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Three cases of lymphomatoid papulosis with a CD56$^+$ immunophenotype

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We report 3 cases of lymphomatoid papulosis (LyP) with a CD56$^+$, cytotoxic immunophenotype. All 3 patients presented with clinical histories typical of LyP, with one patient having associated mycosis fungoides. Histologically, two cases were type A LyP and one was type B. All 3 cases demonstrated a T-cell receptor clone in lesional skin without evidence of blood involvement. The atypical lymphocytes in each of the 3 cases expressed cytotoxic granules (T-cell intracellular antigen-1$^+$ and granzyme B$^+$) and were CD8$^+$ and CD56$^+$. Expression of CD56 is associated with a poor prognosis in subcutaneous panniculitis-like T-cell lymphoma and blastic natural killer cell lymphoma. However, the two cases of CD56$^+$ LyP previously reported and the 3 cases in this series all appear to be pursuing an indolent course with no evidence of systemic disease. (J Am Acad Dermatol 2006;55:903-6.)

Lymphomatoid papulosis (LyP) is classified by the World Health Organization (WHO) as a lymphoproliferative disorder of uncertain malignant potential, which can be associated with a lymphoma in approximately 10% of cases (usually mycosis fungoides [MF], anaplastic large cell lymphoma, or Hodgkin's disease). It is characterized by spontaneously resolving papules and nodules and the disease may recur for decades. It can be classified into 3 histologic subtypes (A, B, and C) depending on the presence and proportion of atypical CD30$^+$ lymphocytes.[1]

Abbreviations used:

EORTC:	European Organization for Research and Treatment of Cancer
LyP:	lymphomatoid papulosis
MF:	mycosis fungoides
TCR:	T-cell receptor
TIA-1:	T-cell intracellular antigen
WHO:	World Health Organization

The atypical lymphocytes in LyP type B classically express a T-cell immunophenotype similar to MF (CD2$^+$, CD3$^+$, CD4$^+$, CD8$^-$, CD30$^-$, T-cell intracellular antigen [TIA]-1$^-$, CD56$^-$) but in LyP types A and C, the immunophenotype is equivalent to that of primary cutaneous anaplastic large cell lymphoma (CD4$^+$, CD30$^+$, TIA-1$^+$, granzyme B$^+$), with variable loss of pan T-cell antigens (CD2, CD3, or CD5). Only 5% express a cytotoxic phenotype (CD2$^+$, CD3$^+$, CD4$^-$, CD8$^+$, TIA-1$^+$, CD56$^-$). The CD56 antibody

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Table I. Summary of immunohistochemical findings in cases 1 to 3

Case	CD2	CD3	CD4	CD8	CD30	Beta-F1	Granzyme B	TIA-1	CD56
1	+	+	–	+	–	N/A	N/A	+	+
2	+	+	–	+	+	+	+	+	+
3	+	+	–	+	+	+	+	+	+

N/A, Test not performed; *TIA*, T-cell intracellular antigen.

or neuronal-cell adhesion molecule is expressed by all natural killer cells and cytotoxic T cells. In the WHO classification, several groups of $CD56^+$ lymphomas are described, including extranodal natural killer/T-cell lymphoma of the nasal type, blastic natural killer cell lymphoma, and subcutaneous panniculitis-like T-cell lymphoma[2] where $CD56^+$ is often associated with a worse prognosis. Only two cases of $CD56^+$ LyP have been reported previously in the literature,[3,4] and we report 3 further cases of this rare subtype. However, a recent publication[5] reported $CD56^+$ in approximately half of LyP lesions. This is a surprising result that might infer that, although it is not normally looked for, $CD56^+$ is common in LyP. We, therefore, undertook immunostaining for CD56 in 12 further cases of LyP retrieved from our pathology archives.

CASE REPORTS

Case 1

A 29-year-old Caucasian man presented in 2002 with a 4-year history of recurring erythematous, crusted papules and nodules occurring on his arms and legs. The lesions lasted 2 to 3 months and healed with postinflammatory hyperpigmentation. He had no hepatosplenomegaly or lymphadenopathy. The disease pursued an indolent course with no treatment and the patient was subsequently lost to follow-up.

A skin biopsy specimen of a papule showed an epidermotropic infiltrate of medium atypical lymphocytes with Pautrier's microabscess formation, consistent with the diagnosis of LyP type B. Immunohistochemical analysis for CD56 was performed on formalin-fixed, paraffin-embedded tissue sections using CD56 antibody (Novocastra, Newcastle-upon-Tyne, England) at dilution 1:40 with microwave heating and citrate buffer. Immunohistochemistry results are summarized in Table I. T-cell receptor (TCR) gene rearrangement studies using polymerase chain reaction/single-strand conformational polymorphism performed on DNA extracted from lesional skin identified a clonal population of T cells whereas TCR studies performed on DNA extracted from peripheral blood mononuclear cells were polyclonal. Lymphocyte subsets, lactate dehydrogenase levels, Sézary cell count, and human T-lymphotrophic virus type I serology in peripheral blood were normal.

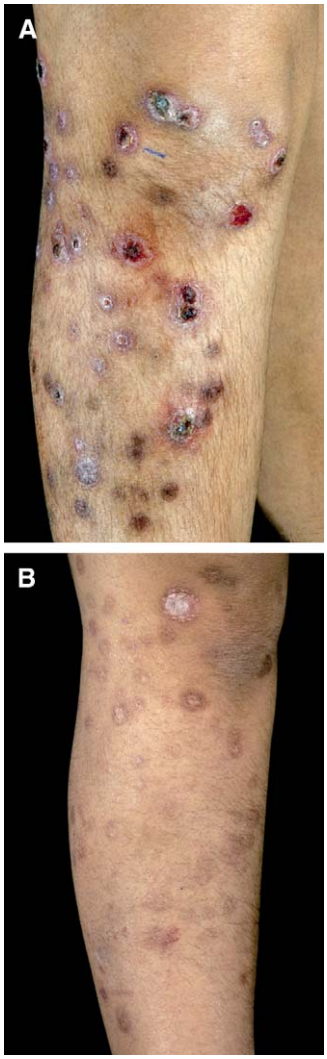

Fig 1. A, Widespread eruption of eroded papules. **B**, Healing with atrophic scarring and postinflammatory hyperpigmentation.

Case 2

A 23-year-old Iranian man was given a diagnosis in 1997 of cytotoxic juvenile-onset MF, which was $CD2^+$, $CD3^+$, $CD8^+$, TIA-1^+, and $CD56^+$, but $CD4^-$. He subsequently presented in 2004 with a widespread eruption of itchy papules, some of which were eroded or excoriated. The lesions spontaneously resolved and healed with atrophic scarring (Fig 1). He was otherwise well with no lymphadenopathy or hepatosplenomegaly.