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A Case of Leukemia Cutis

We report a case of leukemia cutis with atypical skin manifestations, presented with generalized various sized dark brownish to erythematous patches with plaques on the whole body of a 42-year-old man. Skin lesions developed 6 months ago and had no signs of itching or tenderness. He complained of sustaining fevers with abdominal discomfort. Laboratory findings showed elevation of leukocyte count and peripheral blood smear revealed 86% of lymphocyte. Histologic examination showed diffuse infiltration of abnormal cells that appeared to be leukemic in nature.

Key Words: *Leukemic infiltration; Skin*

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INTRODUCTION

Leukemias are neoplasms of hematolymphoid cells that are usually prominently involved with the peripheral blood. The course of the disease may be chronic or expulsive; if left untreated, all leukemias are fatal. Leukemia may be associated with a wide variety of cutaneous manifestations. These can be divided into nonspecific lesions and lesions containing leukemic cells, a condition designated as leukemia cutis. Leukemia cutis is most frequently associated with acute myeloblastic leukemia and is seldom observed in patients with acute lymphoblastic leukemia (1).

We describe a 42-year-old man with acute lymphoblastic leukemia and atypical cutaneous skin manifestations.

CASE REPORT

The patient, a 42-year-old man presented on March 1997, with a 6-month history of skin rash on the whole body. Skin lesions were generalized, various sized, erythematous to brownish colored patches and plaques (Fig. 1). He had no complaints about itching or tenderness, but skin lesions were darkened and elevated slowly. The patient had intermittent fevers with chills, and had mild fatigue with abdominal discomfort. The skin biopsy specimen showed a perivascular and periappendigeal infiltration of intermediate sized irregular lymphoblastic cells with fine chromatin and indistinct nucleoli (Fig. 2). Immunohistochemical stain of infiltrated cells were revealed as positive in T-cell marker (MT-1), and negative in B-cell marker (L-26). The patient was diagnosed as leuke-

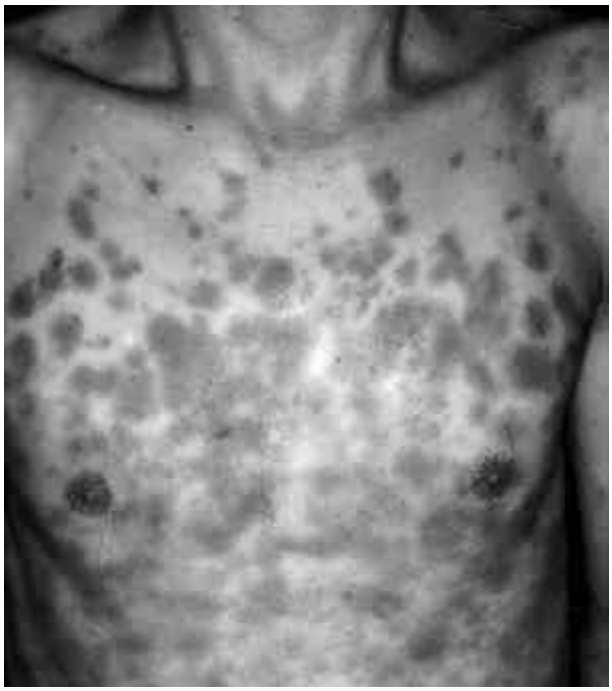

Fig. 1. Generalized erythematous to brownish colored patches and plaques on trunk.

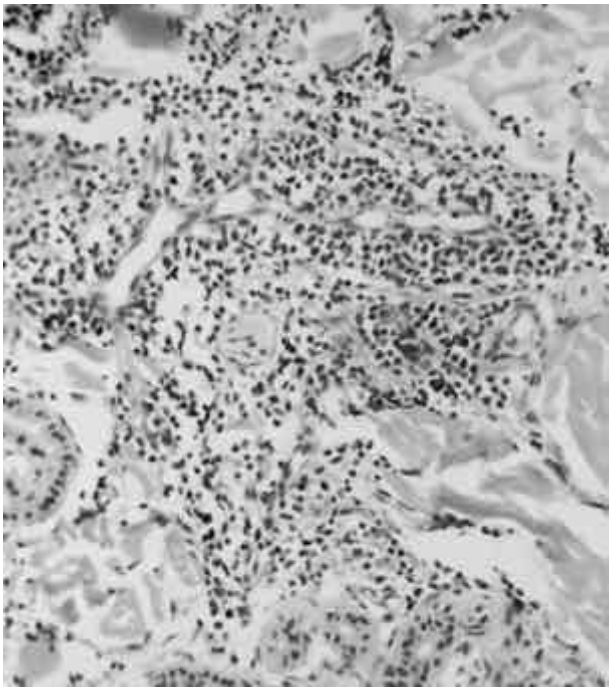

Fig. 2. Perivascular and periappendigeal infiltration of intermediate sized irregular lymphoblastic cells (H&E, ×100).

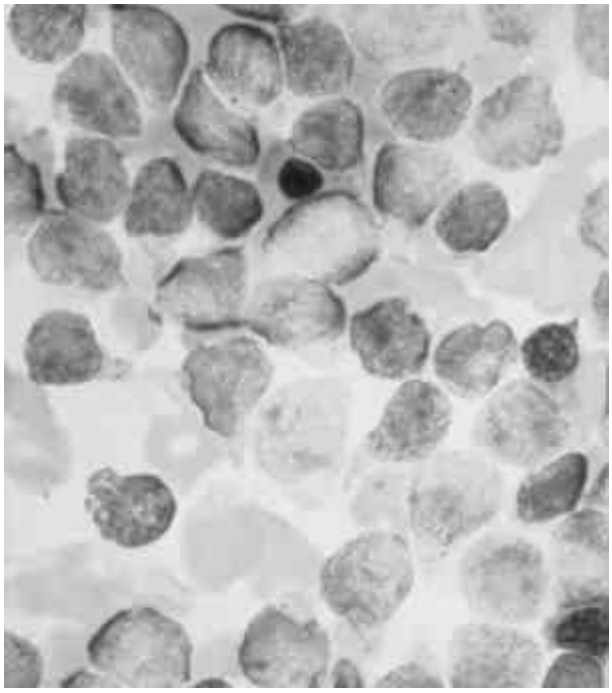

Fig. 3. Bone marrow aspiration: hypercellular with sheets of monotonous undifferentiated cells that replace the normal marrow elements (Wright stain, ×1,000).

mia cutis and was admitted to the medical unit for evaluation. General physical examination revealed enlarged lymph node in the submandibular area. Laboratory data included a leukocyte count of 146,400 cell/mm^3 with 91% blast. Serologic marker appeared as CD5, CD7, CD13 and CD34 positive phenotype (2) and these are interpreted as acute T-cell lymphocytic leukemia with aberrant expression of CD13. Abdominal ultrasonography revealed marked splenomegaly with mild hepatomegaly. Chromosomal study was normal and bone marrow aspiration and biopsy showed hypercellularity with sheets of monotonous undifferentiated cells that replace the normal marrow elements (Fig. 3).

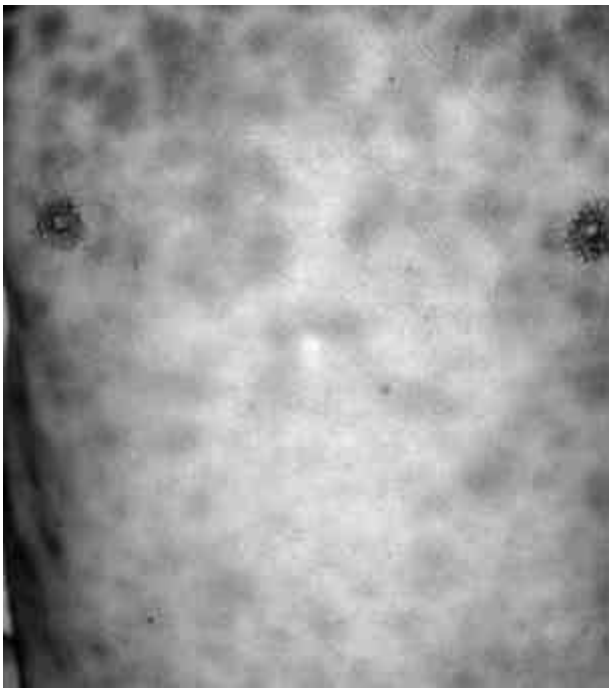

Fig. 4. Flattened and faded skin lesions after chemotherapy.

He was diagnosed as acute lymphoblastic leukemia, and treated with a regimen consisting of cyclophosphamide, vincristine, and prednisolone. Complete remission was induced in the third week of therapy. Skin lesions were somewhat flattened and lost some of it's color (Fig. 4), and skin biopsy specimen showed post inflammatory hyperpigmentation with no leukemic cell infiltration (Fig. 5).

DISCUSSION

Leukemia is a condition in which the bone marrow is replaced by a malignant clone of lymphocytic or granulocytic cells. Leukemia can be broadly grouped into acute and chronic forms of either lymphoid or myeloid lineage. Acute leukemias are neoplasms of immature cells

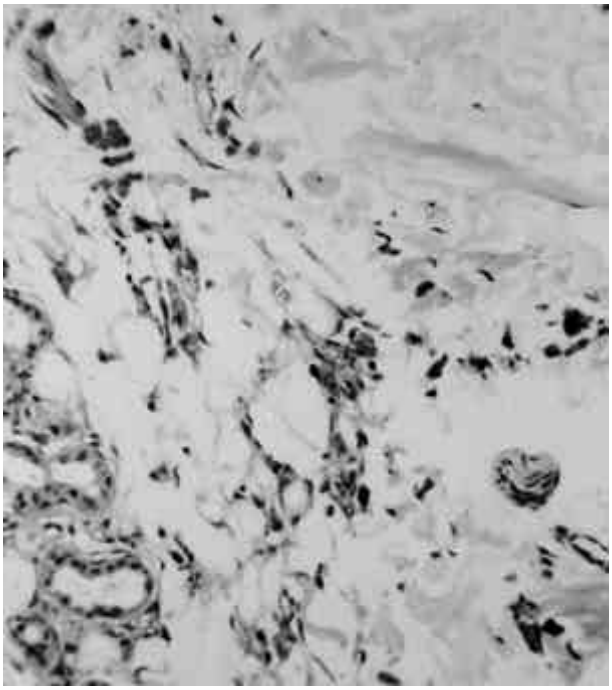

Fig. 5. Section after chemotherapy: post inflammatory hyperpigmentation with no leukemic cell infiltration.

or blasts, whereas chronic leukemias are composed of mature cells, often with a range of differentiation. Acute leukemias are divided into two categories: acute lymphoblastic leukemia (ALL) and acute myeloblastic leukemia (AML). ALL is primarily affects children, AML primarily affects adults. Approximately 20% of adult leukemias, however, are of the lymphoblastic type (3).

The cutaneous manifestations of leukemia can be divided into specific or nonspecific. Specific cutaneous lesions of leukemia result from direct infiltration of the skin or subcutaneous tissues by leukemic cells. They are usually seen as papules, nodules, plaques, maculae, ecchymoses, and palpable purpuric lesions. Single or multiple lesions may be present, but generalized skin infiltration is rarely observed (1, 4). Nonspecific skin lesions, also known as leukemoids, are common and represent a spectrum of cutaneous diseases that may be related to bone marrow dysfunction.

The incidence of leukemia cutis varies from 1% to 50%, depending on the type of leukemia (5, 6). Leukemia cutis is most frequently associated with acute myeloblastic leukemia and is seldom observed in patients with acute lymphoblastic leukemia. Specific skin involvement occurs approximately 10% in acute myeloblastic leukemia, with higher incidence in the monocytic and myelomonocytic subtypes. Although acute lymphoblastic leukemia is the most common malignant disease affecting children, specific skin involvement is rare. Seen in 0.5% to 1% of patients, skin lesions generally are solitary or localized papules and nodules at presentation (1, 5-7). There are nine cases of leukemia cutis in patients with ALL which have been reported in domestic journals (4, 6, 8). Maculopapular infiltrations are most common form of skin lesion, on the other hand nodules and plaques are rarely observed. There are no specific predilection site of skin lesions, but scalp, trunk, and extremities are commonly arised areas. Most of them were solitary or localized grouped cutaneous infiltrations, and generalized leukemic infiltrations are not observed (6, 8). But our patient presented atypical generalized distribution of various sized patches and plaques on whole body without specific symptom, and it considered as very rare.

When leukemia cutis occurs in the course of the disease, it frequently is concomitant with the diagnosis of systemic leukemia, and it sometimes precede the diagnosis of systemic leukemia (1, 5, 6, 9). Our patient also revealed skin manifestations before the systemic symptoms develop.

Cutaneous leukemic infiltrates display several characteristic histologic pattern, irrespective of lineage. In ALL the leukemic cells are predominantly small-to-medium sized lymphoid cells with a high nucleus-to-cytoplasmic ratio and regular or clefted nucleus. Variable numbers of large lymphoblasts with irregular nuclei and prominent nucleoli may be present. The infiltrates are diffuse in distribution and usually involve all layers of the dermis and subcutis (1, 9, 10). Our patient had revealed intermediate sized irregular lymphoblastic cell infiltrations.

Several infectious and reactive processes may simulate the clinicopathologic features of leukemia cutis. Clinically, leukemia cutis should be differentiated from secondary syphilis, arthropod bite reactions, nodular scabies, lupus erythematosus, vasculitis, and sarcoidosis (1, 5). Distinguishing leukemia cutis from myeloid derived-mycosis fungoides, metastatic undifferentiated carcinoma, eosinophilic granuloma, and Sezary syndrome may also be difficult (6).

The laboratory findings may be helpful in the diagnosis of leukemia cutis. The leukocyte count is increased in two thirds of patients. Leukemic blasts usually are identified on peripheral blood smears. Increased cell destruction is responsible for hyperphosphatemia, hypocalcemia, and increased levels of serum uric acid. Although a skin biopsy may be helpful in detecting the leukemic infiltrate, the bone marrow biopsy is the only way to confirm leukemia cutis (1, 10).

Specific treatment of acute leukemia consists primarily of chemotherapy. Therapy with cytotoxic agents, including vincristine, L-asparaginase, cyclophosphamide, cytarabine, teniposide, and methotrexate, has contributed significantly to remission in cases of childhood ALL (3), but

has not been reproduced in adults. Our patient was treated two times with cyclophosphamide, vincristine, and prednisolone. Complete remission was induced in the third week of therapy and skin lesions were also flattened and lost their color. Skin biopsy was performed after remission and it revealed post inflammatory hyperpigmentation with no leukemic cell infiltrations.

In conclusion, we report a generalized skin infiltrations of leukemic cells in adult ALL patient, and these are very rarely observed. It is important that early diagnosis of leukemia cutis and careful monitoring of patients might allow the detection of underlying hematologic malignancy, improving chances for possible cure.

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