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Erythrodermic Actinic Reticuloid Is Characterized by the Overspill of Oligoclonal CD8+ Lymphocytes Responsive To Ultraviolet Irradiation

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Erythrodermic actinic reticuloid (EAR) is a photosensitive disorder characterized by dense lymphocytic infiltration in the sun-exposed areas and an increased number of atypical lymphocytes in the peripheral blood. We have reported 2 patients with EAR with circulating atypical lymphocytes and photosensitivity to both ultraviolet (UV) B and A. Although no clonal proliferation of T-cells was observed in the peripheral blood, CD8+ cells were increased in number in an oligoclonal fashion. A number of proliferating CD8+ cells were small, but most cells expressed bcl-2. These findings suggest EAR is a photosensitivity dermatitis characterized by the overspill of oligoclonal CD8+ lymphocytes responsive to UV irradiation.

Key words: actinic reticuloid, Sezary syndrome, photosensitivity, erythroderma, ultraviolet

INTRODUCTION

Patients with erythrodermic actinic reticuloid (EAR) present with clinicopathologic features mimicking Sezary syndrome, a cutaneous T-cell lymphoma characterized by desquamative dermatitis and CD4+ lymphocytic leukemia [1,2]. EAR, however, is distinct from Sezary syndrome because of the presence of photosensitivity to UVB and UVA, and an increased number of CD8+ lymphocytes in the peripheral blood.

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PATIENTS

Case 1: A 48-year-old man with a 6-year history of photosensitivity dermatitis presented with desquamative erythroderma, palmoplantar hyperkeratosis and lymphadenopathy in the neck, axillae and groin. The peripheral blood tests revealed a WBC count of 28,900 /cu mm with 55.5% lymphocytes and 10% atypical lymphocytes with a convoluted nucleus, and an increased

number of CD8+ cells (77.3%).

Case 2: A 67-year-old man with a 15-year history of photosensitivity dermatitis progressed to erythroderma in the past 3 years (Fig.1). The WBC count was 9,300 /cu mm with 24% lymphocytes and 4% atypical lymphocytes (Fig 2), and a CD4/8 ratio was 0.76.

Figure 1. Desquamative erythroderma and grouping nodules (Case 2).

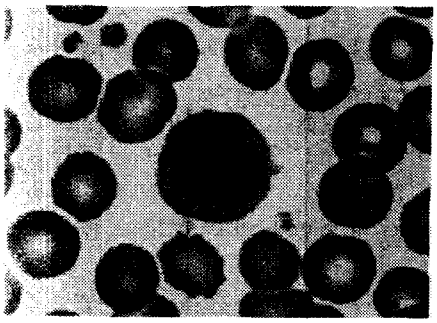

Figure 2. Circulating atypical lymphocytes with a convoluted nucleus (Case 2).

MATERIALS AND METHODS

Phototests: Various doses of UVB and A were irradiated, and skin reactions were observed at 24, 48 and 72 hr.

Immunohistological staining: Paraffin-embedded biopsy specimens were stained with anti-CD3, CD4, CD8, bcl-2, and PCNA (MIB-1)

Cell cycle analysis: DNA contents of peripheral blood lymphocytes were measured.

T cell receptor (TcR) gene analysis: Rearrangement of TcR genes was analyzed by Southern blotting in CD4+ and CD8+ cell fractions from the patients.

RESULTS

UVA and a small dosage of UVB irradiation induced indurated, edematous erythema in both patients. CD8+ cells were infiltrated dominantly in the cutaneous lesions and the UV-induced sites (Fig. 3). Most infiltrating cells expressed bcl-2, but cells in the proliferating fraction, determined by PCNA expression and DNA contents, were rather small (Fig. 4). No clonal proliferation of circulating lymphocytes was found by TcR gene analysis, but oligoclonal expansion of CD8+ cells was detected in the peripheral blood (Fig 5).

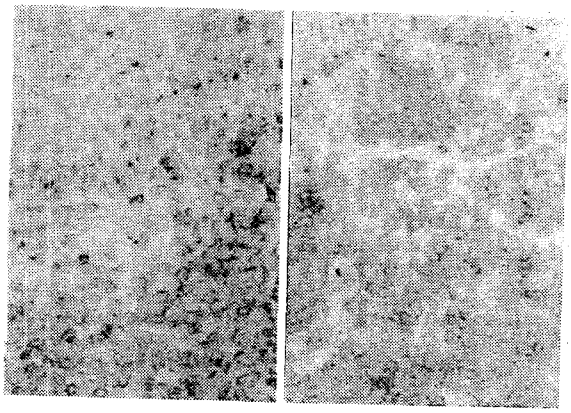

Figure 3. CD8+ cells dominantly infiltrate in the skin lesions (left; CD3, right; CD8).

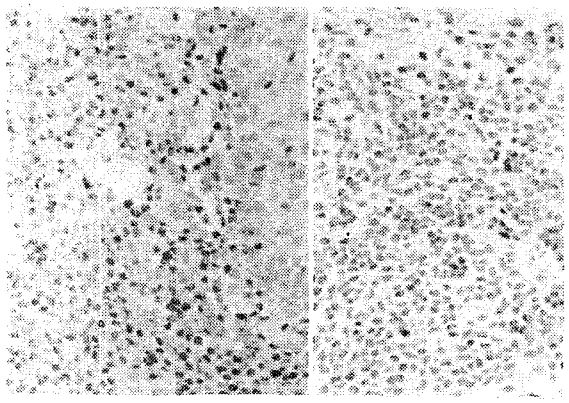

Figure 4. Most infiltrating cells are positive for bcl-2, and only 20-30% of the infiltrates are positive for PCNA (MIB-1). (left; bcl-2, right; PCNA)

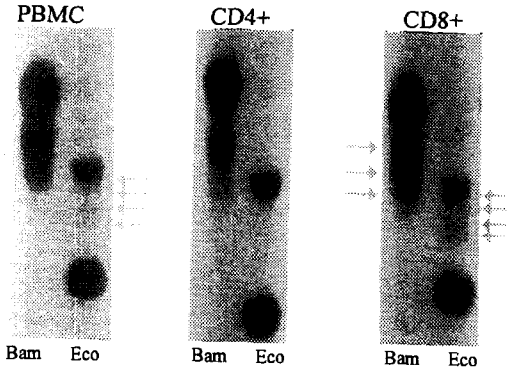

Figure 5. Oligoclonal proliferation of CD8+ cells is present in the peripheral blood (Case 1). Rearrangement analysis for T cell receptor C β gene by Southern blotting.

DISCUSSION

EAR is the most severe variant of chronic actinic dermatitis, characterized by desquamative dermatitis, lymphadenopathy and the presence of atypical lymphocytes in the peripheral blood. Although these clinical features are essentially the same as those of Sezary syndrome, a leukemic variant of cutaneous T-cell lymphoma, the reactive infiltration of CD8+ cells is typical for EAR, in contrast to the clonal proliferation of CD4+ cells in Sezary syndrome.

In the present study, we have studied cytological findings of the proliferating CD8+ cells in the skin lesions and peripheral blood in 2 patients with EAR. Our results demonstrated that there was no clonal expansion of CD8+ cells in EAR, and most CD8+ cells expressed bcl-2, an anti-apoptotic marker, while a number of cells in a proliferating fraction were small. These findings suggest that EAR is a photosensitivity dermatitis characterized by the overspill of oligoclonal CD8+ lymphocytes responsive to UV irradiation.

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