involvement often require PUVA, total skin electron-beam irradiation, or systemic biologic therapies such as retinoids or interferon.[13,14] Finally, systemic disease is commonly treated with multiagent chemotherapy.

This case illustrates an unusual presentation of tumor-stage MF limited to a single digit associated with onychodystrophy. Unlike patients previously reported, our patient did not go on to develop involvement of all the digits. Complete response was noted after local radiation therapy.

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# A report of Epstein-Barr virus–positive primary cutaneous natural killer–/T-cell lymphoma

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We describe a patient who presented with Epstein-Barr virus–positive tumor-stage primary cutaneous lymphoma. Our patient had previously been treated with oral methotrexate for long-standing rheumatoid arthritis. Tissue analysis revealed large tumor cells that were surface CD2- and CD3-positive; T-cell–restricted intracellular antigen–positive; CD56-, CD20-, and CD30-negative; and stained positively for Epstein-Barr virus. Our case is noteworthy for several reasons. Although the presence of rheumatoid arthritis and therapy with methotrexate are putative risk factors for the development of immune suppression-related and Epstein-Barr virus–related lymphomas, the vast majority of lymphomas in this setting are of B-cell origin, and rarely are these primary cutaneous in nature. In addition, our patient's tumor displayed an unusual phenotype, with immunophenotypic features suggestive of an atypical natural killer–/T-cell lymphoma. Methotrexate was withdrawn, and our patient was successfully treated with local radiotherapy. She has remained in complete remission 28 months since diagnosis. (J Am Acad Dermatol 2008;59:157-61.)

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Primary cutaneous lymphomas encompass a broad range of clinical entities characterized by the proliferation of neoplastic lymphoid cells in the skin. The risk factors for the development of cutaneous lymphomas are largely unknown. Immunosuppression and Epstein-Barr virus (EBV) are known to play a role in the development of B-cell lymphomas but rarely are these factors associated with or implicated in the development of lymphomas developing primarily in the skin.[1-4] We describe a patient who presented with tumor-stage primary cutaneous lymphoma who was initially rendered the clinical and histologic diagnosis of mycosis fungoides. Detailed analysis revealed an EBV-positive primary cutaneous atypical natural killer (NK)-/T-cell lymphoma. We discuss in detail the clinical and pathological features of this case.

*Abbreviations used:*

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| EBV: | Epstein-Barr virus |
| MTX: | methotrexate |
| NK: | natural killer |
| RA: | rheumatoid arthritis |
| TNF: | tumor necrosis factor |

## CASE REPORT

A 60-year-old white woman was referred for an approximately 9-month history of slowly growing, asymptomatic tumors localized to the right arm (Fig 1). Her medical history was significant for a 12-year history of rheumatoid arthritis (RA) for which she was treated with methotrexate (MTX) (total estimated dose 7.6 g). Six years before presentation she also received infliximab, which was discontinued after 3 infusions. Her social and family histories were noncontributory. At presentation she denied fever, chills, or night sweats; however, she did report a 7-lb weight loss in the months before presentation. Examination revealed two erythematous tumors, one 4 cm and the other 1 cm, on the extensor aspect of her right proximal forearm. Total body skin examination revealed no other skin lesions, and she had no palpable peripheral lymphadenopathy.

Initial skin biopsy specimen revealed an epidermotropic dense, diffuse infiltrate of large atypical lymphocytes that was interpreted by the reporting hematopathologist as tumor-stage cutaneous T-cell lymphoma. Immunohistochemical stains on this specimen were positive for CD3 and negative for CD30, CD20, and CD79a. Repeated biopsy specimens were performed that revealed a dense, atypical large-cell lymphocytic infiltrate (Fig 2), with minimal to no epidermotropism detectable in the majority of these sections. Repeated immunohistochemistry revealed positive surface staining for CD3 (Fig 3) and leukocyte common antigen, and negative staining for CD20, CD30, CD56, and terminal deoxynucleotidyl transferase. In addition, staining for T-cell–restricted intracellular antigen, which stains cytotoxic granule proteins, was positive (Fig 4). Lesional skin flow cytometric analysis demonstrated a clonal population of cells with positive expression of CD2, CD3, and CD45, and negative for CD5, CD7, CD4, and CD8. Polymerase chain reaction–based T-cell receptor gamma chain gene rearrangement analysis of the tissue samples did not detect a clonal rearrangement. In situ hybridization demonstrated diffuse positivity of the tumor cells for EBV-encoded early RNAs (Fig 5). This finding raised the possibility of an immune suppression–related lymphoma in our patient. Despite withdrawal of MTX for 18 weeks after onset, however, the lesions failed to regress spontaneously. Systemic evaluation, including complete blood cell count with differential, lactate dehydrogenase, serum protein electrophoresis, peripheral blood flow cytometry for clonal populations, and peripheral blood T-cell receptor gamma chain gene rearrangement analysis all produced normal or negative findings. EBV serologies were positive for IgG antibodies, but negative for IgM. Bone-marrow biopsy specimen and cytogenetic studies revealed normal results, with no detectable involvement by lymphoma or leukemia. Positron emission/computed tomography scan revealed a subcentimeter right supraclavicular lymph node with a standardized uptake value of 7.4 located medial to the insertion of the pectoralis muscle. Because of the small size, poorly accessible location, and intermediate level of uptake, a lymph node biopsy was not performed immediately. Based on the results of these studies, the diagnosis of primary cutaneous atypical NK-/T-cell lymphoma was established.

The patient underwent localized radiation therapy to the skin and lymph node. Fig 6 shows her arm 3 months after completion of therapy. Physical examination and positron emission/computed tomography imaging at this time revealed no evidence of disease. However, 3 months later positron emission/computed tomography images revealed recurrence of the hypermetabolic focus (standardized uptake value of 5.0) in the right supraclavicular lymph node. Subsequent excisional biopsy specimen revealed a benign lymph node with no histopathologic or flow cytometric evidence of lymphoma. The patient has been well and free of disease for a total of 37 months since disease onset and 28 months since diagnosis.