

# Eosinophilic Pustular Folliculitis in the Setting of Untreated Chronic Lymphocytic Leukemia

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## PRACTICE POINTS

- Eosinophilic pustular folliculitis (EPF) is associated with an immunosuppressed state, as in patients with underlying hematologic malignancy.
- Topical corticosteroids remain the first-line treatment for EPF; however, antimicrobial agents have been used with moderate success when topical therapies have failed.

To the Editor:

Eosinophilic pustular folliculitis (EPF) is a noninfectious dermatosis that typically manifests as recurrent follicular papulopustules that generally affect the face and occasionally the trunk and arms. There are several subtypes of EPF: classic EPF (Ofuji disease), infancy-associated EPF, and immunosuppression-associated EPF.<sup>1,2</sup> We report a rare case of EPF in the setting of untreated chronic lymphocytic leukemia (CLL), a subtype of immunosuppression-associated EPF that has been associated with hematologic malignancy EPF (HM-EPF).<sup>3-5</sup>

A 69-year-old woman presented with diffusely scattered, pruritic, erythematous, erosive lesions on the back, arms, legs, and forehead (Figure 1) of 4 months' duration, as well as an ulcerative lesion on the left third toe due to a suspected insect bite. She had a history of untreated CLL that was diagnosed 2 years prior. The patient was empirically started on clindamycin for presumed infection of the

toe. A punch biopsy of the left wrist revealed superficial and deep dermal perivascular and interstitial inflammatory infiltrates composed of lymphocytes, histiocytes, and numerous eosinophils in association with edema and necrosis. Histopathology was overall most consistent with an exuberant arthropod reaction; however, at 2-week follow-up, the patient reported that the pustular lesions improved upon starting antibiotics, which raised concerns for a bacterial process. The patient initially was continued on clindamycin given subjective improvement but was later switched to daptomycin, as she developed clindamycin-resistant methicillin-resistant *Staphylococcus aureus* osteomyelitis from the necrotic toe.

A month later, the patient returned with new papules and pustules on the arms and trunk. A repeat biopsy showed notable dermal collections comprised predominantly of neutrophils and eosinophils as well as involvement of follicular structures by dense inflammation (Figure 2). Immunohistochemistry demonstrated a predominant population of small CD3<sup>+</sup> T cells, which raised concern for cutaneous T-cell lymphoma. However, retention of CD5 expression made this less likely. Few scattered CD20<sup>+</sup> B cells with limited CD23 reactivity and without CD5 co-expression were detected, which ruled out cutaneous involvement of the patient's CLL. Bacterial culture and Grocott methenamine-silver, Gram, acid-fast bacilli, and periodic acid-Schiff stains were negative. Polymerase chain reaction testing for varicella-zoster virus and herpes simplex virus also were negative. Thus, a diagnosis of EPF

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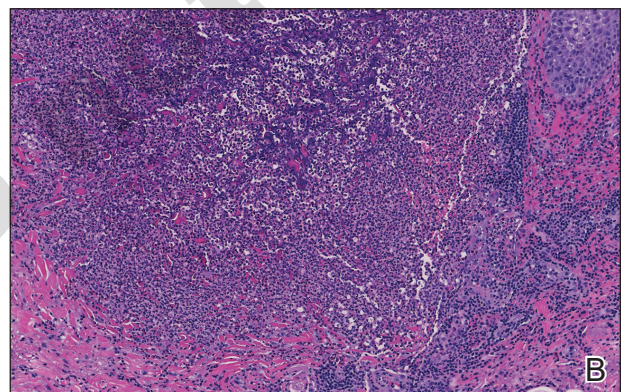
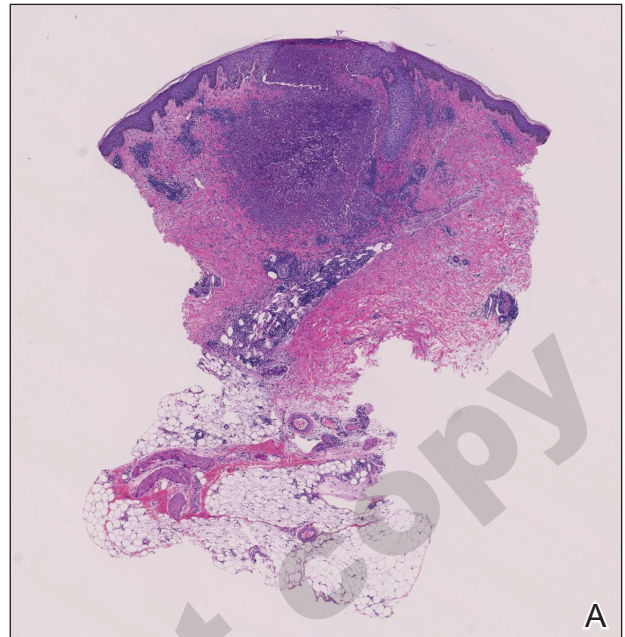


**FIGURE 1.** Scattered erythematous papules on the arms characteristic of eosinophilic pustular folliculitis.

secondary to CLL was favored, as an infectious process also was unlikely. The patient was started on triamcinolone cream 0.1% with gradual improvement.

Cases of HM-EPF predominantly have been reported in patients who have undergone chemotherapy, bone marrow transplantation, or hematopoietic stem cell transplantation. Furthermore, a vast majority of these cases have been reported in older males.<sup>3-16</sup> In a retrospective study of more than 750 patients with established CLL, Agnew et al<sup>7</sup> identified 125 different skin complications in 40 patients. Of this subset, only a small number (2/40) were associated with eosinophilic folliculitis, with 1 case noted in a middle-aged woman with a history of CLL treatment.<sup>7</sup> Moreover, Motaparathi et al<sup>4</sup> reported 3 additional cases of HM-EPF, with all patients identified as middle-aged men who were treated with chemotherapy for underlying CLL. Our patient represents a case of EPF in the context of untreated CLL in a woman.

Although topical corticosteroids remain the first-line treatment for EPF, a survey study conducted across 67 hospitals in Japan indicated that antibiotics were moderately or highly effective in 79% of EPF patients (n=143).<sup>17</sup> This association may explain the subjective improvement reported by our patient upon starting clindamycin. Furthermore, in HIV-associated EPF, high-dose cetirizine, itraconazole, and metronidazole have been successful when topical therapies have failed.<sup>18</sup> Although the precise pathogenesis of EPF is unknown, histopathologic features, clinical appearance, and identification of the accurate EPF subtype can still prove valuable in informing empiric treatment strategies. Consequently, the initial histopathologic diagnosis of an arthropod



**FIGURE 2.** A, Histopathology revealed a dermal collection of dense inflammation composed of neutrophils, eosinophils, lymphocytes, and histiocytes adjacent to a follicular structure (H&E, original magnification  $\times 20$ ). B, High-power view demonstrated numerous eosinophils within an infiltrate (H&E, original magnification  $\times 100$ ).

bite reaction in our patient highlights the importance of clinical correlation and additional ancillary studies in the determination of EPF vs other inflammatory dermatoses that manifest microscopically with lymphocytic infiltrates, prominent eosinophils, and follicular involvement.<sup>4</sup> The histopathologic features of EPF demonstrate considerable overlap with eosinophilic dermatosis of hematologic malignancy (also known as eosinophilic dermatosis of myeloproliferative disease). It is suspected that eosinophilic dermatosis of hematologic malignancy and EPF may exist on a spectrum, and additional cases may improve categorization of these entities.<sup>19</sup>

In conclusion, this report adds to the medical practitioner's awareness of EPF manifestations in patients with underlying CLL, an infrequently reported subtype of HM-EPF.

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