

A case of systemic lupus erythematosus with cutaneous granulomatous vasculitis



Tina Hsu, MD,^a Peter Nguyen, MS,^b and Vesna Petronic-Rosic, MD, MSc, MBA^a
Chicago, Illinois and Dallas, Texas

Key words: cutaneous granulomatous vasculitis; discoid lupus; granulomatous vasculitis; lupus vasculitis; systemic lupus erythematosus.

INTRODUCTION

Cutaneous granulomatous vasculitis is a rare histopathologic finding that has been reported in association with systemic vasculitis, lymphoproliferative disorders, autoimmune disorders, and infection. Granulomatous cerebral vasculitis and pulmonary, lymphatic, and renal granulomas have rarely been reported in association with systemic lupus erythematosus (SLE), and the pathogenesis of granuloma formation is unclear.^{1,2} Here, we report a case of SLE with cutaneous granulomatous vasculitis.

CASE REPORT

A 53-year-old man with a history of non-Hodgkin's lymphoma diagnosed in 2015, treated with chemotherapy and in remission for 4 years, presented with an asymptomatic rash of the head and trunk that had been present for 2 years. The patient was not taking any medications. Review of systems was positive for dyspnea, productive cough, and unintentional weight loss of 7 kg. On examination, there were many scattered, slightly depressed, indurated, and hyperpigmented 1- to 2-cm plaques on the temporal and occipital scalp, forehead, and cheeks and smaller uniform plaques on the chest (Fig 1). Punch biopsy of a lesion on the right side of the chest demonstrated atrophic epidermis, vacuolar interface changes, and a thickened basement membrane. There was a superficial and deep perivascular, periadnexal, and perineural lymphoplasmacytic infiltrate with increased mucin in the dermis (Fig 2). A granulomatous vasculitis of medium-sized blood vessels at the junction of the dermis and subcutaneous fat was present (Fig 3).

Abbreviations used:

ANCA:	antineutrophil cytoplasmic autoantibodies
EGPA:	eosinophilic granulomatosis with polyangiitis
GPA:	granulomatosis with polyangiitis
SLE:	systemic lupus erythematosus



Fig 1. Scattered, uniform 5- to 10-mm indurated hyperpigmented plaques on the chest.

Gram, Fite, acid-fast bacilli, and treponemal stains were negative.

The laboratory findings were notable for pancytopenia, low levels of C3 and C4, antinuclear antibody >1:160, anti-double-stranded DNA >300, anti-Smith >300, antiribonucleoprotein >8, and positive anti-Sjogren's syndrome A, anti-cardiolipin, and anti-B2-glycoprotein. Rheumatoid factor and antineutrophil cytoplasmic autoantibodies (ANCA) were negative. Urinalysis revealed 100+ proteinuria. Infectious workup was negative for HIV, hepatitis A, B, and C, tuberculosis, and syphilis. Computed

From the Division of Dermatology, John H. Stroger Jr. Hospital of Cook County, Chicago^a and College of Medicine, Texas A&M Health Science Center, Dallas.^b

Funding sources: None.

IRB approval status: Not applicable.

Correspondence to: Tina Hsu, MD, Division of Dermatology, John H. Stroger Jr. Hospital of Cook County, 1950 West Polk Street, 4th Floor, Room 37, Chicago, IL 60612. E-mail: tina.hsu@cookcountyhealth.org.

JAAD Case Reports 2022;21:93-6.
2352-5126

© 2022 by the American Academy of Dermatology, Inc. Published by Elsevier, Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

<https://doi.org/10.1016/j.jdc.2022.01.006>

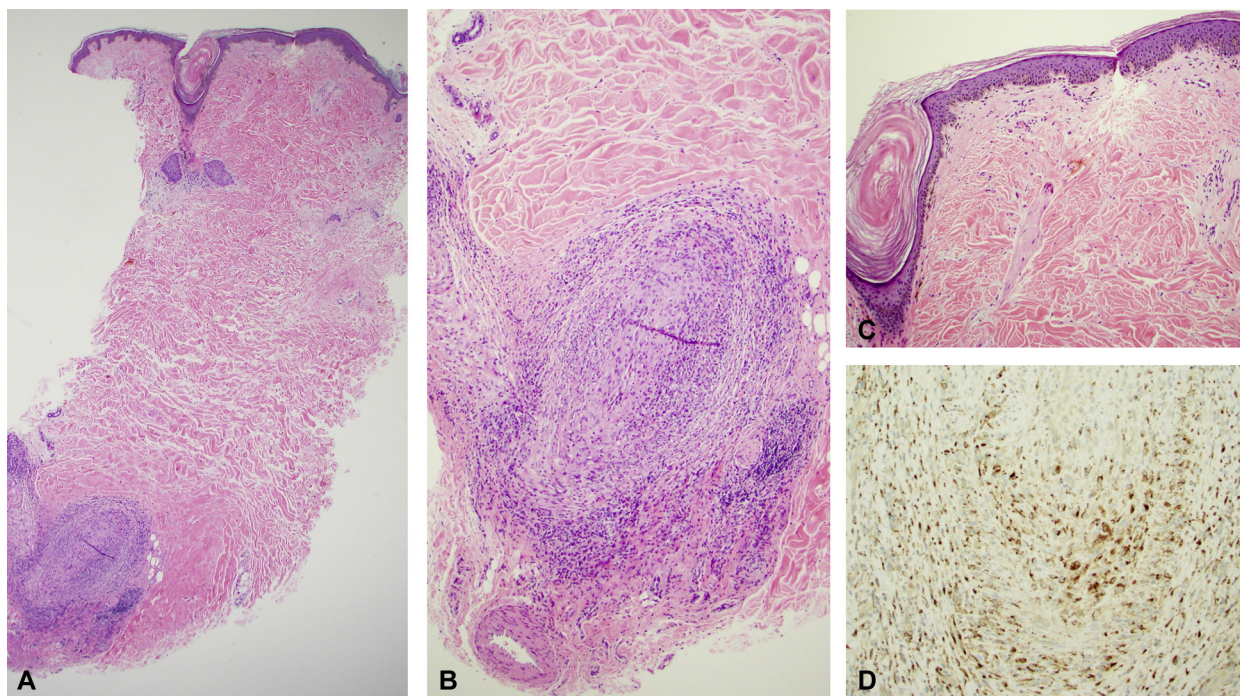


Fig 2. **A**, Deep periadnexal lymphoplasmacytic infiltrate. **B** and **C**, Vacuolar interface change at the dermoepidermal junction. **D**, Periodic acid–Schiff stain highlights thickened basement membrane. **E**, Colloidal iron stain highlights increased mucin in the dermis. (**A**, **B**, and **C**, Hematoxylin-eosin stain; **D**, periodic acid–Schiff stain; **E**, colloidal iron stain; original magnifications: **A**, **B**, and **C**, $\times 100$; **D** and **E**, $\times 200$.)

tomography scan of the chest demonstrated patchy bilateral ground-glass opacities and axillary, mediastinal, and bilateral hilar lymphadenopathy. A bronchoscopy was performed, and multiple lymph node biopsies were negative for malignancy. The clinical, laboratory, and histologic findings were supportive of discoid lupus and underlying SLE with granulomatous vasculitis.

The patient was started on prednisone 60 mg daily with rapid improvement of his systemic symptoms. At the 2-week follow-up, anti–double-stranded DNA had decreased to 61 from >200 , and the levels of C3 and C4 had increased. Mycophenolate mofetil was introduced as a steroid-sparing agent with sustained improvement.

DISCUSSION

Vasculitis is not an uncommon complication of SLE, with an estimated prevalence of 11% to 36%.³ Cutaneous small-vessel vasculitis is the most common form of vasculitis in patients with SLE, although there may also be involvement of the viscera. It usually presents with palpable purpura, petechiae, livedo reticularis, or ulcerations.⁴ In a cohort study of 540 SLE patients with vasculitis, cutaneous manifestations were the main clinical presentation in 89% of patients, with 86% of these patients presenting with

small-vessel vasculitis and 14% presenting with medium-vessel vasculitis.³ Leukocytoclastic vasculitis, which is characterized by fibrinoid changes in the vessel walls composed of immunoglobulin and complement, is the most common histopathologic finding.⁴ Granulomatous vasculitis in conjunction with SLE was reported in one case of granulomatous cerebral small-vessel vasculitis in a patient with SLE who presented with worsening neuropsychiatric symptoms.² Pleural granulomas were reported in one case report of a patient with SLE.¹ However, to our knowledge, no cases of cutaneous granulomatous vasculitis in SLE have been previously reported.

Many conditions can present with granulomatous vasculitis as a primary or secondary finding. The lung is the most common site for granulomatous vasculitis, and cutaneous manifestations of granulomatous vasculitis include erythematous papules, nodules, and ulcers. Primary vasculitides, such as granulomatosis with polyangiitis (GPA) and eosinophilic granulomatosis with polyangiitis (EGPA), are characterized by the combination of granulomatous inflammation and necrosis within or near vessel walls of the upper or lower respiratory tract.⁵ Cutaneous biopsy often reveals small-vessel leukocytoclastic vasculitis, though granulomatous medium-vessel vasculitis can be seen in areas of

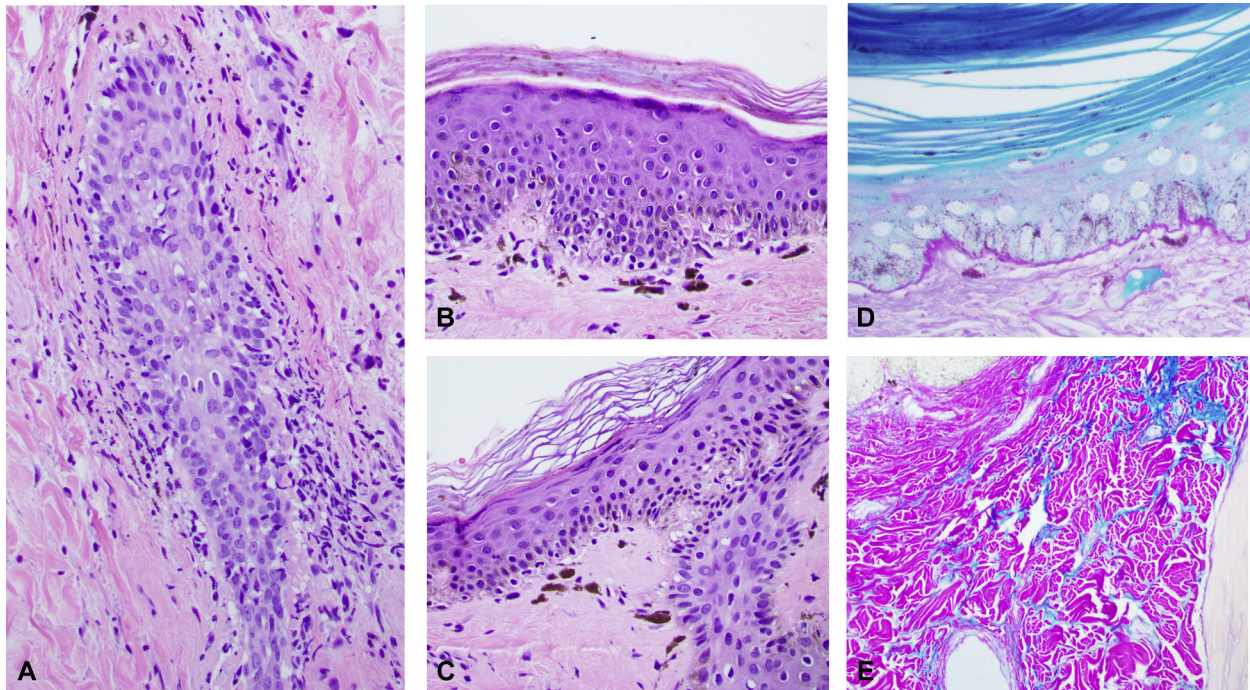


Fig 3. **A**, Punch biopsy specimen with a scant superficial and deep perivascular, periadnexal, and perineural lymphoplasmacytic infiltrate. **B**, Medium-sized blood vessel at the junction of the dermis and subcutaneous fat with dense granulomatous inflammation permeating the vessel wall and surrounding dermis. **C**, Atrophic epidermis with a patulous infundibulum, follicular plugging, basal layer vacuolization, and pigment incontinence. **D**, CD68 highlights histiocytes of the granulomatous vasculitis. (**A**, **B**, and **C**, Hematoxylin-eosin stain; **D**, CD68 immunohistochemistry stain; original magnifications: **A**, $\times 20$; **B** and **C**, $\times 100$; **D**, $\times 200$.)

skin nodules.⁵ An estimated 90% of patients with GPA or EGPA have positive antineutrophil cytoplasmic autoantibodies (ANCA), and granulomatous lesions may be a source of ANCA-producing autoreactive B cells.⁵ This is significant, because localized GPA with more granulomatous features tends to have more frequent relapses.⁵ Granulomatous vasculitis can also be seen as a secondary finding in infection, autoimmune conditions such as sarcoidosis and rheumatoid arthritis, and lymphoproliferative disorders, although it is still more commonly seen in the lungs than in the skin.⁵ For example, cutaneous granulomatous vasculitis has been reported in association with lymphomatoid granulomatosis, a B-cell lymphoma characterized by atypical angiocentric lymphoid infiltrates.⁶ On the other hand, biopsies of cutaneous sarcoidosis with lesions clinically resembling vasculitis tend to show noncaseating granulomas in the dermis, rather than true granulomatous vasculitis.⁶ Importantly, the prognosis of patients with ulcerative lesions and underlying cutaneous granulomatous vasculitis was more favorable than the prognosis of those with systemic granulomatous vasculitis.⁶ Gibson et al⁷

reported eight cases of cutaneous granulomatous vasculitis, two of which were associated with sarcoidosis, two with concurrent lymphoma, one with systemic granulomatous vasculitis, and one with active herpes simplex virus infection. None were associated with SLE.

Granulomatous medium- or large-vessel vasculitis is not thought to be a feature of SLE, although it can rarely be seen in sarcoidosis and lymphoproliferative disorders, primarily lymphoma.⁶ Although our patient had a distant history of non-Hodgkin's lymphoma, he had been successfully treated with chemotherapy and had been in remission for 4 years, with multiple negative posttreatment positron emission tomography/computed tomography scans, as well as negative lymph node biopsies during this hospitalization. Furthermore, skin biopsy did not demonstrate atypical angiocentric lymphoid infiltrates, which are characteristic of lymphomatoid granulomatosis. Our patient did not meet the diagnostic criteria for sarcoidosis, and skin biopsy did not demonstrate any noncaseating granulomas characteristic of sarcoidosis. The patient also had negative ANCA, which have an estimated

90% positivity rate in GPA and EGPA, and without the glomerulonephritis that would be expected in GPA or the asthma and eosinophilia that would be expected in EGPA, SLE and ANCA-associated vasculitis overlap syndrome is not likely.⁵ Our patient also denied having joint pain and had a negative rheumatoid factor, excluding rheumatoid arthritis. Although polyarteritis nodosa can cause a granulomatous medium-vessel vasculitis, the consulting nephrology service declined to perform additional studies, such as renal angiography or renal biopsy, given their high suspicion for SLE.

Both the clinical and histopathologic findings in SLE are highly variable, and cutaneous granulomatous vasculitis is an extremely rare but notable finding. Recognition that SLE may present with cutaneous granulomatous vasculitis may have prognostic implications, and it is important to keep SLE on the differential for cutaneous granulomatous vasculitis. We report this case for its clinical and histopathologic interest.

We are indebted to the patient for granting permission to publish this article.

Conflicts of interest

None disclosed.

REFERENCES

1. Datta SK, Gandhi VC, Lee HJ, Pillay VKG, Dunea G. Granuloma in systemic lupus erythematosus. *S Afr Med J*. 1972;46(41):1514-1516.
2. Koerner C, Sommer C, Knauth M, Breitbart A, Wildemann B. Granulomatous cerebral vasculitis in systemic lupus erythematosus during systemic remission of disease. *J Neurol*. 2000;247(9):722-724.
3. Barile-Fabris L, Hernández-Cabrera MF, Barragan-Garfias JA. Vasculitis in systemic lupus erythematosus. *Curr Rheumatol Rep*. 2014;16(9):440. <https://doi.org/10.1007/s11926-014-0440-9>
4. Calamia KT, Balabanova M. Vasculitis in systemic lupus erythematosus. *Clin Dermatol*. 2004;22(2):148-156. <https://doi.org/10.1016/j.clindermatol.2003.12.022>
5. Pagnoux C, Bienvenu B, Guillevin L. The spectrum of granulomatous vasculitides. *Fut Rheumatol*. 2006;1(6):729-750. <https://doi.org/10.2217/17460816.1.6.729>
6. Wei CH, Huang YH, Shih YC, Tseng FW, Yang CH. Sarcoidosis with cutaneous granulomatous vasculitis. *Australas J Dermatol*. 2010;51(3):198-201. <https://doi.org/10.1111/j.1440-0960.2010.00630.x>
7. Gibson LE, el-Azhary RA, Smith TF, Reda AM. The spectrum of cutaneous granulomatous vasculitis: histopathologic report of eight cases with clinical correlation. *J Cutan Pathol*. 1994;21(5):437-445. <https://doi.org/10.1111/j.1600-0560.1994.tb00286.x>