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Case Report

Primary palmar hyperhidrosis treated with intradermal botulinum toxin type A injection and topical aluminum chloride

Tara Sefanya Kairupan, Marlyn Grace Kapantow

Department of Dermatology and Venereology, Faculty of Medicine, Sam Ratulangi University/ Prof. dr. R.D. Kandou General Hospital, Manado, Indonesia.

Abstract Primary focal hyperhidrosis is chronic, idiopathic, excessive sweating beyond the amount necessary for normal thermoregulation. It can affect one or more areas of the body, commonly the face, armpits, palms, or feet. This can cause great disruption in the quality of life of the patients and needs to be treated properly. Various treatment options are available, including topical and systemic drugs, botulinum toxin type A injection, iontophoresis, microwave thermolysis, and surgery. Effective hyperhidrosis treatment varies among patients and may involve combination therapy. We report a case of primary palmar hyperhidrosis in a 33-year-old man. The patient had been using topical 15% aluminum chloride for 1 month without significant improvement. We administered intradermal botulinum toxin A injections, 100 IU for each palm, which led to marked improvements but still was not satisfying. Topical 10.8% aluminum chloride was given. Hyperhidrosis disease severity scale (HDSS) improved from 4 (severe) to 1 (mild). Topical aluminum chloride is one of the first-line therapy for hyperhidrosis considering its safety, cost-effectiveness, and efficacy profile. Botulinum toxin A injection can be used in cases of severe hyperhidrosis or refractory to topical treatment. Nevertheless, not all patients respond to monotherapy approach, thus combination therapy can be recommended. In this case report, combination of intradermal botulinum toxin A injection and topical 10.8% aluminum chloride was found to be effective in controlling hyperhidrosis in a patient with partial response to monotherapy of either agent.

Key words
Palmar hyperhidrosis; Botulinum toxin; Aluminium chloride.

Introduction

Primary focal hyperhidrosis is a chronic, idiopathic condition characterized by excessive sweat production in areas such as the axillae, palms, soles, and/ or craniofacial region, beyond what is necessary for normal thermoregulation.[1,2]

It can cause considerable psychosocial impact for the patients and needs to be treated properly. Standard therapeutic approaches include topical and systemic drugs, botulinum toxin A injection, iontophoresis, microwave thermolysis, and surgery. Each modality has its own levels of effectiveness, side effects, practicality and costs. Combination of modalities has been shown to increase the treatment response in refractory cases.[2-7]

Address for correspondence
Dr. Tara Sefanya Kairupan
Department of Dermatology and Venereology,
Faculty of Medicine, Sam Ratulangi University/
Prof. dr. R.D. Kandou General Hospital,
Manado, 95163, Indonesia.
Email: tarakairupan@unsrat.ac.id

Case Report

A 33-year-old man visited our outpatient clinic with the chief complaint of sweaty palms which had been present since he was 8 years old, often intensified by stress, anxiety, and warm temperature. Sweating became worse and more frequent about 5 years ago, interfering with daily

life and work. The symptom was milder and often not felt at night when he was sleeping. Excessive sweating was also felt in the armpits and soles of the feet but not as bothersome. The patient was otherwise healthy, denied having any other diseases or consuming any drugs. He smokes and consumes alcohol occasionally. He had previously tried topical 15% aluminum chloride for 1 month with no significant effect. His father and 4 other relatives were also experiencing similar complaints.

Dermatological examination revealed hyperhidrosis on both palms confirmed with positive Minor's starch iodine test **(Figure 1A)**. Hyperhidrosis disease severity scale (HDSS) score was 4 (severe). Blood glucose, erythrocyte sedimentation rate, liver and renal functions, free T4 and TSH levels were within normal limits. Patient was diagnosed with primary palmar hyperhidrosis and treated with botulinum toxin A. Intradermal injections were done to multiple sites throughout the palms, 1-1.5 cm apart, 1.5 IU for each site. Second treatment was done to several unaffected areas after 1 week, with Minor starch iodine test result as a guidance. A total of 200 IU botulinum toxin was administered for both palms.

The patient started noticing decrease in sweat production by the first week. He experienced minimal muscle weakness that subsequently disappeared. At 1-month follow-up, palms were still partially wet, HDSS score decreased to 2-3 (moderate), Minor's starch iodine test showed multiple anhidrotic halos covering 60-70% of the palms **(Figure 1B)**. Patient admitted that on certain occasions he still sweats excessively and wished for additional topical medication. We prescribed him with topical 10.8% aluminum chloride solution applied every night. After 2 weeks, he was very satisfied with the additional sweat control and continued using the solution as needed. HDSS score decreased to 1 (mild). On examination, minor starch iodine test showed >90% anhidrotic areas even after 20 minutes **(Figure 1C)**.

Discussion

Aluminum chloride-based antiperspirant is often used as first-line option for primary focal hyperhidrosis. Mechanism of action is through blockade of aluminum salts in the eccrine sweat gland ducts, leading to functional and structural degeneration of both ductal epithelial cells and glandular secretory cells, which in turn prevent the release of sweat.

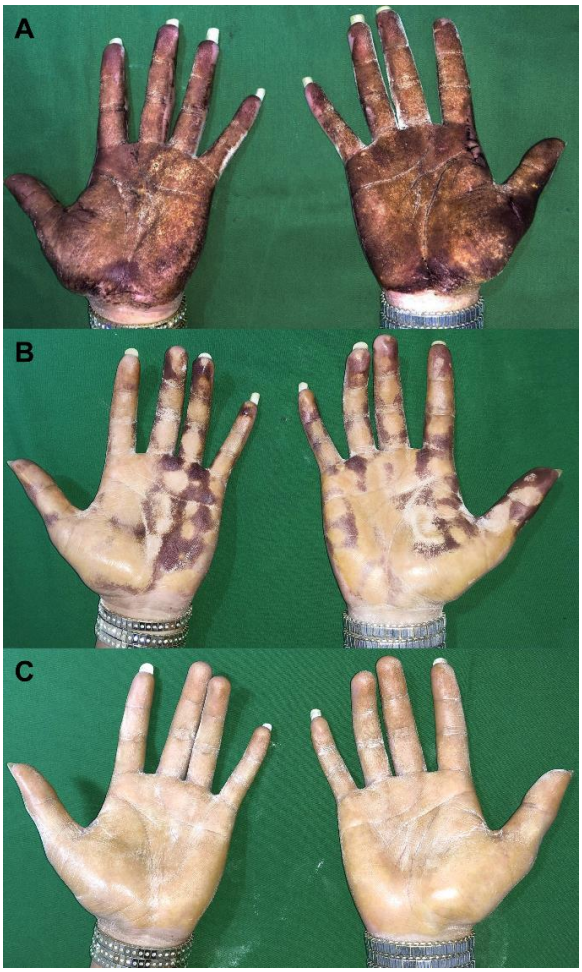

Figure 1 Minor's starch iodine test after 15 minutes. (A) Before botulinum toxin A injection. (B) 4 weeks after botulinum toxin A injection (100 IU for each palm). (C) 2 weeks after adding topical 10.8% aluminum chloride.

For moderate to severe cases, concentration of 10-35% can be used nightly to the affected area and left for 6-8 hours. Once clinical relief has been attained, application interval may be extended to 1-2 times per week.[1-3]

For cases with severe hyperhidrosis or refractory to topical therapy, second-line modalities such as botulinum toxin A can be given. Botulinum toxin A blocks the release of acetylcholine, which acts as a mediator sympathetic neurotransmission in the sweat glands, thus eventually may stop excessive sweating. The recommended dose of botulinum toxin A for the treatment of palmar hyperhidrosis is 50-200 IU for each palm, adjusted to the size of the palm (1-2 points on each phalanx and 1-2 cm intervals on the palms). Each point can be given an injection dose of 1.5-2.0 IU.[4,5]

It is very crucial to address patients' expectations prior to initiating treatment, as below par results can cause lower compliance. In our case, the patient refused trying more topical therapy and resorted to botulinum toxin injection because of the history of topical treatment failure. The patient, however, continued using topical treatment diligently after botulinum toxin A injection for its excellent additional sweat control. Abundance of sweat production may prevent aluminum chloride to efficiently block the sweat ducts. Initial botulinum toxin therapy may decrease the severity of sweating, making topical treatment penetrate more effectively. Consequently, this may lower the need for higher concentration of aluminum chloride solution. Combination therapy may also achieve relatively longer duration of effect in comparison to monotherapy. Newer formulations with 2-4% salicylic acid gel base may be used to increase efficacy and higher concentration tolerability (less skin irritation).[6,7]

Conclusion

Primary focal hyperhidrosis is a chronic disorder that can have a significant impact on quality of life. While monotherapy can be effective in most cases, some patients might need combination of therapies to achieve complete satisfaction. We presented a case of 33-year-old male with primary palmar hyperhidrosis which was successfully treated with a combination therapy of intradermal botulinum toxin A and topical 10.8% aluminum chloride.

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