Ulcer on the Leg

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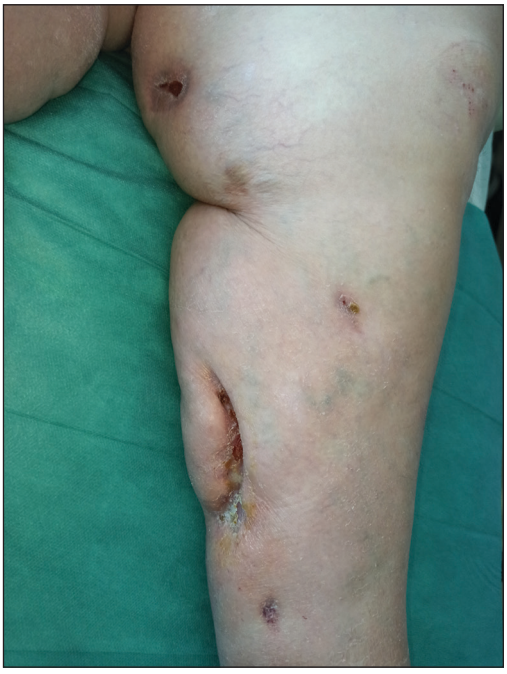

A 49-year-old woman with type 2 diabetes mellitus, morbid obesity, pulmonary fibrosis, and pulmonary arterial hypertension presented to our hospital with an ulcer on the left leg of unknown etiology that was superinfected by multidrug-resistant *Klebsiella* according to bacterial culture. She had an axillary temperature of 38.6 °C. She underwent amputation of the second and third toes on the left foot 5 years prior to presentation due to distal necrotic ulcers of ischemic origin. Physical examination revealed an 8×2-cm deep ulcer with abrupt edges on the left leg with fibrin and a purulent exudate. Deep palpation of the perilesional skin revealed indurated subcutaneous nodules. She also had scars on the fingertips of both hands with no induration on the rest of the skin surface. Capillaroscopy showed no pathologic findings. Blood cultures were performed, and she was admitted to the hospital for intravenous antibiotic therapy. During ulcer debridement, some solid whitish material was released.

WHAT'S YOUR **DIAGNOSIS?**

a. calcinosis cutis due to dermatomyositis
b. calcinosis cutis due to systemic sclerosis sine scleroderma
c. calciphylaxis
d. traumatic ulcer with secondary calcification
e. venous ulcer

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The authors report no conflict of interest.
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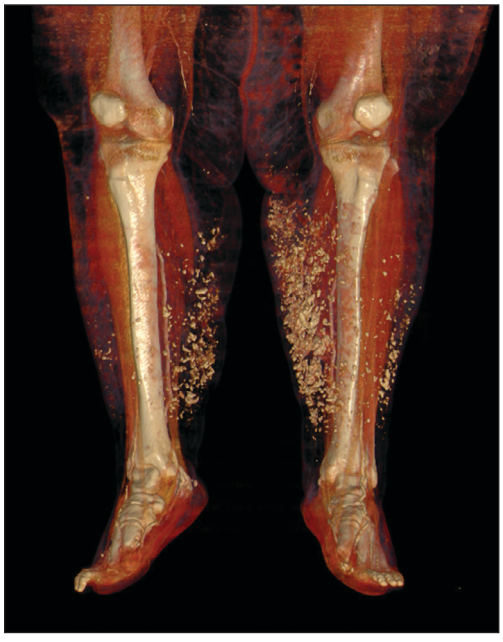
THE **DIAGNOSIS:** Calcinosis Cutis Due to Systemic Sclerosis Sine Scleroderma

Laboratory evaluation was notable for high titers of antinuclear antibodies (>1/320; reference range, 0–1/80) and positive anticentromere antibodies. There were no other relevant laboratory findings; phosphocalcic metabolism was within normal limits, and urinary sediment was normal. Biopsy of the edge of the ulcer revealed basophilic material compatible with calcium deposits. In a 3D volume rendering reconstruction from the lower limb scanner, grouped calcifications were observed in subcutaneous cellular tissue near the ulcer (Figure). The patient had a restrictive ventilatory pattern observed in a pulmonary function test. An esophageal motility study was normal.

The patient was diagnosed with systemic sclerosis sine scleroderma (ssSSc) type II because she met the 4 criteria established by Poormoghim et al[1]: (1) Raynaud phenomenon or a peripheral vascular equivalent (ie, digital pitting scars, digital-tip ulcers, digital-tip gangrene, abnormal nail fold capillaries); (2) positive antinuclear antibodies; (3) distal esophageal hypomotility, small bowel hypomotility, pulmonary interstitial fibrosis, primary pulmonary arterial hypertension (without fibrosis), cardiac involvement typical of scleroderma, or renal failure; and (4) no other defined connective tissue or other disease as a cause of the prior conditions.



A 3D volume rendering reconstruction of the lower limbs showed multiple calcifications grouped in the subcutaneous cellular tissue on both legs.

Systemic sclerosis is a chronic disease characterized by progressive fibrosis of the skin and other internal organs—especially the lungs, kidneys, digestive tract, and heart—as well as generalized vascular dysfunction. Cutaneous induration is its hallmark; however, up to 10% of affected patients have ssSSc.[2] This entity is characterized by the total or partial absence of cutaneous manifestations of systemic sclerosis with the occurrence of internal organ involvement and serologic abnormalities. There are 3 types of ssSSc depending on the grade of skin involvement. Type I is characterized by the lack of any typical cutaneous stigmata of the disease. Type II is without sclerodactyly but can coexist with other cutaneous findings such as calcifications, telangiectases, or pitting scars. Type III is characterized clinically by internal organ involvement, typical of systemic sclerosis, that has appeared before skin changes.[2]

An abnormal deposit of calcium in the cutaneous and subcutaneous tissue is called calcinosis cutis. There are 5 subtypes of calcinosis cutis: dystrophic, metastatic, idiopathic, iatrogenic, and calciphylaxis. Dystrophic skin calcifications may appear in patients with connective tissue diseases such as dermatomyositis or systemic sclerosis.[3] Up to 25% of patients with systemic sclerosis can develop calcinosis cutis due to local tissue damage, with normal phosphocalcic metabolism.[3]

Calcinosis cutis is more common in patients with systemic sclerosis and positive anticentromere antibodies.[4] The calcifications usually are located in areas that are subject to repeated trauma, such as the fingers or arms, though other locations have been described such as cervical, paraspinal, or on the hips.[5,6] Our patient developed calcifications on both legs, which represent atypical areas for this process.

Dermatomyositis also can present with calcinosis cutis. There are 4 patterns of calcification: superficial nodulelike calcified masses; deep calcified masses; deep sheetlike calcifications within the fascial planes; and a rare, diffuse, superficial lacy and reticular calcification that involves almost the entire body surface area.[7] Patients with calcinosis cutis secondary to dermatomyositis usually develop proximal muscle weakness, high titers of creatine kinase, heliotrope rash, or interstitial lung disease with specific antibodies.

Calciphylaxis is a serious disorder involving the calcification of dermal and subcutaneous arterioles and capillaries. It presents with painful cutaneous areas of necrosis.

Venous ulcers also can present with secondary dystrophic calcification due to local tissue damage. These

patients usually have cutaneous signs of chronic venous insufficiency. Our patient denied prior trauma to the area; therefore, a traumatic ulcer with secondary calcification was ruled out.

The most concerning complication of calcinosis cutis is the development of ulcers, which occurred in 154 of 316 calcinoses (48.7%) in patients with systemic sclerosis and secondary calcifications.[8] These ulcers can cause disabling pain or become superinfected, as in our patient.

There currently is no drug capable of removing dystrophic calcifications, but diltiazem, minocycline, or colchicine can reduce their size and prevent their progression. In the event of neurologic compromise or intractable pain, the treatment of choice is surgical removal of the calcification.[9] Curettage, intralesional sodium thiosulfate, and intravenous sodium thiosulfate also have been suggested as therapeutic options.[10] Antibiotic treatment was carried out in our patient, which controlled the superinfection of the ulcers. Diltiazem also was started, with stabilization of the calcium deposits without a reduction in their size.

There are few studies evaluating the presence of nondigital ulcers in patients with systemic sclerosis. Shanmugam et al[11] calculated a 4% (N=249) prevalence of ulcers in the lower limbs of systemic sclerosis patients. In a study by Bohelay et al[12] of 45 patients, the estimated prevalence of lower limb ulcers was 12.8%, and the etiologies consisted of 22 cases of venous insufficiency (49%), 21 cases of ischemic causes (47%), and 2 cases of other causes (4%).

We present the case of a woman with ssSSc who developed dystrophic calcinosis cutis in atypical areas with secondary ulceration and superinfection. The skin usually plays a key role in the diagnosis of systemic sclerosis, as sclerodactyly and the characteristic generalized skin induration stand out in affected individuals. Although our patient was diagnosed with ssSSc, her skin manifestations also were crucial for the diagnosis, as she had ulcers on the lower limbs.

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