Sweet Syndrome With Marked Eosinophilic Infiltrate

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PRACTICE **POINTS**

- This report highlights a case of classical Sweet syndrome (SS) with a particularly dense eosinophilic infiltrate, which could be mistaken for other eosinophilic dermatoses.
- Dermatologists should be aware of the possibility of marked eosinophilic infiltration in all subtypes of SS.

To the Editor:

Sweet syndrome (SS), also known as acute febrile neutrophilic dermatosis, is an uncommon inflammatory skin disorder characterized by sudden onset of fever, leukocytosis, neutrophilia, and tender erythematous papules or plaques or both. Skin biopsy usually reveals extensive infiltration of neutrophils into the epidermis and dermis.[1-3] Although rare, cases of eosinophil-rich SS have been reported in patients with drug-induced and malignancy-associated SS.[4,5] We report a case of a patient with classical SS with dermal eosinophilic infiltration.

An 80-year-old Hispanic man presented with abrupt onset of a rash on the posterior scalp, left ear, back, and hands of 5 days' duration. The lesions were painful and had progressed to the point of impairing hand grip. The patient's medical history included a reported common cold the week prior, hyperlipidemia, and hypertension, for which he took metoprolol, simvastatin, aspirin, and clopidogrel. He denied oral lesions and medication changes. He was afebrile and did not experience dietary changes, weight loss, or fatigue. He recently returned from travel to the Dominican Republic.

Physical examination revealed tender, well demarcated, pink to violaceous, pseudovesicular papules and plaques on the palms and dorsal hands (Figure 1), the posterior scalp, left ear, proximal left arm, and back. Pink, juicy, targetoid papules were also found on the scalp, back, and left arm. There was no evidence of lymphadenopathy. Laboratory test results revealed an elevated white blood cell count (11,500/μL [reference range, 3800-10,800/μL]), absolute neutrophil count (8073/μL [reference range, 1500–7800/μL]), and eosinophil count (610/μL [reference range, 15–500/μL]). These results indicated leukocytosis with neutrophilia and mild eosinophilia. The patient also was anemic (hemoglobin, 11.5 g/dL [reference range, 13.2–17.1 g/dL]; hematocrit, 35.1% [reference range, 38.5%–50%]). Urine testing revealed altered renal function (serum creatinine, 2.42 mg/dL [reference range, 0.7–1.1 mg/dL]; blood urea nitrogen, 34 mg/dL [reference range, 7–25 mg/dL]; glomerular filtration rate, 4 mL/min/1.73 m^2 (reference range, ≥60 mL/min/1.73 m^2]), suggesting stage 4 chronic kidney disease. Urinalysis showed mild hematuria and proteinuria.

Histopathology of biopsies taken from plaques on the left arm and lower back revealed a dense neutrophilic infiltrate with numerous scattered eosinophils in the dermis. Some neutrophils were intact; others were fragmented without evidence of vasculitis. A subtle subepidermal edema also was noted (Figure 2). A diagnosis of SS was made.

Initial treatment included prednisone (40 mg daily, tapered by 5 mg every 3 days) and erythromycin (500 mg 4 times daily) for 7 days because of suspected *Mycoplasma* infection. The rash resolved in 1 week. No recurrence was noted during 4 months of follow-up.

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The authors report no conflict of interest.

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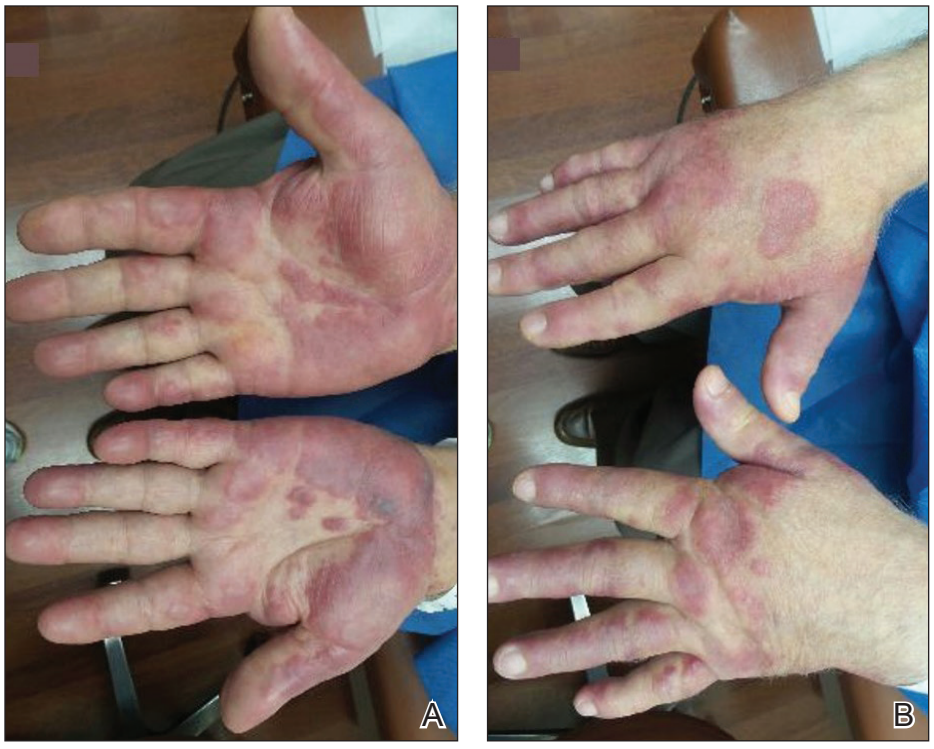

FIGURE 1. Sweet syndrome. A, Well-demarcated violaceous papules and plaques on both palms. B, Rash on the dorsal hands that was described by the patient as tender and affecting hand grip.

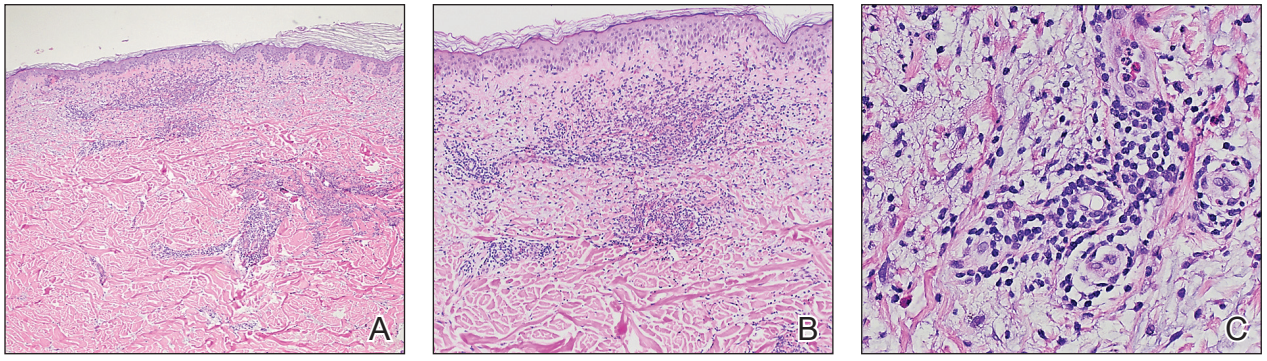

FIGURE 2. Sweet syndrome. A and B, Dense neutrophilic infiltrate dissecting collagen fibers in the superficial and deep dermis (H&E, original magnifications ×4 and ×10). C, Associated dermal eosinophils also were noted (H&E, original magnification ×20).

The white blood cell count returned to within reference range (8400/μL), ruling out the possibility of a smoldering myeloid process.

Acute febrile neutrophilic dermatosis was first described in a case series of 8 women by Sweet[6] in 1964. Patients typically present first with fever, which can precede cutaneous symptoms for days or weeks. Skin lesions generally are asymmetric and located on the face, neck, and upper extremities. Lesions can be described as painful, purple to red papules, plaques, or nodules. Sweet syndrome can present as 3 subtypes based on cause[7]: (1) classical SS, also known as idiopathic SS, can be preceded by an upper respiratory tract or gastrointestinal tract infection or vaccination, or can be pregnancy associated[2]; (2) drug-induced SS usually follows use of granulocyte colony-stimulating factor, or other causative drugs including trimethoprim-sulfamethoxazole, nitrofurantoin, quinolones, oral contraceptives, furosemide, hydralazine, diazepam, clozapine, abacavir, imatinib, bortezomib, azathioprine, and celecoxib[2,3,8]; and (3) malignancy-associated SS can occur as a paraneoplastic syndrome and generally is associated with hematologic malignancy or a solid tumor.[1,9]

In our patient, the observed clinical and histological findings were consistent with a diagnosis of SS,[2,10] specifically tender erythematous plaques of sudden onset, fast response to systemic corticosteroid therapy, a dermal neutrophilic infiltrate without evidence of leukocytoclastic vasculitis, and leukocytosis greater than 8000/μL with more than 70% neutrophils. He also exhibited targetoid lesions, which have been reported in 7% to 12% of SS patients.[10,11]

The predominant cells involved in the dermis of SS lesions are mature neutrophils; however, eosinophils have been observed in small numbers within dermal infiltrates in skin lesions of patients with either classical SS or drug-induced dermatosis.[2] In 2 studies of cases of SS (N=73 and N=31), eosinophils were reported in 35% and 41% of skin biopsies, respectively.[4,5] Nevertheless, cases with dense eosinophilic infiltrates are rare. Furthermore, Masuda et al[12] reported a case of eosinophil-rich SS in a 29-year-old woman after treatment of an upper respiratory tract infection with an antibiotic, and Soon et al[13] described an eosinophil-rich case of SS in the setting of new-onset enteropathy-associated T-cell lymphoma.

Our patient was considered to have classical SS because he had an episode of an upper respiratory tract infection 1 week prior to onset of clinical manifestations. The histologic finding of numerous eosinophils in our case was unusual for idiopathic SS. This finding might suggest a drug hypersensitivity reaction, but the lack of any change in the patient's long-term medication list and the lack of any other episodes made a diagnosis of drug-induced SS less likely in our patient.

Eosinophilic dermatosis of hematologic malignancy is a rare cutaneous condition in which nodules, pruritic papules, and vesicles arise in patients with a hematologic malignancy, such as chronic lymphocytic leukemia and mantle cell lymphoma,[13] in which a deep perivascular lymphocytic infiltrate and numerous eosinophils are observed. Malignancy was ruled out in our patient because of the lack of characteristic abnormalities in blood testing, the fast response to corticosteroid therapy, and the lack of recurrence posttreatment or additional systemic concerns.

The typical pathology findings of SS consist of mature neutrophils found in the dermis without evidence of leukocytoclastic vasculitis. Eosinophil-rich infiltration, however rare, has been reported in SS. This report highlights a case of classical SS with a particularly dense eosinophilic infiltrate, which could be mistaken for other eosinophilic dermatoses. Dermatologists should be aware of the possibility of marked eosinophilic infiltration in all subtypes of this disorder.

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