintain safety and aesthetic balance.

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