

Prurigo nodularis after acupuncture

Timothy Hermosura Almazan, MD,^a and Jae Yeon Jung, MD, PhD^{a,b}
Duarte, California

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INTRODUCTION

Prurigo nodularis (PN) is a difficult-to-treat, chronic skin disorder characterized by the eruption of pruritic, hyperkeratotic nodules of the extensor surfaces.¹ Here, we describe a patient who presented to our clinic with symptomatic, biopsy-proven PN shortly after acupuncture therapy.

CASE

A 52-year-old man without a history of atopy was referred to the dermatology clinic at the City of Hope Medical Center for lesions on his arms and legs that had been present for several months. He stated that they began to appear days after receiving traditional needle acupuncture therapy. The location of the lesions on his extremities coincided with where the acupuncture needles had been placed.

The patient's medical history included papillary thyroid cancer, thyroidectomy, subsequent hypothyroidism (treated with levothyroxine and euthyroid at the time of presentation based on a normal thyroid-stimulating hormone level), hyperlipidemia, and prostatic hypertrophy. Given his history of cancer, the patient was concerned that his skin lesions represented cancer recurrence. Skin lesions were extremely pruritic and continued to increase in size after acupuncture.

Examination found five 15-mm hyperkeratotic papules and plaques located on the bilateral upper and lower extremities (Fig 1). Skin of the chest, back, face, scalp, and abdomen were unaffected.

A shave biopsy performed on plaques of the right dorsal arm and left forearm found PN. The left forearm lesion additionally had ulceration and secondary bacterial colonization. A left forearm skin culture found methicillin-sensitive *Staphylococcus aureus*; this was thought to represent colonization

Abbreviations used:

IL: interleukin
PN: prurigo nodularis

rather than infection. Results of acid-fast stain, acid-fast culture, potassium hydroxide prep, fungal cultures, and herpes simplex virus/varicella-zoster virus shell vial cultures were negative.

Clinically and histologically, the patient's skin lesions were consistent with PN. He was treated with intralesional steroids (Kenalog [triamcinolone acetone] 40 mg/mL) along with fluocinonide 0.05% ointment twice a day. This resulted in improvement of pruritus and flattening of the nodules. The possibility of a late-in-life presentation of epidermolysis bullosa pruriginosa was considered; however, given a lack of family history of skin conditions, along with no skin blistering, excoriations, or significant lichenification, this diagnosis was felt to be less likely.

DISCUSSION

Cutaneous sequela related to acupuncture is rare. A prospective study of 97,733 patients having received acupuncture treatment noted that the 2 most commonly reported adverse events were local pain (3.3%) and hematoma formation (3.2%).² Nevertheless, acupuncture has been uncommonly associated with a variety of cutaneous phenomena, including mycobacterial infections, erythema nodosum, and the Koebner phenomenon. The association between acupuncture and PN has not yet been fully characterized.

PN affects all age groups and is often associated with a history of atopic disease. Additionally,

From the Division of Dermatology,^a and Cancer Immunotherapeutics and Tumor Immunology^b, City of Hope Comprehensive Cancer Center.

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Correspondence to: Jae Yeon Jung, MD, PhD, City of Hope Comprehensive Cancer Center, Division of Dermatology, 1500 East Duarte Road, Duarte, CA 91010. E-mail: jjung@coh.org.

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Fig 1. PN after acupuncture. Hyperkeratotic nodules on the extensor surface of the patient's forearms at sites of recent acupuncture needle placement (**A**, **B**, and **C**). Pathology findings show dermal hyperplasia with hyperkeratosis associated with focal erosion and acute inflammation (**D** and **E**). (Hematoxylin-eosin stain.)

PN may be linked to nondermatologic systemic conditions, including human immunodeficiency virus, mycobacterial infections, hyperthyroidism, and lymphoma.¹

The pathogenesis of PN is poorly understood but may be related to local hypertrophy and proliferation of dermal nerves. Nerves that are immunoreactive to calcitonin gene–related peptide and substance P are more abundant in patients with PN. The upregulation of these neuropeptides, possibly by skin microtrauma, may play a role in neurogenic inflammation and pruritus in this disease.¹

The mechanical stimulus of acupuncture is found to induce calcium influx within mast cells, leading to degranulation.³ Heavily degranulated mast cells are

often found in areas of prurigo. Mast cells release nerve growth factor, a neuropeptide that stimulates development and survival of peripheral nerve cells. Nerve growth factor is found to be overexpressed in PN and may induce neuron hyperplasia and neurogenic inflammation.¹

Another possible mechanism driving PN is the engenderment of an allergic-type reaction caused by an irritant on the acupuncture needle (eg, bacteria, chemicals) or by direct skin irritation from the metal itself. In a study of 22 patients with PN, epidermal biopsies stained disproportionately for markers of the allergic T helper 2 cytokines (interleukin [IL]-4, IL-5, and IL-13) as opposed to T helper 1 cytokine (interferon and IL-27) markers.⁴

The concept of skin lesions forming at sites of prior trauma is not new. The Koebner phenomenon in patients with psoriasis is perhaps the best-studied example. There is increasing recognition of other dermatologic diseases that arise at sites of cutaneous injury. These include diseases such as vitiligo, lichen planus, Darier's disease, and bullous dermatoses.⁵

Although dermatologic complications resulting specifically from acupuncture are rare, they are not unheard of. Acupuncture-induced mycobacteriosis has been commonly described in the literature. Infections with *Mycobacterium chelonae*, *Mycobacterium nonchromogenicum*, and *Mycobacterium abscessus* have been reported in immunocompetent hosts and are associated with contaminated acupuncture needles.⁶

Erythema nodosum, considered a systemic hypersensitivity reaction, has been reported after acupuncture in a single case report. Erythema nodosum-like lesions first appeared at prior needle placement sites and were followed by the development of similar lesions on the face, body, and extremities, in association with flulike symptoms.⁷

One case report described a patient with underlying ulcerative colitis in whom pyoderma gangrenosum induced by acupuncture developed; another report of an acupuncture-induced, positive pathergy test (as evidenced by pustule formation in prior needling sites) occurred in a patient with Behcet's disease.^{8,9}

A case of acupuncture-related dermal spread of breast cancer has been reported in the literature and is considered an extremely rare case.¹⁰

CONCLUSION

Here, we describe a unique presentation of PN appearing shortly after acupuncture, with lesions appearing at sites of prior needle placement. We

speculate that the irritation from acupuncture led to pruritus and repeated scratching, which in turn may have contributed to the persistence and enlargement of the patient's lesions until treatment was initiated. Small amounts of scarring or potential keloid formation may have been complicating factors. This case illustrates the importance of understanding the possible skin-related consequences associated with acupuncture.

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