Sweet-like Dermatosis in 2 Patients With Clinical Features of Dermatomyositis and Underlying Autoimmune Disease

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Background: The neutrophilic dermatoses comprise a group of cutaneous disorders that are characterized histopathologically by infiltration of the dermis with mature neutrophils with or without vessel wall destruction. Neutrophilic dermatoses have been reported in association with a variety of autoimmune diseases, most recently as a manifestation of lupus erythematosus.

Observations: We describe 2 patients with photodistributed violaceous plaques: one with associated heliotrope rash and malar erythema, and the other with scalp involvement and Gottron-like papules. In each case, the biopsy specimen revealed changes compatible with a neutrophilic dermatosis as opposed to an interface dermatitis. The first patient also had a history of Graves disease and primary biliary cirrhosis, while second patient had Wegener granulomatosis. The 2 patients responded to therapy with oral dapsone and prednisone, respectively.

Conclusions: The atypical presentation of neutrophilic dermatosis in 2 patients with clinical features of dermatomyositis and intercurrent autoimmune-mediated illnesses may suggest an expansion in the clinical spectrum of parainflammatory neutrophilic dermatoses. The finding of a neutrophilic dermatosis in a biopsy specimen from a patient without a classic clinical presentation should invoke a thoughtful search for underlying immune complex–mediated systemic disease.

Arch Dermatol. 2008;144(11):1486-1490

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one case, and Wegener granulomatosis with additional features of systemic lupus erythematosus in the other). We examine the histologic differential diagnosis of a neutrophil-rich dermal infiltrate and speculate regarding a possible immune-associated pathogenesis.

**REPORT OF CASES**

**CASE 1**

A 55-year-old woman with a history of Grave disease and primary biliary cirrhosis presented with a photodistributed rash of 3 months’ duration. Her medications at presentation included levothyroxine sodium, milk thistle, and vitamin E. Five weeks before the development of her eruption she had stopped taking ursodiol. Physical examination demonstrated malar erythema, violaceous periorbital edema, and juicy erythematous plaques in a photodistribution on her arms and neck (Figure 1). Cuticular overgrowth and splinter hemorrhages were also noted. Her strength was normal. Before presentation, her laboratory tests revealed the following elevated liver enzyme levels (to convert values to microkatal per liter, multiply by 0.0167): alkaline phosphatase, 670 U/L (reference range, 20-125 U/L); aspartate aminotransferase, 86 U/L (reference range, 2-35 U/L), and alanine aminotransferase, 74 U/L (reference range, 2-40 U/L). Her erythrocyte sedimentation rate was also elevated at 48 mm/h (reference value, <30 mm/h). The results of a thyroid function panel, basic metabolic profile, complete blood cell count, and antinuclear antibody titer were within normal limits. Two punch biopsy specimens revealed similar findings that included a superficial and middermal perivascular and focally diffuse infiltrate composed almost entirely of mature neutrophils with occasional scattered lymphocytes and rare eosinophils (Figure 2). Dermal edema was noted. Leukocytoclasia and vascular fibrin were not present. A periodic acid–Schiff stain was negative for fungal elements. Further laboratory studies were negative for anti-Ro (SS-A) and anti-La (SS-B) antibodies, rheumatoid factor, and anti-native DNA antibodies. The creatine kinase level was normal, but the aldolase level was elevated (12.2 U/L [to convert to microkatal per liter, multiply by 0.0167] [reference range, 1.2-7.6 U/L]). Serum protein electrophoresis revealed elevated levels of polyclonal IgG, consistent with a chronic inflammatory response. The results of urine protein electrophoresis were negative, and complement levels were within normal limits. The patient was started on a regimen consisting of a methylprednisolone dose pack, fluticasone propionate cream, 0.05%, at night, and tacrolimus ointment in the morning. Her rash persisted, and 1 month later, biopsy specimens were obtained from the posterior aspect of her neck and from the lower midback area. The specimens revealed diffuse infiltrates of mature neutrophils admixed with neutrophil dust, rare eosinophils, and mild papillary dermal edema. Two months after the patient’s initial presentation, oral dapsone therapy (25 mg/d) was initiated, and a slight improvement was seen within 3 weeks. When the dosage was increased to 25 mg twice a day, the lesions resolved; however, when the dapsone therapy was discontinued after 8 months, the eruption recurred but again responded after the dapsone therapy was reinitiated.

**CASE 2**

A 69-year-old woman with a history of arthritis, anemia, stroke, and chronic renal insufficiency was hospitalized for acute renal failure of unknown cause. She reported a long history of a pruritic rash on her scalp and upper back area but was unable to specify the exact duration. She described a relapsing and remitting rash that was worsened by sun exposure. A previous autoimmune disease workup revealed a positive antinuclear antibody titer (1:160 homogeneous, 1:320 speckled); an elevated antihistone antibody level (336 U/mL); a positive antineutrophil cytoplasmic antibody titer (1:40); a markedly elevated erythrocyte sedimentation rate (>150 mm/h); and mildly reduced complement levels (C3, 793 µg/dL [reference range, 160-470 µg/dL]; C4, 129 mg/dL [reference range, 880-2010 µg/dL]; and C1q, 160-470 µg/dL) (to convert complement values to grams per liter, multiply by 0.001). Serologic tests were negative for rheumatoid factor, cryoglobulins, anti-native DNA, anti-Ro/SS-A and anti-La/SS-B, antiribonucleoprotein, anti–Scl-70, and Jo-1. The patient had been taking allopurinol, azathioprine, ibuprofen, vasotec, and vitamin E. Five weeks before the development of her eruption she had stopped taking ursodiol. Physical examination demonstrated malar erythema and violaceous periorbital edema as well as juicy erythematous plaques in a photodistribution on the arms and neck (Figure 1). Cuticular overgrowth and splinter hemorrhages were also noted. Her strength was normal. Before presentation, her laboratory tests revealed the following elevated liver enzyme levels (to convert values to microkatal per liter, multiply by 0.0167): alkaline phosphatase, 670 U/L (reference range, 20-125 U/L); aspartate aminotransferase, 86 U/L (reference range, 2-35 U/L), and alanine aminotransferase, 74 U/L (reference range, 2-40 U/L). Her erythrocyte sedimentation rate was also elevated at 48 mm/h (reference value, <30 mm/h). The results of a thyroid function panel, basic metabolic profile, complete blood cell count, and antinuclear antibody titer were within normal limits. Two punch biopsy specimens revealed similar findings that included a superficial and middermal perivascular and focally diffuse infiltrate composed almost entirely of mature neutrophils with occasional scattered lymphocytes and rare eosinophils (Figure 2). Dermal edema was noted. Leukocytoclasia and vascular fibrin were not present. A periodic acid–Schiff stain was negative for fungal elements. Further laboratory studies were negative for anti-Ro (SS-A) and anti-La (SS-B) antibodies, rheumatoid factor, and anti-native DNA antibodies. The creatine kinase level was normal, but the aldolase level was elevated (12.2 U/L [to convert to microkatal per liter, multiply by 0.0167] [reference range, 1.2-7.6 U/L]). Serum protein electrophoresis revealed elevated levels of polyclonal IgG, consistent with a chronic inflammatory response. The results of urine protein electrophoresis were negative, and complement levels were within normal limits. The patient was started on a regimen consisting of a methylprednisolone dose pack, fluticasone propionate cream, 0.05%, at night, and tacrolimus ointment in the morning. Her rash persisted, and 1 month later, biopsy specimens were obtained from the posterior aspect of her neck and from the lower midback area. The specimens revealed diffuse infiltrates of mature neutrophils admixed with neutrophil dust, rare eosinophils, and mild papillary dermal edema. Two months after the patient’s initial presentation, oral dapsone therapy (25 mg/d) was initiated, and a slight improvement was seen within 3 weeks. When the dosage was increased to 25 mg twice a day, the lesions resolved; however, when the dapsone therapy was discontinued after 8 months, the eruption recurred but again responded after the dapsone therapy was reinitiated.
the metacarpophalangeal and distal interphalangeal joints bilaterally (Figure 3B); and erythematous papules and plaques involving the palmar and lateral surfaces of the first and second digits of the right hand, with vesicle formation at the base of the right thumb. She denied muscle weakness other than that which was residual from a stroke that affected her right side. Proximal muscle strength was 4/5 on the right side and 5/5 on the left side. A complete blood cell count demonstrated anemia but a normal white blood cell count with a normal differential cell count. The creatine kinase level was less than 20 U/L (to convert to microkatal per liter, multiply by 0.0167) (reference range, 30-350 U/L); the lactate dehydrogenase level was normal at 498 U/L (to convert to microkatal per liter, multiply by 0.0167) (reference range, 300-650 U/L), and the aldolase level was mildly elevated at 8 U/L (reference range, 1.2-7.6 U/L). Our clinical differential diagnosis included systemic lupus erythematosus, drug-induced cutaneous lupus erythematosus, and dermatomyositis.

A biopsy specimen obtained from the upper back area, however, revealed a focally dense neutrophilic infiltrate that was mostly perivascular, with histiocytes and rare eosinophils but no microthrombi, fibrinoid necrosis, or erythrocyte extravasation (Figure 4). A renal biopsy specimen later demonstrated crescentic glomerulonephritis and features consistent with Wegener granulomatosis. Based on the renal biopsy findings and microscopic hematuria, a diagnosis of Wegener granulomatosis was made. Hydralazine therapy was discontinued. An oral prednisone taper was begun, and the patient’s rash was resolving at the time of discharge. The Wegener granulomatosis was ultimately treated with prednisone, cyclophosphamide, and azathioprine, with remission of the disease after 6 months. Of note, the rash has not recurred despite discontinuation of prednisone, cyclophosphamide, and azathioprine therapy and reinstitution of hydralazine therapy.

We report 2 cases of neutrophilic dermatoses with unusual clinical presentations in patients with underlying autoimmune diseases. While there are numerous reports in the literature of neutrophilic dermatoses associated with systemic lupus erythematosus and other autoimmune disorders, the cases reported herein are unique in their dermatomyositis-like clinical presentation.

The clinical presentations in the described patients were most suggestive of dermatomyositis or cutaneous lupus erythematosus owing to the photodistribution of erythematosus to violaceous plaques, which were either asymptomatic or mildly pruritic. Additional skin findings in one patient included a heliotrope rash, malar ery-
Dermatomyositis is likely photo-monly occur between the knuckles and are more likely cutaneous lupus erythematosus. The lesions of dermatomyositis occur more frequently over bony prominences and can be associated with pruritus, while those of subacute cutaneous lupus erythematosus more commonly occur between the knuckles and are more likely to be asymptomatic. Dermatomyositis is likely photo-aggravated, but photosensitivity is not a common presenting complaint.

The differential diagnosis of a neutrophil-rich dermal infiltrate includes the “classic” neutrophilic dermatoses, Sweet syndrome, RND, bowel bypass syndrome, and the acute phase of pyoderma gangrenosum. Palisaded neutrophilic and granulomatous dermatitis is less classically categorized histologically as a neutrophilic dermatosis given the diminished density and absence of diffuse infiltration of neutrophils within the dermis. Although typically associated with collagen degeneration, the histopathologic pattern can be varied, and necrobiosis may be absent.

Palisaded neutrophilic and granulomatous dermatitis (described by Chu et al), in its early stage, can demonstrate pandermal infiltrates of neutrophils. The condition is associated with various immune complex-mediated illnesses, including collagen vascular disease, systemic vasculitis, lymphoproliferative disorders, bacterial endocarditis, Wegener granulomatosis, and inflammatory bowel disease, and presents as an eruption of papules and plaques on the extremities. However, of the patients described by Chu et al, all 5 showed leukocytoclastic vasculitis in vessels throughout the dermis, a finding that was absent in the biopsy specimens from both of our patients. Subsequently, Sangueza et al described a histopathologic spectrum of changes in palisaded neutrophilic and granulomatous dermatitis, with some cases lacking necrobiosis and vasculitis. Alternatively, the histopathologic features could represent RND, which is a rare cutaneous manifestation of rheumatoid arthritis (RA) that typically presents with symmetrical erythematous nodules and plaques over the extensor surface of the joints, particularly on the hands and arms. Histopathologic analysis reveals a dense neutrophilic infiltrate involving the entire dermis, with leukocytoclasia but without vasculitis. Rheumatoid neutrophilic dermatitis typically occurs in patients with seropositive RA but has been reported in patients with seronegative RA. While RND is histologically difficult to distinguish from Sweet syndrome, the clinical findings in our cases were not suggestive enough of RA to make RND a compelling diagnosis.

The histopathologic pattern of a neutrophilic dermatosis, in particular Sweet syndrome, would not be inconsistent with the medical histories in our 2 cases. Sweet syndrome, while never reported specifically to occur in primary biliary cirrhosis, has a well-documented association with autoimmune diseases, including Graves disease (as in patient 1). Wegener granulomatosis has also been reported in association with a neutrophilic dermatosis (as in patient 2). Also relevant to case 2 are numerous reports of Sweet syndrome in association with hydralazine or hydralazine-induced lupus. To our knowledge, there has been 1 published report of Sweet syndrome in a patient with dermatomyositis.
ful of reports describe Sweet-like findings in patients with lupus erythematosus. Gleason et al18 recently reported a nonbullous neutrophilic dermatosis with no evidence of vasculitis in 4 patients with lupus erythematosus. Two additional reports describe Sweet syndrome as the initial manifestation of systemic lupus erythematosus in a 38-year-old woman and a 14-year-old girl.19,20

The atypical presentation of neutrophilic dermatosis in 2 patients with clinical features of dermatomyositis and intercurrent autoimmunity-mediated illnesses may suggest an expansion in the clinical spectrum of parainflammatory neutrophilic dermatoses. The photosensitivity and photodistribution noted in our patients may be the result of cutaneous pathergy, which is known to occur in some cases of Sweet syndrome. Without the benefit of histologic studies in these cases, misdiagnosis could have easily been made based on clinical findings, especially as both dermatomyositis and Sweet-like neutrophilic dermatoses would be responsive to treatment with corticosteroids or dapsone.2,4,21-23 Our cases suggest an expanded differential diagnosis in patients with asymptomatic or pruritic, photodistributed, erythematous lesions and underlying autoimmune disease to include a neutrophilic dermatosis–like reaction pattern. Sweet-like neutrophilic dermatosis may represent disease in the spectrum of palisaded neutrophilic and granulomatous dermatitis. The finding of a neutrophilic dermatosis in a biopsy specimen from a patient without a classic clinical presentation should invoke a thoughtful search for underlying immune complex–mediated systemic disease.

Accepted for Publication: February 19, 2008.

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Author Contributions: Drs Owen, Malone, and Callen had full access to all the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis. Study concept and design: Owen, Malone, and Callen. Acquisition of data: Owen, Malone, and Callen. Analysis and interpretation of data: Owen, Malone, and Callen. Drafting of the manuscript: Owen and Malone. Critical revision of the manuscript for important intellectual content: Malone and Callen. Administrative, technical, and material support: Owen, Malone, and Callen. Study supervision: Malone.

Financial Disclosure: Dr Callen has received honoraria or consultancies from Electrical Optical Sciences, Abbott Immunology, Amgen, Centocor, Steifel, and Medicis and has received royalties from Elsevier.

Disclaimer: Dr Callen is the associate editor for the Archives of Dermatology; he was not involved in the editorial evaluation or editorial decision to accept this work for publication.

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