Leukemia Cutis: An Unusual Presentation

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Abstract Leukemia cutis is the term used for cutaneous manifestations of leukemia, which can have varied clinical presentations. A skin biopsy can help in diagnosing such condition and differentiating it from other skin diseases. We present a case where a 45 years old man presented with diffuse papulovesicular skin lesions mimicking disseminated herpes. Further workup revealed patient having acute myeloid leukemia (AML-M2) and skin biopsy showed infiltration by myeloblasts. With chemotherapy patient went into remission and skin lesions healed.

Keywords Acute myeloid leukemia · Leukemia cutis · Myeloperoxidase

Case Summary

A 45 years old male presented with papulovesicular skin eruptions (Figs. 1, 2) and high grade fever for 10 days. He was referred to our institute with suspected disseminated herpes. He was evaluated and found to have high total

leukocyte count of $46 \times 10^9/l$ (normal range $4\text{--}11 \times 10^9/l$) with 80% blasts on differential count on peripheral smear. His hemoglobin was 9.2 g/dl and platelet counts were 70×10^9 (normal range $150\text{--}450 \times 10^9/l$). The detailed bone marrow analysis including morphology, cytochemistry, cytogenetics and immunophenotyping revealed acute myeloid leukemia with maturation, not otherwise categorised (AML-M2). The blasts were positive for myeloperoxidase (MPO). Skin biopsy showed bullae with spongiosis with presence of neutrophils and myeloblasts in subepidermal region which were positive for MPO on immunohistochemistry (Fig. 3). There were no fungal elements or viral inclusion bodies. Polymerase chain reaction for herpes simplex virus (HSV-PCR) was negative.

The patient received the standard 3 + 7 induction chemotherapy for AML including cytarabine ($100 \text{ mg/m}^2/\text{day}$; 7 day infusion) and daunorubicin ($45 \text{ mg/m}^2/\text{day}$ on day 1 to 3). Subsequently, there was progressive reduction in the appearance of new lesions and healing of old lesions. After day 16 of induction chemotherapy, no new lesions appeared. Day 28 bone marrow examination revealed it to be in remission. Hyperpigmented scarred lesions could be visualised on day 28 post-chemotherapy (Fig. 4).

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Discussion

Skin involvement (leukemia cutis) occurs in approximately 10 to 15% of AML patients and usually presents as violaceous, raised, nontender plaques or nodules, which on biopsy are found to be infiltrated with myeloblasts [1]. Diffuse involvement of the skin may be seen. However, dermal involvement in the form of papulovesicular lesions with bullae formation is an uncommon/rare presentation. Diagnosis is based on the morphologic pattern of skin

Fig. 1 Skin lesions at presentation on trunk

Fig. 2 Skin lesions at presentation on upper limb

Fig. 3 Skin biopsy showing infiltration by blasts which are MPO positive

Fig. 4 Skin lesions on day 28 of induction chemotherapy

infiltration, cytological features and the immunophenotyping or cytochemistry of tumor cells [2, 3]. Correlation with clinical data and bone marrow and peripheral blood findings is often helpful to confirm the diagnosis. Biopsy may reveal prominent diffuse infiltrate involving the deep dermal surface but preservation of the superficial dermis. Skin involvement has been emphasized as a feature of monocytic leukemias, however it occurs equally frequently in myeloblastic as in monocytic leukemias [4, 5]. Like other forms of extramedullary disease, leukemia cutis usually portends a poor prognosis in patients with AML. The prognosis for leukemia cutis is related directly to the prognosis for the systemic disease. Therapy is usually directed at the underlying leukemia [6]. Treatment of acute myeloid leukemia involves induction chemotherapy followed by consolidation with multiple courses of high dose cytarabine or stem cell transplantation. Leukemia cutis present at the time of diagnosis of AML in the bone marrow may be successfully treated with chemotherapy alone, and resistant or recurrent skin disease may then be treated with electron-beam therapy followed by reinduction and/or consolidation chemotherapy. Our patient was treated with induction chemotherapy resulting in disease remission with nearly complete resolution of skin lesions. At present patient is in complete remission after 6 months of follow up.

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