Nonbullous neutrophilic lupus erythematosus: A newly recognized variant of cutaneous lupus erythematosus

Nooshin K. Brinster, MD,[a,b] Julia Nunley, MD,[b] Robert Pariser, MD,[c] and Brian Horvath, MD, MPH[b]
Richmond and Norfolk, Virginia

Background: Neutrophils in the setting of systemic lupus erythematosus (SLE) are commonly associated with bullous disease. Rare cases of nonbullous neutrophilic lesions have been reported in patients with SLE.

Objective: This study used clinical and histologic findings of 4 patients to further define the newly emerging entity of nonbullous neutrophilic lupus erythematosus (LE).

Methods: We reviewed the clinical and pathological findings of 4 patients with known SLE who developed urticarial papules, plaques, subcutaneous nodules, or a combination of these.

Results: All patients were women with established SLE. Histopathological findings in all patients included an interstitial and perivascular neutrophilic infiltrate with leukocytoclasia, and variable vacuolar alteration along the dermoepidermal junction. Direct immunofluorescence study results in two patients were positive for C3, IgG, and IgM along the basement membrane zone. One patient also presented with neutrophil-rich lupus panniculitis. All clinical lesions resolved with immunomodulating/immunosuppressive agents.

Limitations: This study was limited by the small number of cases.

Conclusions: Nonbullous neutrophilic LE is an important entity to consider in the differential diagnosis of neutrophil-mediated eruptions. In addition, the histologic finding of neutrophils in the setting of lupus should alert one to the possibility of systemic disease. (J Am Acad Dermatol 2012;66:92-7.)

Key words: direct immunofluorescence; lupus erythematosus; neutrophils; panniculitis.

Rare reports in the literature have described a nonbullous neutrophilic dermatitis in the setting of lupus erythematous (LE).[1-3] To our knowledge, the existing literature describes 6 cases.[2,3] We describe 4 additional patients with nonbullous neutrophilic LE. All 4 patients had the clinical findings of pruritic, urticarial papules and plaques, and one patient also had the newly described pattern of neutrophil-rich lupus panniculitis.

Abbreviations used:

bid: twice a day
DEJ: dermoepidermal junction
LE: lupus erythematous
SLE: systemic lupus erythematosus

METHODS

We reviewed the clinical records and histopathological specimens of 4 patients seen during a 2-year period of time (2006-2008) at the dermatology clinics of the Virginia Commonwealth University (cases 1-3) and Eastern Virginia Medical School (case 4). Hematoxylin and eosin–stained sections and direct immunofluorescence studies were reviewed.

From the Departments of Pathology[a] and Dermatology,[b] Virginia Commonwealth University, Richmond; and Department of Dermatology,[c] Eastern Virginia Medical School, Norfolk.
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Reprint requests: Nooshin K. Brinster, MD, Virginia Commonwealth University, 1101 East Marshall St, Richmond, VA 23298. E-mail: nbrinster@mcvh-vcu.edu.
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RESULTS

For all patients, pertinent clinical data including age, race, gender, duration, distribution and morphology of skin lesions, history of systemic lupus, serologic data, and medications at the time of diagnosis were reviewed (Table I). All patients were women aged 18 to 50 years (mean age 35.5 years). They presented with recent onset urticarial papules and plaques on the trunk and extremities. One patient simultaneously had subcutaneous nodules. None developed blisters. In all 4 patients histologic examination revealed intradermal perivascular and interstitial neutrophils with leukocytoclasia and variable degrees of vacuolar alteration along the dermoepidermal junction (DEJ). There was no leukocytoclastic vasculitis. For all patients, immunomodulating medications resulted in resolution of the lesions.

CAPSULE SUMMARY

- Nonbullous neutrophilic lupus erythematosus is a reproducible entity, typically seen in association with systemic disease.
- Histologic features include dermal neutrophils with leukocytoclasia and no vasculitis or bulla formation.
- Direct immunofluorescence studies may show C3 and immunoglobulin deposition along the basement membrane zone.
- Neutrophils in the setting of lupus panniculitis may indicate systemic disease.

Case 1

An 18-year-old Peruvian woman with a 1-year history of systemic LE (SLE) presented with pruritic, erythematous papules on her trunk and hands, present for 1 month (Fig 1, *A*). Pertinent serologies are listed in Table I. Skin biopsy specimen showed a superficial perivascular and interstitial infiltrate of neutrophils with leukocytoclasia, and a brisk neutrophil-mediated vacuolar alteration along the DEJ (Fig 2, *A*). Direct immunofluorescence studies showed strong C3 and IgG and weak IgM staining along the DEJ in a granular pattern (Fig 3). IgA and fibrinogen were negative.

At the time of her initial biopsy, the patient was taking mycophenolate mofetil (500 mg twice a day [bid]), hydroxychloroquine (200 mg bid), and prednisone (15 mg daily). Shortly after an increase in mycophenolate mofetil to 1000 mg bid, her lesions resolved.

Case 2

A 38-year-old white woman with a 7-year history of SLE presented with 3 weeks of urticarial papules on her trunk and arms (Fig 1, *B*). The lesions were pruritic and burning. Relevant serologies are listed in Table I. Skin biopsy specimen showed a superficial perivascular and interstitial infiltrate of neutrophils, with extensive leukocytoclasia and mild vacuolar alteration along the DEJ (Fig 2, *B*). Direct immunofluorescence showed strong granular staining of IgG and IgM, with weak C3 and IgA along the DEJ. Fibrinogen was negative.

At the time of presentation the patient was taking mycophenolate mofetil (1000 mg bid), prednisone (20 mg daily), and hydroxychloroquine (200 mg bid). Subsequent increase in prednisone to 40 mg daily resulted in resolution of the lesions.

Case 3

A 36-year-old African American woman with type 2 diabetes mellitus and a 10-year history of SLE presented with 3 weeks of urticarial papules and tender subcutaneous nodules on her legs (Fig 1, *C* and *D*). Serologies are listed in Table I. Biopsy specimen of a papule showed a sparse superficial and perivascular infiltrate of neutrophils, with mild vacuolar alteration along the DEJ (Fig 2, *C*). Biopsy specimen of a nodule revealed a mixed septal and lobular panniculitis with broad, fibrotic septa and paraseptal lymphoid follicles (Fig 2, *D*). Hyalinization of fat lobules was present. There was also a superficial and deep perivascular infiltrate of lymphocytes, eosinophils, and neutrophils. Neutrophils were also present within the lymphoid follicles and in septa (Fig 2, *E*). Tissue stain findings for micro-organisms (Gram, periodic acid-Schiff, and Ziehl-Neelsen) were negative. Direct immunofluorescence examination produced negative findings.

At the time of presentation she was taking prednisone (20 mg daily). The subsequent addition of dapsone (50 mg daily) rapidly resolved the clinical lesions.

Case 4

A 50-year-old white woman with a 2-year history of SLE presented with mildly pruritic urticarial, pink plaques on the torso and proximal upper and lower extremities, of a few weeks duration. Pertinent serologies are listed in Table I. Although she was previously taking hydroxychloroquine, the patient was not taking immunomodulating medications at the time of diagnosis. Skin biopsy specimen showed a perivascular and interstitial neutrophil-predominant infiltrate with leukocytoclasia (Fig 2, *F*) and focal vacuolar alteration along the DEJ. Direct immunofluorescence