

TREATMENT OPTION FOR PLANTAR HYPERHIDROSIS

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Hyperhidrosis is excessive sweating of the axillae, palms, face, feet or can be generalized. It is thought to affect up to 1% of the population and can be embarrassing for the patient and increase their susceptibility to infections due to macerated skin. There are two types of hyperhidrosis, primary or idiopathic where no known cause can be identified, and secondary hyperhidrosis, in which a cause of the excessive sweating can be identified. Some common causes of secondary hyperhidrosis are hyperthyroidism, hormonal imbalances (menopausal or drug-induced), obesity, or various psychiatric disturbances. Treatment of secondary hyperhidrosis consists of managing the underlying disease or disorder. For primary hyperhidrosis, various treatment options currently exist.

Patients may seek treatment from the podiatric physician because of the hygiene problems associated with excessive perspiration, tendency for blisters, or because of the high incidence of athlete's foot infection associated with damp, macerated skin.

Previous treatment options included topical antiperspirants, oral medications, iontophoresis, or surgical sympathectomy. Topical treatments include Epsom salt soaks or aluminum-chloride applications such as Drysol or Certain-Dry. These modalities may work in patients with mild to moderate cases of hyperhidrosis and should be considered initially before considering more invasive or painful options. Oral medications aimed at blocking or slowing down the sympathetic nervous system have also been used. Anti-cholinergics such as Robinul or Ditropan are effective in some patients however often have intolerable side effects such as dry mouth, constipation, or dry eyes. Tolerance to these medications may also develop with time. Antidepressant/anxiolytic medications may also be beneficial in those with an emotional etiology or trigger associated with the onset of their excessive perspiration.

Iontophoresis, which is application of an electrical current to the skin, has been used to treat hyperhidrosis of the hands, feet, or axillae. This can be applied by a physical therapist in an office setting, or smaller, home units are also available for patients to purchase directly. The most popular home unit is marketed by General Medical Company and is called Drionic. These units are often effective in more resistant cases of hyperhidrosis and can be combined with other treatment modalities. Some patients may find them cost prohibitive or especially when used on the hands, may be too uncomfortable for

long-term use. Fortunately, when used on the feet, there are fewer reports of discomfort.

For those patients with symptoms unresponsive to the above modalities, surgical sympathectomy can be considered a final option. Endoscopic techniques, where a small camera is inserted into the armpit area exposing the sympathetic chain ganglia, have reduced some of the complications associated with this procedure. Significant potential side effects still persist despite more refined techniques. Most notable is compensatory sweating where the perspiration on the hands, face, or feet is reduced or cured but excessive sweating occurs elsewhere on the body such as the trunk, buttocks, or thighs. Intolerance to excessive heat or cold also is a known risk. If hyperhidrosis is limited to just the soles of the feet, the thoracic endoscopic procedure is not indicated and a more invasive abdominal approach to transect the sympathetic chain at the lumbar level would be necessary. Due to the excessive surgical exposure and complications, this procedure is rarely performed.

Most recently, injectable neurotoxins have been reportedly used to treat this condition in the feet, hands, face, and axillae. Botox, is purified botulinum toxin type A, and is manufactured by Allergan. It has been approved for use in treatment of chronic, muscular spasmotic disorders such as torticollis, strabismus (deviation of alignment of an eye), and blepharospasm (twitching of the muscles around the eye). It also has been approved for cosmetic use to soften the appearance of frown lines on the forehead. Use of Botox for hyperhidrosis is considered "off-label" and has not been FDA approved however numerous reports exist in the medical literature citing its safety and effectiveness in treating this condition. Because it has yet to earn FDA approval for this indication, most insurance companies will not cover the cost of treating hyperhidrosis with Botox. Unfortunately the price of the medication and treatment may be cost prohibitive for some patients.

TECHNIQUE

Prior to injecting the neurotoxin into the skin, the exact areas of overactive sweat glands must be identified. This is accomplished by applying a tincture of iodine to the soles of the feet and lightly dusting them with corn starch powder. The areas of hyperhidrosis will turn black which

will indicate the areas that must be treated. This is referred to as the "Minor Starch Test." This test is performed again at follow up visits to determine the effectiveness of the treatment and to determine if any additional injections are necessary.

Once the areas needing treatment have been identified, the Botox chemical needs to be prepared. Each vial of Botox contains 100 units of vacuum-dried *Clostridium botulinum* type A neurotoxin, the active ingredient. The vial must be reconstituted with sterile saline and refrigerated prior to its use. There are no preservatives in the medication and it must be used within 4 hours of reconstitution. Generally, only one foot is treated at a time and requires about 100 units or more of Botox. No more than 200 units of Botox may be injected in one treatment session as sensitization may occur. In the areas of the foot requiring treatment, 0.05 ml of the reconstituted chemical is injected intradermally such that a small, dermal wheal is raised. One must take care not to inject too deeply into the subcutaneous layer as the chemical will quickly dissipate and the nerve supplying the eccrine gland will be missed. The injections should be spaced about 0.75 cm apart in the plantar skin. One week following the first treatment, the patient should be reappointed to have the opposite foot treated in a similar manner. In order for these multiple injections to be tolerable for the patient, typically a posterior tibial nerve block is performed. The procedure may be performed under

local anesthesia only or in conjunction with IV sedation. The most common side effect is that of mild, transient weakness of some of the intrinsic muscles of the feet or digits. This weakness may persist for 7-10 days.

On follow up appointments, the starch test should be repeated to determine if any areas on the feet need to be retreated. Typically, total anhidrosis is obtained and lasts approximately 6 months. There have been no reports of compensatory hyperhidrosis in those treated with Botox unlike with those treated with surgical sympathectomies. Unfortunately, this treatment option does not provide a permanent cure for hyperhidrosis but may control the problem for many months and has fewer side effects than most other treatment modalities.

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