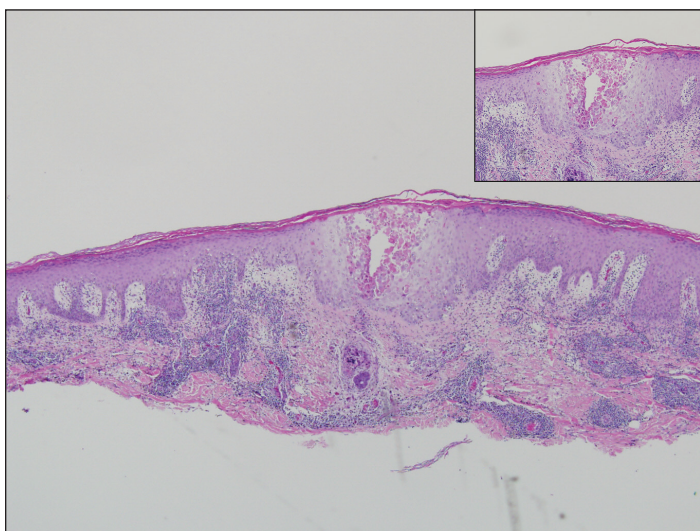


Indurated Plaque on the Shoulder

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H&E, original magnification $\times 20$.

A 66-year-old man with mycosis fungoides presented with a new indurated plaque on the left shoulder. Biopsies of the left shoulder and back lesions were obtained.

THE BEST DIAGNOSIS IS:

- exaggerated arthropod reaction
- herpes zoster
- large cell transformation of mycosis fungoides
- lymphomatoid papulosis
- secondary B-cell lymphoma

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THE DIAGNOSIS: Herpes Zoster

Herpes zoster (HZ) is a painful skin condition caused by reactivation of latent varicella-zoster virus (VZV) in dorsal root ganglion cells.¹ Upon reactivation, VZV replicates in the dorsal root ganglion, which ultimately results in inflammation and necrosis of the neuron and intense neuralgia. Reactivation of latent VZV may occur spontaneously or may be induced by various factors including immunosuppression, stress, illness, and trauma. Prior to the development of skin lesions, many patients experience a prodrome of tingling, pain, or pruritus. Herpes zoster classically presents with grouped vesicles on an erythematous base in a unilateral dermatomal distribution; however, more than one adjacent dermatome may be involved, and the lesions can cross the midline. Furthermore, the development of vesicles may be preceded by the development of edematous papules or plaques.¹

On histology, VZV closely resembles herpes simplex virus type 1 and herpes simplex virus type 2 infections.² Classic histologic findings include ballooning degeneration of keratinocytes, acantholysis, nuclear molding, ground-glass nuclear inclusions, margined chromatin, and multinucleated keratinocytes, as well as necrosis of follicles and sebaceous glands.² Varicella-zoster virus polymerase chain reaction or immunostaining can be used to confirm the diagnosis.²

Classic mycosis fungoides (MF) presents with well-circumscribed erythematous patches in non-sun-exposed areas and eventually may progress to plaques and tumors.³ Patients with cutaneous T-cell lymphomas, such as MF, are at a higher risk for skin infections including HZ^{4,5}; however, immunocompromised patients, such as those with cutaneous lymphomas, can have atypical clinical presentations of HZ that may be concerning for cutaneous lymphoma.⁶ Furthermore, cutaneous malignancies can occur in dermatomal distributions that may mimic HZ.⁷ Therefore, the threshold for biopsy should be lowered in those patients with dermatomal lesions and history concerning for possible malignancy.

Classically, histologic examination of MF demonstrates an infiltrate of haloed cells at the dermo-epidermal junction, which are atypical T cells with hyperchromatic cerebriform nuclei that are larger, darker, and more angulated than the benign recruited lymphocytes in the perivascular infiltrate seen in VZV infection (Figure 1).³ Papillary dermal fibrosis typically is present, and the perivascular infiltrate is denser above the post-capillary venule rather than being symmetrical around the vessel (bare underbelly sign). Clusters of these cells may form within the epidermis, which are called Pautrier microabscesses.³ Mycosis fungoides also can

exhibit large cell transformation in which small lymphocytes transform into larger cells, thereby associated with a poorer prognosis.⁸

Lymphomatoid papulosis is a CD30⁺-predominant form of cutaneous T-cell lymphoma characterized by papules and nodules that spontaneously involute.⁹ This condition is most commonly associated with MF but can be associated with other lymphomas. This condition may be mistaken for HZ clinically, but histology classically demonstrates large atypical lymphocytes resembling Reed-Sternberg cells in small clusters rather than follicular necrosis (Figure 2).⁹

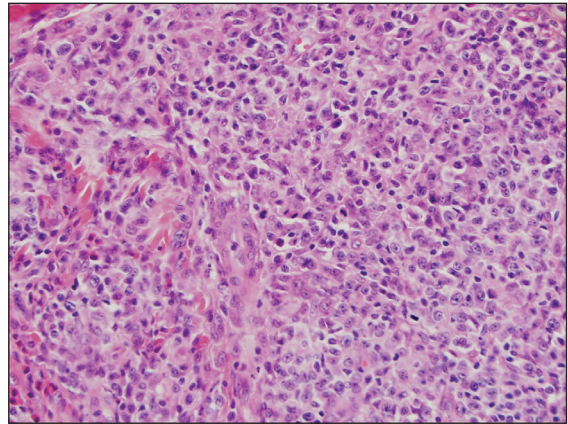


FIGURE 1. Transformed mycosis fungoides is evidenced by an infiltrate of large atypical T cells with hyperchromatic cerebriform nuclei that are larger, darker, and more angulated than the benign lymphocytes (H&E, original magnification $\times 200$).

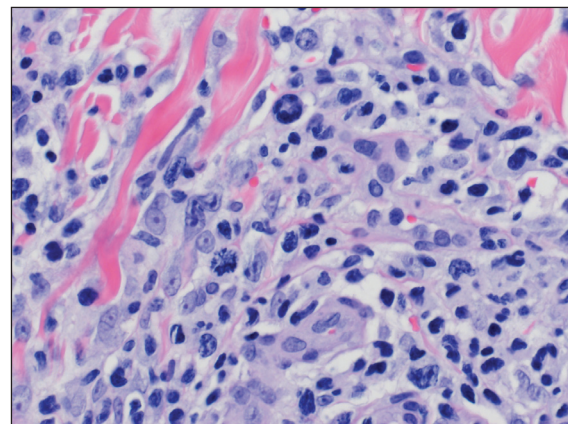


FIGURE 2. Lymphomatoid papulosis type A is evidenced by large atypical lymphocytes resembling Reed-Sternberg cells (H&E, original magnification $\times 400$).

Patients with lymphoma may sequentially develop a secondary lymphoma. There have been reports of secondary B-cell lymphomas associated with MF, but this phenomenon is rare.¹⁰ The histology depends on the type of B-cell lymphoma present, but follicular necrosis would not be expected (Figure 3).

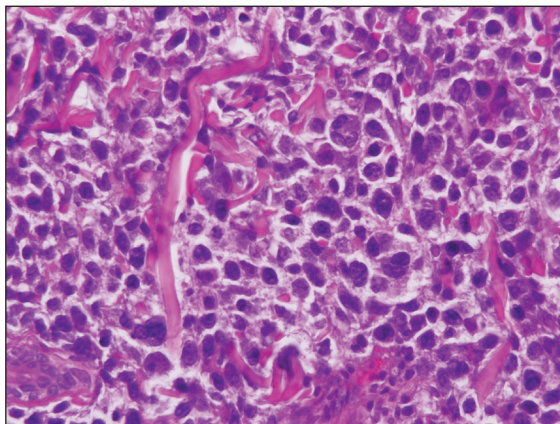


FIGURE 3. Secondary B-cell lymphoma is evidenced by sheets of atypical lymphocytes (H&E, original magnification $\times 400$).

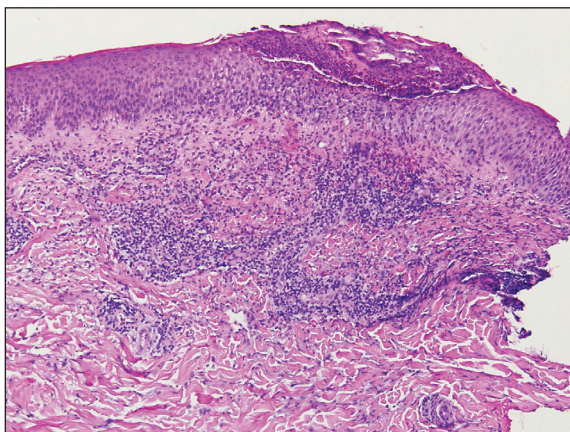


FIGURE 4. Exaggerated arthropod reaction is evidenced by a wedge-shaped perivascular and interstitial infiltrate containing eosinophils with endothelial swelling (H&E, original magnification $\times 40$).

Unusual hypersensitivity reactions to arthropod attacks have been described in patients with lymphoproliferative disorders and could be mistaken for HZ. Histology may demonstrate a wedge-shaped perivascular and/or interstitial infiltrate containing eosinophils with endothelial swelling (Figure 4), but these findings may vary depending on the type of arthropod involved.¹¹

Our case provided a unique example of HZ in a patient with a known history of MF. Clinically, there was concern for progression of the patient's underlying disease; however, histology demonstrated ballooning keratinocytes and follicular necrosis, which are classically seen in HZ infection.

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