CASE REPORT

Development of inflammatory nodules and scarring mimicking hidradenitis suppurativa after treatment of axillary hyperhidrosis using a microwave-based energy device

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Key words: hidradenitis suppurativa; hyperhidrosis; inflammatory nodules; microwave-based energy; miraDry; scarring.

INTRODUCTION

Hidradenitis suppurativa (HS) is an inflammatory condition characterized by recurrent painful erythematous nodules developing most commonly in the axilla or groin. HS is a chronic condition culminating in scarring and often dermal sinus tracts. A microwave-based energy device (miraDry; Sientra, Santa Clarita, CA) is a noninvasive device approved by the US Food and Drug Administration for treatment of axillary hyperhidrosis. It uses microwave energy targeting apocrine and eccrine glands at the interface between the dermis and subcutis.

We report a patient with inflammatory nodules and scarring mimicking HS developing after treatment of axillary hyperhidrosis using a microwave-based energy device.

CASE REPORT

A 31-year-old man with no prior personal or family history of HS presented with recurrent erythematous painful nodules in both axillae after receiving treatment with microwave-based energy device for axillary hyperhidrosis. The patient was never a smoker and had no significant medical or surgical history. The patient first had nodules approximately 1 month after his first treatment. The nodules were occasionally suppurative and painful, and some healed with scarring. The patient did not undergo further microwave-based energy treatments nor pursued treatment for the nodules. On presentation, a year and a half after undergoing microwave-based energy treatment, he continued to have nodules in his axillae, averaging 1 new nodule per month. A solitary tender erythematous nodule was noted on examination in the left axilla, measuring 1.5 × 1 cm. (Fig 1). Both axillae showed scarring at sites of prior nodules (Figs 1 and 2). No sinus tract formation was noted. Intralesional triamcinolone acetonide, 0.4 mL of 10 mg/mL was injected into the nodule with improvement on follow-up 1 month later.

DISCUSSION

HS pathophysiology is linked to pilosebaceous-apocrine unit abnormalities with associated immune response. Recent studies show the importance of the follicular infundibulum in HS. Apocrine gland acrosyringium opens at the infundibular level of hair follicle in the dermis. Therefore, any anatomic or functional alteration in the follicular infundibulum might lead to obstruction with resultant infundibulitis. Other pathogenic factors include bacterial overgrowth or infection. Studies have found the result will lead to increased levels of tumor necrosis factor α and interleukin (IL)-12 and 23, which will

Abbreviations used:
HS: hidradenitis suppurativa
IL: interleukin

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eventually activate IL-17 and keratinocytes. Furthermore, the chronic and suppurative nature of HS is thought to be related to increased levels of lesional IL-17 and dermal biofilms.

A microwave-based energy device targets apocrine and eccrine glands at the interface between the dermis and subcutis. Anesthesia is achieved via tumescent lidocaine injected through a canula. The fanning technique is recommended with a 3- to 4-mm depth (at the dermal-subcutis interface).

In a 2-year efficacy and safety data report, the following adverse reactions were noted: edema, erythema, discomfort, and rarely altered sensation, papules/nodules, and hair loss in the treated area. All adverse reactions were reported as transient and lasting not more than 6 months.

Histologic changes seen after microwave-based energy treatment include near-complete loss of normal-appearing apocrine and eccrine glands in the reticular dermis and subcutis. Periglandular fibrosis and lymphohistiocytic infiltrates were observed and thought to be posttraumatic changes. Inflammatory infiltrates were seen up to 180 days after treatment.

Development of inflammatory nodules in this case may be explained by the microwave-induced periglandular fibrosis and reactive inflammatory infiltrates leading to altered infundibular anatomy and function, similar to pathophysiology of HS. The subsequent development of inflammatory nodules with resultant scarring seems indistinguishable from the symptom complex we call HS. To our knowledge, this is the first reported case of chronic repetitive inflammatory nodules and scarring after microwave-based energy device treatment.

**REFERENCES**

1. Hoffman LK, Ghias MH, Lowes MA. Pathophysiology of hidradenitis suppurativa. *Semin Cutan Med Surg*. 2017;36(2):47-54.
2. Schlappbach C, Hanni T, Yawalkar N, Hunger RE. Expression of the IL-23/Th17 pathway in lesions of hidradenitis suppurativa. *J Am Acad Dermatol*. 2011;65(4):790-798.
3. Hong HC, Lupin M, O’Saughnessy KF. Clinical evaluation of a microwave device for treating axillary hyperhidrosis. *Dermatol Surg*. 2012;38(5):728-735.
4. Lupin M, Hong HC, O'Saughnessy KF. Long-term efficacy and quality of life assessment for treatment of axillary hyperhidrosis with a microwave device. *Dermatol Surg*. 2014;40(7):805-807.
5. Fatemi F, Saffaei A, Pourazizi M, Abtahi-Naeini B. Histopathological evidence of efficacy of microneedle radiofrequency for treatment of axillary hyperhidrosis. *Indian J Dermatol Venereol Leprol*. 2015;81(3):288-290.