Violaceous-Purpuric Targetoid Macules and Patches With Bullae and Ulceration

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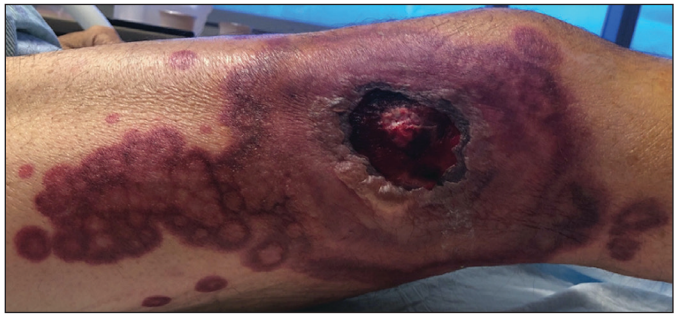

A 64-year-old man with long-standing myelofibrosis presented with neutropenic fevers as well as progressive painful lesions of 3 days' duration on the legs. A bone marrow biopsy during this hospitalization demonstrated a recent progression of the patient's myelofibrosis to acute myeloid leukemia. Physical examination revealed round to oval, violaceous, targetoid plaques. Within a week, new erythematous and nodular lesions appeared on the right arm and left vermilion border. The lesions on the legs enlarged, formed bullae, and ulcerated.

WHAT'S YOUR **DIAGNOSIS?**

a. cutaneous small vessel vasculitis
b. leukemia cutis
c. necrotizing fasciitis
d. neutrophilic eccrine hidradenitis
e. Sweet syndrome (acute febrile neutrophilic dermatosis)

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The authors report no conflict of interest.
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THE **DIAGNOSIS:** Sweet Syndrome (Acute Febrile Neutrophilic Dermatosis)

A skin biopsy of the right lower extremity demonstrated diffuse interstitial, perivascular, and periadnexal neutrophilic dermal infiltrate in the reticular dermis (Figure 1), consistent with a diagnosis of Sweet syndrome without evidence of leukemia cutis or infection. The firm erythematous papulonodules with follicular accentuation on the face (Figure 2) also were confirmed as Sweet syndrome on histopathology. Concern for leukemic transformation was confirmed with bone biopsy revealing acute myeloid leukemia (AML). Our patient began a short course of prednisone, and the cutaneous lesions improved during hospitalization; however, he was lost to follow-up.

Sweet syndrome (also known as acute febrile neutrophilic dermatosis) is a rare inflammatory skin condition typically characterized by asymmetric, painful, erythematous to violaceous papules, plaques, or nodules involving the arms, face, and neck.[1] It most commonly occurs in women and typically presents in patients aged 47 to 57 years. Although the pathogenesis of neutrophilic dermatoses is not completely understood, they are believed to be due to altered expression of inflammatory cytokines, irregular neutrophil function, and a genetic predisposition.[2] There are 3 main categories of Sweet syndrome: classical (or idiopathic), drug induced, and malignancy associated.[1] The lesions associated with Sweet syndrome vary from a few millimeters to several centimeters and may be annular or targetoid in the later stages. They also may form bullae and ulcerate. Fever, leukocytosis, and elevated acute-phase reactants also are common on presentation.[1] Histopathologic analysis demonstrates an intense neutrophilic infiltrate within the reticular dermis with marked leukocytoclasia. Admixed within the neutrophil polymorphs are variable numbers of lymphocytes and histiocytes. Edema in the upper dermis also is characteristic.[3] The exact pathogenesis of Sweet syndrome has yet to be elucidated but may involve a combination of cytokine dysregulation, hypersensitivity reactions, and genetics.[4] Our case demonstrates 3 distinct morphologies of Sweet syndrome in a single patient, including classic edematous plaques, agminated targetoid plaques, and ulceration. Based on the clinical presentation, diagnostic workup for an undiagnosed malignancy was warranted, which confirmed AML. The malignancy-associated form of Sweet syndrome accounts for a substantial portion of cases, with approximately 21% of patients diagnosed with Sweet syndrome having an underlying malignancy, commonly a hematologic malignancy or myeloproliferative disorder with AML being the most common.[1]

The differential diagnosis for Sweet syndrome includes cutaneous small vessel vasculitis, which commonly presents with symmetric palpable purpura of the legs. Lesions may be round, port wine–colored plaques and even may form ulcers, vesicles, and targetoid lesions. However, skin biopsy shows polymorphonuclear infiltrate affecting postcapillary venules, fibrinoid deposits, and extravasation of red blood cells.[5] Leukemia cutis describes any type of leukemia that manifests in the skin. It typically presents as violaceous or red-brown papules, nodules, and plaques most commonly on the legs.

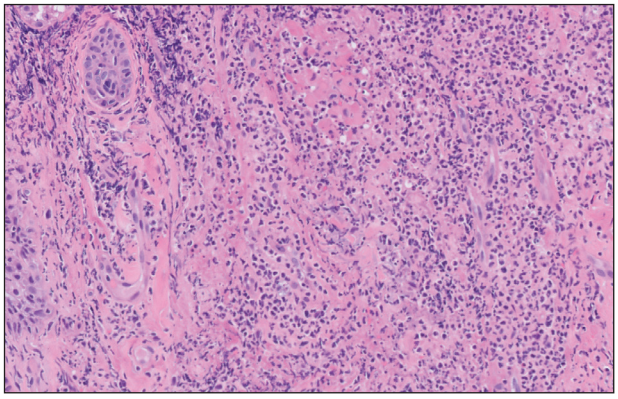

FIGURE 1. Histopathology showed a dense neutrophilic dermal infiltrate in the reticular dermis consistent with Sweet syndrome (H&E, original magnification ×10).

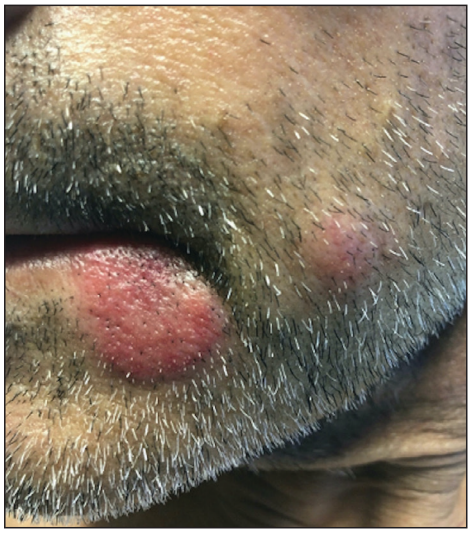

FIGURE 2. An erythematous, edematous, nodular plaque on the left vermilion border and a posterior erythematous nodule were present. The anterior lesion at the vermilion border was confirmed as Sweet syndrome on histopathology.

Histopathology varies by immunophenotype but generally demonstrates perivascular or periadnexal involvement or a diffuse, interstitial, or nodular infiltrate of the dermis or subcutis.[6] Neutrophilic eccrine hidradenitis describes an aseptic neutrophilic infiltration around eccrine coils and glands. It may present as papules or plaques that usually are erythematous but also may be pigmented. Lesions can be asymptomatic or painful as in Sweet syndrome and are distributed proximally or on the distal extremities. Histopathologic examination demonstrates the degeneration of the eccrine gland and neutrophilic inflammatory infiltrates.[7] Lastly, necrotizing fasciitis is a life-threatening infection of the deep soft tissue and fascia, classically caused by group A *Streptococcus*. The infected site may have erythema, tenderness, fluctuance, necrosis, and bullae.[8] Although our patient had a fever, he did not display the tachycardia, hypotension, tachypnea, and rapid deterioration that is common in necrotizing fasciitis.

Sweet syndrome may present with various morphologies within the same patient. Painful, erythematous to violaceous papules, plaques, nodules, bullae, and ulcers may be seen. A workup for an underlying malignancy may be warranted based on clinical presentation. Most patients have a rapid and dramatic response to systemic corticosteroids.

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