

Blastic Natural Killer–Cell Lymphoma: A Case Report

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This article presents a case of blastic natural killer (NK)–cell lymphoma. This rare neoplasm is defined by its clinical presentation, histologic characteristics, and immunostaining pattern. Most cases, including the one presented here, follow an aggressive clinical course.

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Case Report

A 75-year-old Hispanic man presented with a 2-month history of hundreds of purplish contusiform nodules, some confluent to plaques, covering most of his skin surface (Figure 1). The nodules were firm and tender but not ulcerated. They measured from 1 to 10 cm in diameter and were reported to be rapidly growing. The patient appeared sluggish but was afebrile. There were no signs of lymphadenopathy or hepatosplenomegaly.

The results of a 4-mm punch biopsy (Figures 2 and 3) were interpreted as a dense dermal infiltrate of cells containing an inconspicuous nucleolus and a notched nucleus with dispersed fine chromatin. The tissue was stained and determined to be negative for CD3, CD5, CD20, CD30, CD68, and S-100. The biopsy result was thought to be most consistent with a lymphoblastic-type lymphoma.

Because of the nonspecific hematoxylin and eosin (H&E) and marker staining pattern of the 4-mm punch biopsy result, several more biopsy specimens were submitted for flow cytometry. Flow cytometry revealed a population of cells positive for CD56, CD4, CD7, CD25, CD38, and CD45 and negative for CD2, CD3, CD5, CD8, CD16, and CD33. Furthermore, to assess bone marrow involvement, a marrow aspirate and flow cytometry were performed. The bone marrow (Figure 4) was found to be diffusely infiltrated by small to intermediate-sized immature mononuclear cells with the following

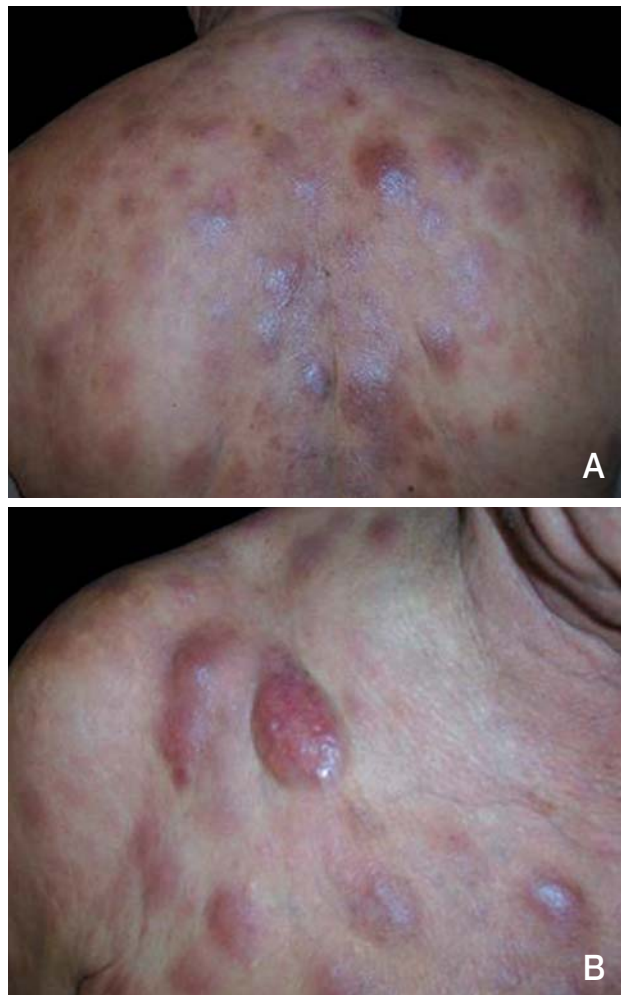


Figure 1. Generalized, violaceous, indurated nodules on the back (A) and right shoulder (B).

marker pattern: CD2⁺, CD4⁺, CD38⁺, CD56⁺, partial CD7, dim CD34, dim terminal deoxynucleotidyl transferase, surface CD3[–], cytoplasmic CD3[–], CD5[–], CD13[–], CD16[–], CD33[–], CD19[–], CD20[–], and negative cytoplasmic CD79a and myeloperoxidase.

Because of the patient's clinical presentation, the light microscopic H&E finding, and the flow cytometry analysis result, a diagnosis of blastic natural killer (NK)–cell lymphoma was made. The patient was referred

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to the hematology/oncology department for management. He was started on combination chemotherapy with cyclophosphamide, doxorubicin, vincristine, and prednisolone. Within 2 days of starting chemotherapy, his skin lesions appeared to melt away (Figure 5). However, the patient died a few days later, presumptively because of secondary widespread disease.

Comment

NK cells are specialized lymphocytes that are capable of nonspecific target cell destruction. They can mediate cytotoxicity without prior sensitization or specific antigen recognition reactions requiring major histocompatibility complexes.¹ NK cells are currently defined by their expression of a 220 kDa surface glycoprotein known as CD56 and other T-cell markers.

CD56⁺ NK/T-cell lymphomas often affect the skin. They are exceedingly rare and often follow an aggressive clinical course.¹⁻⁸

Cutaneous NK/T-cell lymphomas can be separated into the following groups: blastic NK-cell lymphomas; extranodal nasal NK/T-cell lymphomas; extranodal nasal-type NK/T-cell lymphomas; and cutaneous T-cell lymphoma with coexpression of CD56.

Blastic NK-cell lymphomas seem to be the least common of the cutaneous NK/T-cell lymphomas. The clinical presentation of most patients mirrors that of the patient presented here. Patients usually have widespread purplish skin-infiltrating nodules and plaques, and the lymphoma usually leads to the patient's death within one year of presentation. Histologically, dermal aggregates of immature intermediate-sized lymphoblasts are seen. Results of immunohistochemistry tests show most blastic NK-cell

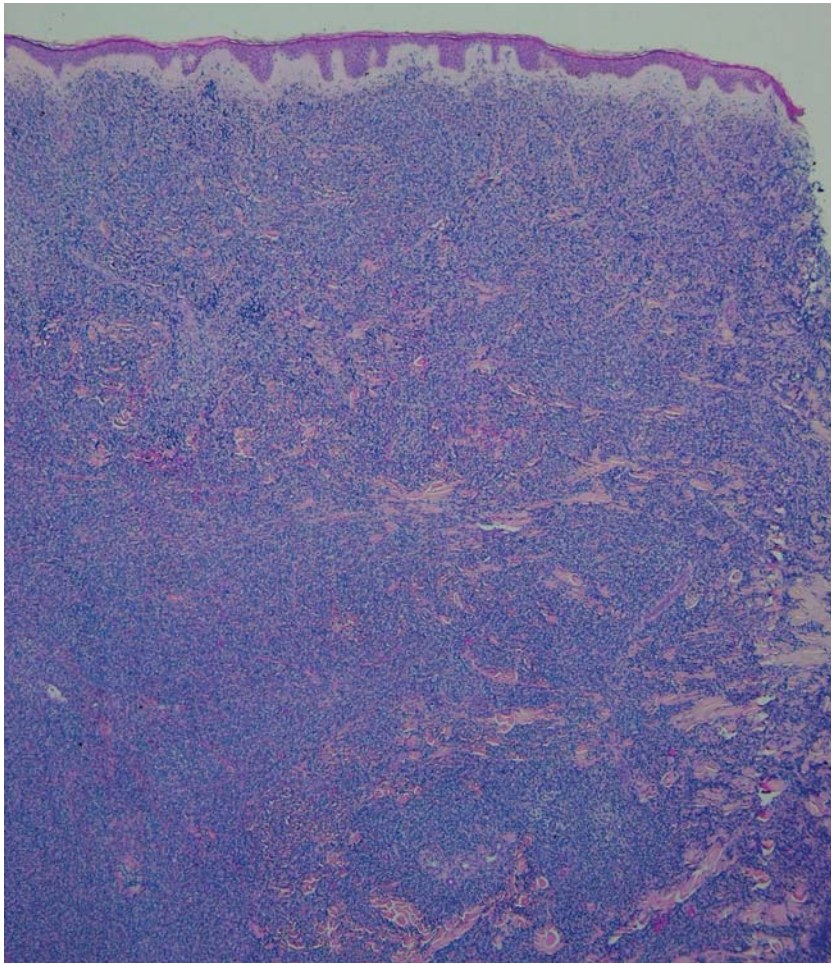


Figure 2. Dense dermal infiltrate of atypical lymphocytes (H&E, original magnification $\times 2$).

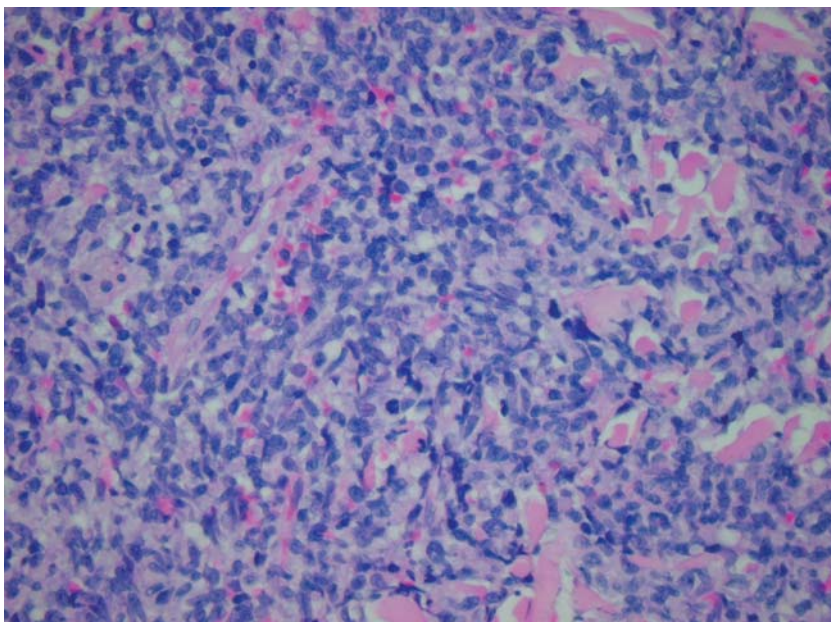


Figure 3. Atypical lymphocytes with numerous mitotic figures (H&E, original magnification $\times 40$).

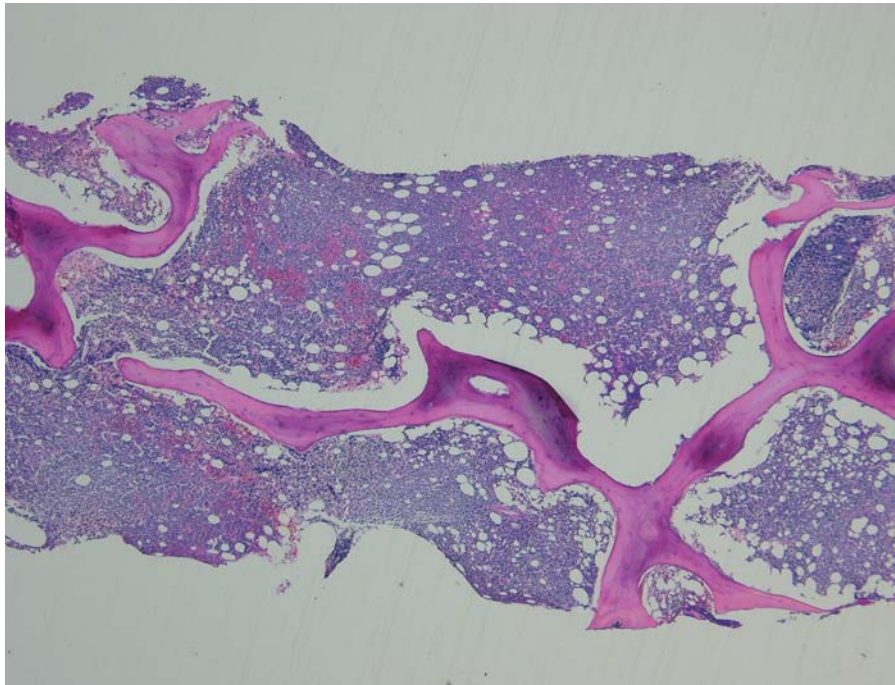


Figure 4. Atypical lymphocytes infiltrating bone marrow (H&E, original magnification $\times 2$).



Figure 5. The back 2 days postchemotherapy.

lymphomas are CD3⁻, CD4⁺, CD7⁺, and CD56⁺, as was the case in this patient's skin and bone marrow samples. Mismatched immunohistochemical findings between skin and bone marrow flow cytometry (as this patient's were regarding CD2) have been previously reported.⁸ Testing for Epstein-Barr virus was not done in this patient; however, unlike nasal and nasal-type extranodal NK/T-cell lymphomas, blastic NK-cell lymphomas classically are not associated with Epstein-Barr virus.

REFERENCES

1. Hercend T, Schmidt RE. Characteristics and uses of natural killer cells. *Immuno Today*. 1988;9:291-293.
2. DiGiuseppe JA, Louie DC, Williams JE, et al. Blastic natural killer cell leukemia/lymphoma: a clinicopathological study. *Am J Surg Pathol*. 1997;21:1223-1230.
3. Petrella T, Dalac S, Maynadie M, et al. CD4⁺ CD56⁺ cutaneous neoplasms: a distinct hematological entity? Groupe Francais d'Etude des Lymphomes Cutanes (GFELC). *Am J Surg Pathol*. 1999;23:137-146.
4. Cheung MM, Chan JK, Wong KF. Natural killer cell neoplasms: a distinct group of highly aggressive lymphomas/leukemias. *Semin Hematol*. 2003;40:221-232.
5. Child FJ, Mitchell TJ, Whittaker SJ, et al. Blastic natural killer cell and extranodal natural killer cell-like T-cell lymphoma presenting in the skin: report of six cases from the UK. *Br J Dermatol*. 2003;148:507-515.
6. Radonich MA, Lazova R, Bolognia J. Cutaneous natural killer/T-cell lymphoma. *J Am Acad Dermatol*. 2002;46:451-456.
7. Chan J, Sin VC, Wong KF, et al. Nonnasal lymphoma expressing the natural killer cell marker CD56: a clinicopathologic study of 49 cases of an uncommon aggressive neoplasm. *Blood*. 1997;89:4501-4513.
8. Falcao RP, Garcia AB, Marques MG, et al. Blastic CD4 NK cell leukemia/lymphoma: a distinct clinical entity. *Leuk Res*. 2002;26:803-807.