Three Cases of Atypical Skin Eruptions in Leukemias

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We report three cases of atypical skin eruptions in leukemias presenting as scrotal ulcers, herpes simplex and urticaria pigmentosa that are unique in their morphology and site of presentation. Therefore any skin lesion that develops in patients with leukemia should be examined by biopsy. (Ann Dermatol 10:(2) 86~90, 1998).

Key Words : Leukemia, Atypical skin eruptions

Leukemia cutis is involvement of the skin with specific lesions of leukemic neoplastic cells[1]. It is regarded as dissemination of aggressive systemic leukemia to the skin and carries a poor prognosis[2,3]. There are differences in the appearences and distributions of the skin lesions in various type of leukemias[2,3]. The specific lesions are usually papules, nodules, plaques, and ulceronecrotic lesions are rare[1-4]. A wide variety of skin lesions occur in leukemia, including : petechiae and purpura, bullous pemphigoid, urticaria, pruritus, eczematous eruptions, erythema nodosum, erythroderma, erythema multiforme, vasculitis, and neutrophilic dermatoses (Sweet syndrome and pyoderma gangrenosum)[1-4].

We report three cases of atypical skin eruptions presenting as scrotal ulcers[5], herpes simplex[6] and urticaria pigmentosa[7] in leukemias

CASE REPORTS

Case 1

A 22-year-old Korean man with a history of acute myelogenous leukemia (AML) (M2) in incomplete remission was admitted to the department of hematology for reduction chemotherapy. He developed a 0.4×0.5cm sized punch-out ulcer on the posterior surface of his scrotum(Fig. 1). The scrotal ulcer had developed during the last ten days. Bacterial and fungal cultures of material from the scrotal ulcer were all negative. A biopsy specimen showed an infiltrate of atypical leukemic cells(Fig. 2). After the diagnosis of AML in relapse with leukemia cutis was made, the patient was treated with radiation therapy. Unfortunately, after 4 months he died from a relapse of leukemia.

Case 2

A 6-year-old Korean boy with acute lymphoblastic leukemia (ALL)(L1) developed herpes simplex lesions on the right lower leg(Fig. 3). The vesicular cutaneous lesions were replaced by pustules. Bacterial cultures were negative. A Tzank preparation was positive for multinucleated giant cells, and the diagnosis of herpes simplex was confirmed by the polymerase chain reaction (PCR) method. A biopsy specimen revealed a dense nodular dermal infiltrate consisting of small lymphocytes, which confirmed the diagnosis of a specific cutaneous ALL(Fig. 4). Chemotherapy(methotrexate) resulted in clinical and hematologic improvement.

Case 3

A Korean woman aged 19 years with a history of acute myelogenous leukemia (AML)(M4) in complete remission presented with asymptomatic erythematous or brownish maculopapular eruptions on the trunk which had been present for 3 weeks(Fig. 5). Widespread eruptions were observed with a positive Darier's sign. Histopatho-

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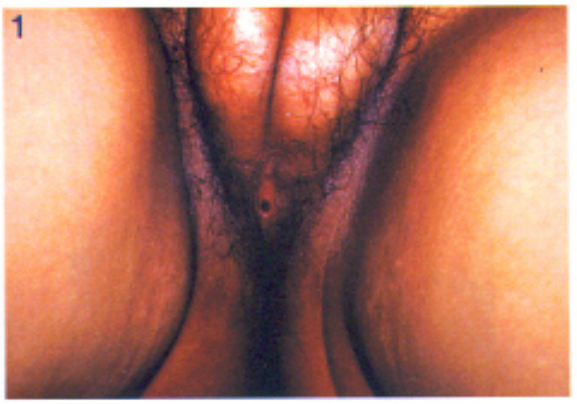


Fig. 1. A 0.4×0.5cm sized punch-out ulcer on the posterior surface of the scrotum.

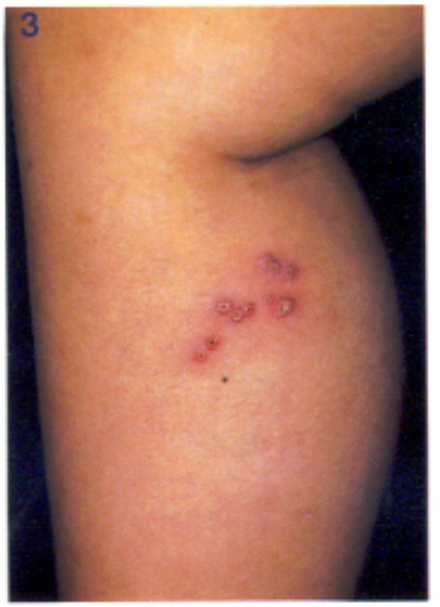
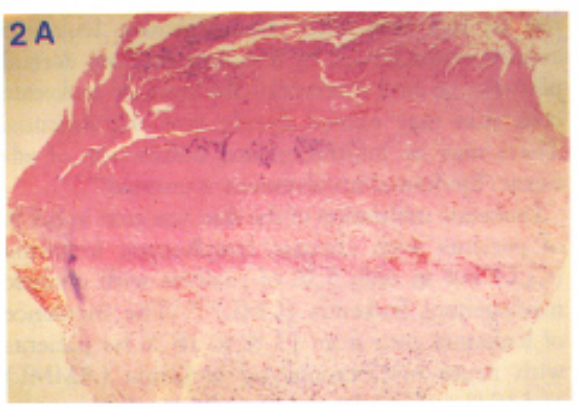


Fig. 3. Grouped erythematous pustules with central umbilication on the right lower leg.



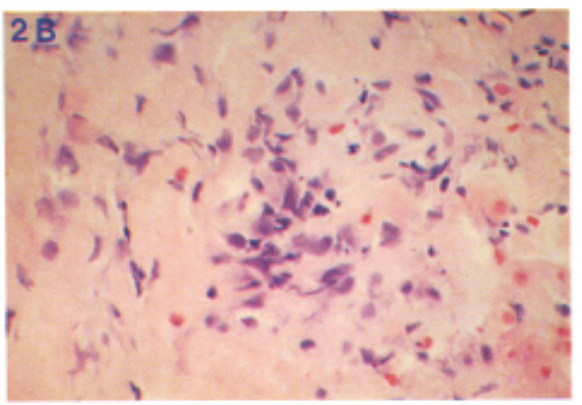
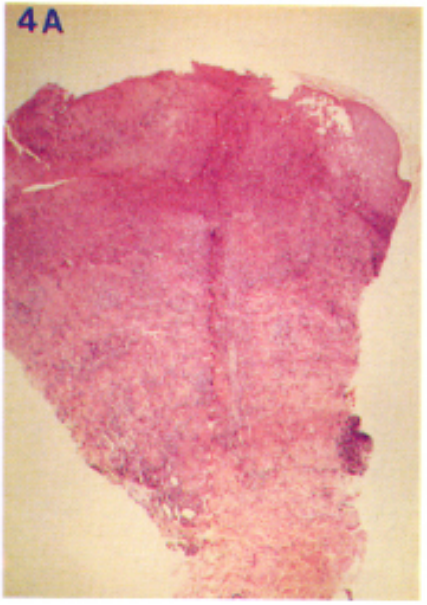


Fig. 2. (A) Acute myelogenous leukemia:there is an infiltrate of mononuclear cells within the lower dermis(H&E stain, ×40). (B) Higher magnification reveals cells with ample cytoplasm arrayed between collagen bundles, and lysozyme staining confirmed myeloid lineage(H&E stain, ×400).

logical findings included infiltrates of leukemic cells and eosinophils which suggested leukemia cutis(Fig. 6). After chemotherapy (adriamycin, daunorubicin, thioguanine) with oral antihistamines and a topical steroid, a partial response of the skin lesions to treatment was obtained.

DISCUSSION

Cutaneous eruptions are frequent complications in the clinical course of patients with leukemia. Leukemia cutis is occasionally the cause of the eruptions, but in many cases the lesions are non-leukemic[1]. Leukemia cutis is usually regarded as a dissemination of aggressive systemic leukemia to skin[1-4]. Secondary skin eruptions without direct leukemic infiltration are called leukemids[1,4]. A leukemid is an acute self-limiting disorder that resolves once the underlying course, often a stress on the bone marrow such as infection or hemolysis,



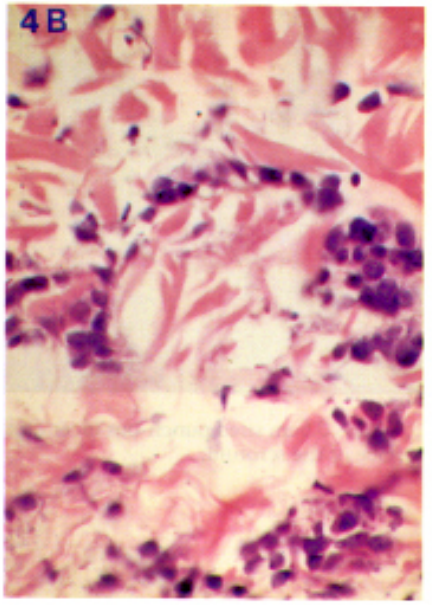


Fig. 4. (A) Acute lymphoblastic leukemia:the blastic infiltrate extends into the deep dermis(H&E stain, ×40). (B) Higher magnification of A. Indian- file apperance(H&E stain, ×400).

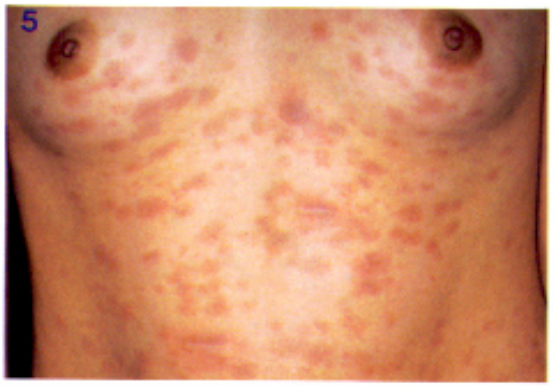


Fig. 5. Asymptomatic erythematous or brownish maculopapular eruptions on the trunk.

has resolved. A wide variety of lesions were seen in patients with leukemia, including a greater number of infectious lesions, drug reactions, vasculitis, and lesions secondary to a hemorrhagic diatheses[2-4].

The lesions of leukemia cutis appear as papules, nodules, or plaques that may ulcerate or become purpuric. Less commonly, erythrodermic or bullae have been observed[1,4]. Although leukemia cutis is most common in myelogenous or monocytic leukemia, it can occur in lymphocytic leukemia[2,3]. Both the acute and chronic leukemias can give rise to leukemia cutis. Histologically, leukemia cutis is characterized by a monomorphous dermal perivascular and interstitial infiltrate of leukemic cells that may extend deeply into the subcutis. There may be infiltration and destruction of adnexae. Epidermal involvement is unusual[1-3].

Leukemic infiltration of the skin was seen in 8.3 % of patients with chronic lymphocytic leukemia (CLL) but in only 5 % of patients with chronic myelogenous leukemia (CML)[8-10]. The incidence of leukemia cutis from 13 % to 18 % for patients with acute myelomonocytic leukemia (AMML) and 10 % to 50 % for patients with acute monocytic leukemia (AMoL)[2,3,11].

There are differences in appearance and distributions of the skin lesions in various type of leukemias. Gingival hypertrophy was seen only in AMoL or AMML, and erythroderma and bullous lesions of leukemic infiltration were observed only in CLL[1-3]. The most common areas of involvement for the lymphocytic leukemias are the face and extremities, whereas those for the nonlymphocytic leukemias are the face, trunk, and extremities[5].

Specific cutaneous deposition of leukemia on the genitalia is uncommon[5,8]. We described a patient with AML whose specific cutaneous lesions were localized to scrotal ulcer sites. A review of the liter-

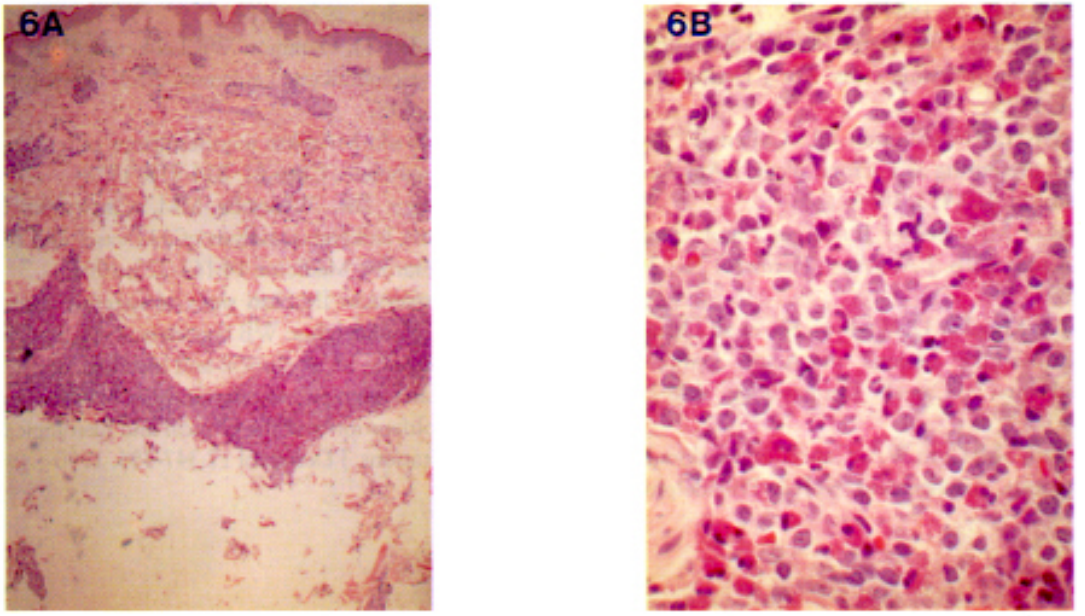


Fig. 6. (A) Acute myelogenous leukemia:dense, bandlike infiltrates of leukemic cells and eosinophils in the mid-dermis(H&E stain, ×40) (B) Higher magnification of A(H&E stain, ×400).

ature indicates that AML rarely presents as an ulcer or on the genitalia.

We present a patient with acute lymphoblastic leukemia (L1) who had developed herpes simplex lesions on the right lower leg. A Tzank preparation was positive for multinucleated giant cells, and the diagnosis of herpes simplex was confirmed by the PCR method. The histopathological findings of inflammatory dermatoses in these patients included leukemic cell infiltration. Infiltration by leukemic cells may occur in nonspecific lesions of leukemia. These infiltrates have been reported in sites of intramuscular injections, scars from recent surgery, scars from herpes zoster, herpes zoster lesions, sites of recent trauma, burns and herpes simplex lesions[12]. Foulds et al reported skin lesions in acute lymphoblastic leukemia resembling urticaria pigmentosa[7]. Skin lesions resembling urticaria pigmentosa have been reported in 3 patients with acute lymphoblastic leukemia. A female aged 19 years with acute myelogenous leukemia (M4) presented asymptomatic erythematous or brownish maculopapular eruptions on the trunk for 3 weeks. Widespread eruptions were observed with a positive Darier's sign. A skin biopsy showed an infiltrate of leukemic cells and eosinophils, but no mast cells. Akiyama[13] described that the mast cell volume density in the lesion is not likely to be an important factor in determining the clinical manifestations of an urticaria pigmentosa lesion. The volume density of dermal mast cells in normal skin specimens ranged from 0.2% to 0.9%, and that in the urticaria pigmentosa lesions was distributed in wide ranges from 1.5% to 73.9%[13]. Leukemic cells are postulated to stimulate the overlying melanocytes to produce more pigment.

In summary, we report three cases of atypical skin eruptions presenting as a scrotal ulcer[5], herpes simplex[6], and urticaria pigmentosa[7] in leukemias. We suggest that patients in whom cutaneous lesions develop in association with leukemia should be carefully observed for the development of leukemia cutis.

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