Multiple Fingerlike Projections on the Leg

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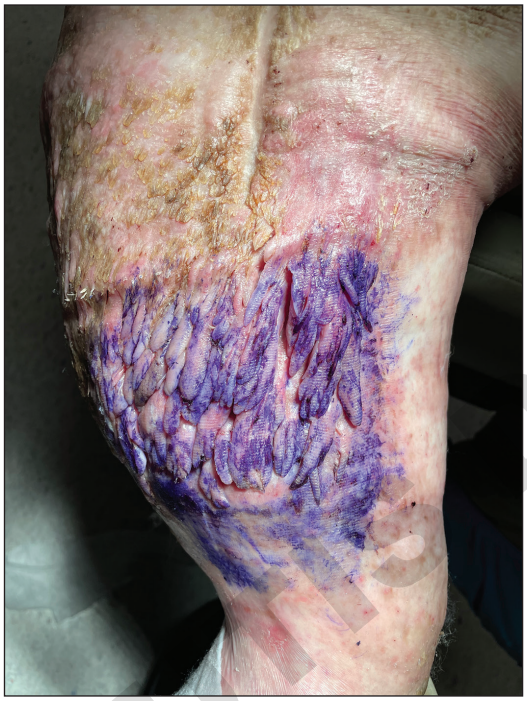

A 61-year-old man presented with painful skin growths on the right pretibial region of several months' duration. The patient reported pain due to friction between the lesions and underlying skin, leading to erosions. His medical history was remarkable for morbid obesity (body mass index of 62), chronic venous stasis, and chronic lymphedema. The patient was followed for wound care of venous stasis ulcers. Dermatologic examination revealed multiple 5- to 30-mm, flesh-colored, fingerlike projections on the right tibial region. A biopsy was obtained and submitted for histopathologic analysis.

WHAT'S YOUR **DIAGNOSIS?**

a. elephantiasis nostras verrucosa
b. lymphatic filariasis
c. papillomatosis cutis carcinoides
d. pretibial myxedema
e. Stewart-Treves syndrome

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THE **DIAGNOSIS:** Elephantiasis Nostras Verrucosa

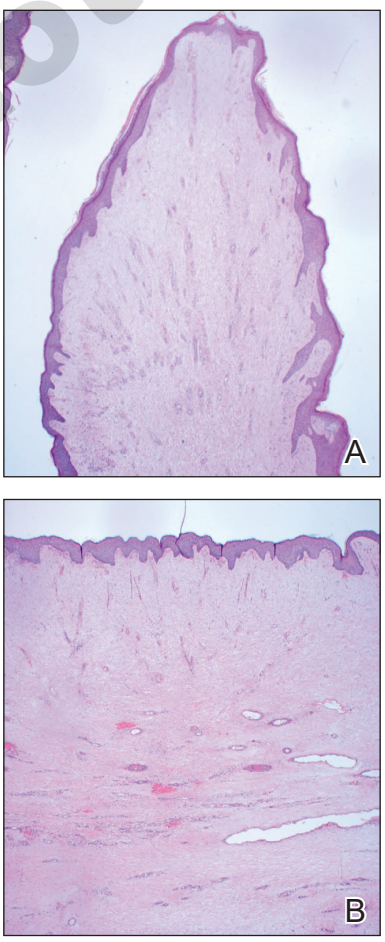
Histopathology revealed a benign fibroepithelial polyp demonstrating areas of hyperkeratosis, acanthosis, and focal papillomatosis (Figure, A). Increased superficial vessels with dilated lymphatics, stellate fibroblasts, edematous stroma, and plasmolymphocytosis also were noted (Figure, B). Clinical and histopathological findings led to a diagnosis of lymphedema papules in the setting of elephantiasis nostra verrucosa (ENV).

Elephantiasis nostras verrucosa is a complication of long-standing nonfilarial obstruction of lymphatic drainage leading to grotesque enlargement of the affected areas. Common cutaneous manifestations of ENV include nonpitting edema, dermal fibrosis, and extensive hyperkeratosis with verrucous and papillomatous lesions.[1] In the beginning stages of ENV, the skin has a cobblestone-like appearance. As the disease progresses, the verrucous lesions continue to enlarge, giving the affected area a mossy appearance. Although less common, groupings of large papillomas similar to our patient's presentation also can form.[2] Ulcer formation is more likely to occur in advanced disease states, increasing the risk for bacterial and fungal colonization. Elephantiasis nostras verrucosa classically affects the legs; however, this condition can develop in any area with chronic lymphedema. Cases of ENV involving the arms, abdomen, scrotum, and ear have been documented.[3-5]

The pathogenesis of ENV involves the proliferation of fibroblasts and fibrosis secondary to lymphostasis and inflammation.[6] When interstitial fluid builds up in the affected region, the protein-rich fluid is believed to trigger fibrogenesis and increase macrophage, keratinocyte, and adipocyte activity.[7] Because of this inflammatory process, dilation and fibrosis of the lymphatic channels develop. Lymphatic obstruction can have several etiologies, most notably infection and malignancy. Staphylococcal lymphangitis and erysipelas create fibrosis of the lymphatic system and are the main infectious causes of ENV.[6] Large tumors or lymphomas are insidious causes of lymphatic obstruction and should be ruled out when investigating for ENV. Other risk factors include obesity, chronic venous insufficiency, surgery, trauma, radiation, and uncontrolled congestive heart failure.[1,6,8]

An ENV diagnosis is clinicopathologic, involving a comprehensive metabolic panel and complete blood cell count with differential. A biopsy is needed for pathologic confirmation and to rule out malignancy. Histologically, ENV is characterized by pseudoepitheliomatous hyperplasia, dermal fibrosis, hyperkeratosis of the epidermis, and dilated lymphatic vessels.[6,8] Additional studies for diagnosis include wound and lymph node culture, Wood lamp examination, and lymphoscintigraphy.

Given the chronic and progressive nature of the disease, ENV is difficult to treat. There currently is no standard of treatment, but the mainstay of management involves reducing peripheral edema. Lifestyle changes including weight loss, extremity elevation, and increased ambulation are helpful first-line therapies.[3] Compression of the affected extremity using stockings or intermittent pneumatic compression devices has proven to be beneficial with long-term use.[7] Patients should be followed for wound care to prevent the infection of ulcers.[2] Pharmacologic treatments include systemic retinoids, which have been shown to reduce the appearance of hyperkeratosis, verrucous lesions, and papillomatous nodules.[6] Prophylactic antibiotics are reserved for advanced stages of disease or in patients with



A, Benign fibroepithelial polyp with areas of hyperkeratosis, acanthosis, and focal papillomatosis (H&E, original magnification ×4).
B, Dilated lymphatics, stellate fibroblasts, edematous stroma, and superficial plasmolymphocytosis (H&E, original magnification ×10).

recurrent infections.[2,7] In severe cases of ENV that are unresponsive to medical management, surgical intervention such as lymphatic anastomosis and debulking may be considered.[9,10]

Other diagnoses to consider for ENV include pretibial myxedema, lymphatic filariasis, Stewart-Treves syndrome, and papillomatosis cutis carcinoides. Pretibial myxedema is an uncommon dermatologic manifestation of Graves disease. It is a local autoimmune reaction in the cutaneous tissue characterized by hyperpigmentation, nonpitting edema, and nodules on the anterior leg. Histopathology shows increased hyaluronic acid and chondroitin as well as compression of dermal lymphatics.[11]

Filariasis is a parasitic infection caused by *Wuchereria bancrofti*, *Brugia malayi* or *Brugia timori,* and *Onchocerca volvulus*.[6] This condition presents with elephantiasis of the affected extremities but should be considered in areas endemic for filarial parasites such as tropical and subtropical countries.[12] Eosinophilia and identification of microfilaria in a peripheral blood smear would indicate parasitic infection.

Stewart-Treves syndrome is a rare angiosarcoma that arises in areas of chronic lymphedema. This condition classically is seen on the upper extremities following a mastectomy with lymphadenectomy, lymph node irradiation, or both. Stewart-Treves syndrome presents with coalescing purpuric macules and nodules that eventually coalesce into cutaneous masses. Histopathology reveals proliferating vascular channels that split apart dermal collagen with hyperchromatism and pleomorphism in the tumor endothelial cells that line these channels.[13]

Papillomatosis cutis carcinoides is a low-grade squamous cell carcinoma that occurs secondary to human papillomavirus commonly affecting the mouth, anogenital area, and the plantar surfaces of the feet. It presents with exophytic growths and ulcerated tumors that are unilateral and asymmetrical. The presence of blunt-shaped tumor projections extending deep into the dermis to form sinuses and keratin-filled cysts is characteristic of papillomatosis cutis carcinoides.[14]

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