

## What Is Your Diagnosis?

---



An otherwise healthy 62-year-old man presented for evaluation of multiple scaly erythematous plaques on the right upper arm and shoulder of 10 years' duration. The patient reported a burning sensation but no exacerbation of the lesions upon sun exposure. He previously had been treated for a presumed clinical diagnosis of erythema annulare centrifugum but experienced only modest improvement with topical corticosteroids and tacrolimus ointment 0.1%. Previous trials of systemic antifungals also yielded minimal benefit.

PLEASE TURN TO PAGE 31 FOR DISCUSSION

---

Carol B. Thompson, MD; Lesley L. Starnes, MD; Rebecca Todd Bell, MD; M. Barry Randall, MD; Cristina Shimek, MD;  
Robert B. Skinner Jr, MD

Dr. Thompson is from the Division of Dermatology, University of Louisville, Kentucky. Dr. Starnes is from The Jackson Clinic, Tennessee. Dr. Bell is from Central Dermatology, Chapel Hill, North Carolina. Drs. Randall and Skinner are from the Department of Dermatology, University of Tennessee Health Science Center, Memphis. Dr. Shimek is from Duckworth Pathology Group, Memphis. The authors report no conflict of interest. Correspondence: Lesley L. Starnes, MD, 930 Madison Ave, Ste 840, Memphis, TN 38103 (llstarnes10@gmail.com).

## The Diagnosis: Mycosis Fungoides

Physical examination revealed erythematous polycyclic and arcuate plaques with fine overlying scale on the right arm and shoulder (Figure 1). Mild wrinkling and telangiectasias were noted on the skin surrounding the lesions. Laboratory tests showed normal values for antinuclear antibodies, anti-Sjögren syndrome–related antigen A, and anti-Sjögren syndrome–related antigen B.

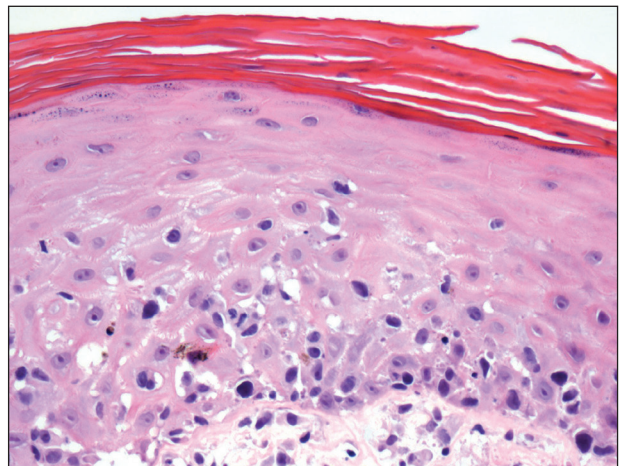
A skin biopsy of a plaque on the right upper arm showed enlarged pleomorphic lymphocytes arranged along the basal layer and in focal collections within the epidermis (Figure 2). Within the dermis were wiry bundles of collagen, a sparse superficial and patchy infiltrate of lymphocytes, and scattered large mononuclear cells (Figure 3). Immunoperoxidase staining revealed large intraepidermal lymphocytes positive for CD4 (Figure 4A) and CD5. Notably, these lymphocytes also stained positive for CD30

(Figure 4B). Staining for CD8, CD1a, CD56, and anaplastic lymphoma kinase was negative, with aberrant loss of CD3. The morphology and pattern of immunoreactivity supported the diagnosis of mycosis fungoides (MF).

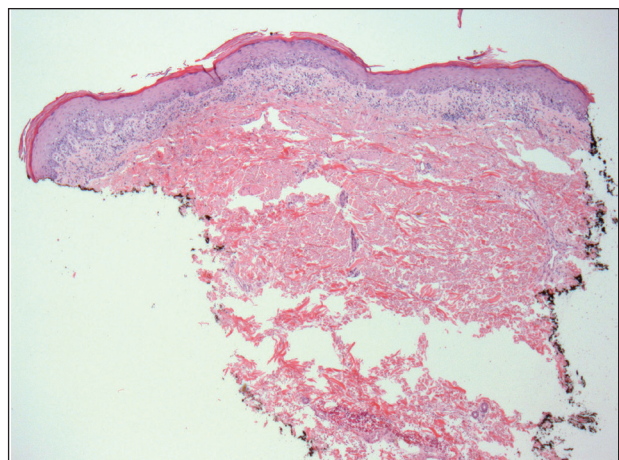
Mycosis fungoides is the most common form of cutaneous T-cell lymphoma.<sup>1</sup> Its progression is classified in 3 stages: (1) early (patch) stage, (2) plaque stage, and (3) tumor stage. Conclusive diagnosis of early stage MF often is difficult due to its clinical



**Figure 1.** Erythematous polycyclic and targetoid plaques with fine overlying scale on the right arm.

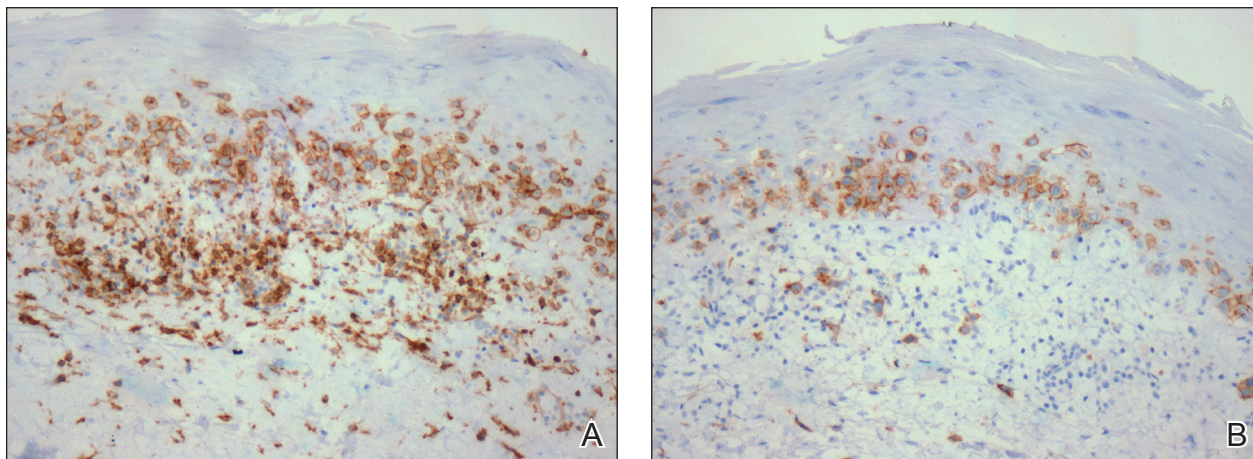


**Figure 2.** Enlarged pleomorphic lymphocytes arranged along the basal layer and in focal collections were noted within the epidermis (H&E, original magnification  $\times 200$ ).



**Figure 3.** Lymphocytes arranged along the basal layer and in focal collections within the epidermis. Wiry bundles of collagen, a sparse superficial and patchy infiltrate of lymphocytes, and scattered large mononuclear cells were noted within the dermis (H&E, original magnification  $\times 20$ ).





**Figure 4.** Large intraepidermal lymphocytes were highlighted on CD4 (A) and CD30 immunostaining (B)(original magnification  $\times 200$  and  $\times 200$ ).

features that are similar to more common benign dermatoses (eg, atopic dermatitis, psoriasis, lichen planus), leading to shortcomings in determining prognosis and selecting an appropriate treatment regimen. With this diagnostic difficulty in mind, guidelines have been created to aid in the diagnosis of early stage MF.<sup>2</sup>

Clinical features consistent with early stage MF include multiple erythematous, well-demarcated lesions with varying shapes that typically are greater than 5 cm in diameter.<sup>2</sup> Lesions usually are flat or thinly elevated and may exhibit slight scaling. As was noted in our patient, poikiloderma of the surrounding skin is fairly specific for early stage MF, as it is not a feature associated with common clinical mimics of MF (eg, atopic dermatitis, psoriasis, lichen planus). The distribution of skin lesions in non-sun-exposed areas is common. The eruption is persistent, though it may wax and wane in severity.<sup>2</sup>

Histopathologic examination is necessary to confirm a diagnosis of MF. Typically, early stage MF is marked by enlarged T lymphocytes within the epidermis as well as the papillary and superficial reticular dermis. Cerebriform nuclei are a key finding in the diagnosis of MF. Lymphocytes frequently are arranged linearly along the basal layer of the epidermis. Within the epidermis, clusters of atypical lymphocytes (Pautrier microabscesses) without spongiosis are uncommon but are a characteristic finding of MF if present.<sup>1</sup> Papillary dermal fibrosis also may be evident.<sup>2</sup>

Immunostaining typically reveals positivity for CD3 and CD4, as well as for lymphocyte antigens CD2 and CD5.<sup>1</sup> CD30 positivity in early stage MF rarely has been reported in the literature.<sup>3,4</sup> Such cases appear histologically similarly to CD30-negative cases in other respects. One study

showed that the presence of CD30-positive lymphocytes does not alter the clinical course of MF.<sup>3</sup> Another study found that, while epidermal CD30-positive lymphocytes had no prognostic relevance, an increased percentage of dermal CD30-positive cells was linked to a higher stage at diagnosis and worse overall prognosis.<sup>5</sup> Pathogenesis underlying CD30 positivity in early MF is unknown. It is important to note that CD30-positive cells commonly are seen in lymphomatoid papulosis and anaplastic large cell lymphoma, as well as a variety of nonneoplastic conditions.<sup>3,6,7</sup>

## REFERENCES

- Smoller BR. Mycosis fungoides: what do/do not we know? *J Cutan Pathol.* 2008;35(suppl 2):35-39.
- Pimpinelli N, Olsen EA, Santucci M, et al. Defining early mycosis fungoides. *J Am Acad Dermatol.* 2005;53:1053-1063.
- Wu H, Telang GH, Lessin SR, et al. Mycosis fungoides with CD30-positive cells in the epidermis. *Am J Dermatopathol.* 2000;22:212-216.
- Ohtani T, Kikuchi K, Koizumi H, et al. A case of CD30<sup>+</sup> large-cell transformation in a patient with unilesional patch-stage mycosis fungoides. *Int J Dermatol.* 2009;48:623-626.
- Edinger JT, Clark BZ, Pucevich BE, et al. CD30 expression and proliferative fraction in nontransformed mycosis fungoides. *Am J Surg Pathol.* 2009;33:1860-1868.
- Resnik KS, Kutzner H. Of lymphocytes and cutaneous epithelium: keratoacanthomatous hyperplasia in CD30<sup>+</sup> lymphoproliferative disorders and CD30<sup>+</sup> cells associated with keratoacanthoma. *Am J Dermatopathol.* 2010;32:314-315.
- Kempf W. CD30<sup>+</sup> lymphoproliferative disorders: histopathology, differential diagnosis, new variants, and simulators. *J Cutan Pathol.* 2006;33(suppl 1):58-70.