Leukemia cutis limited to the needle puncture sites

Dear Editor,

Leukemia cutis is a localized or disseminated skin infiltration by leukemic cells. An early and accurate identification of leukemia cutis is important as it implies poor prognosis. Although the incidence of leukemia cutis in acute myeloid leukemia (AML) is not low (13% in overall incidence and 30% incidence in subtypes M4 and M5), those limited to trauma sites have rarely been reported. We herein present a case of leukemia cutis exclusively found at needle puncture sites in a patient with AML (M0).

A 40-year-old man was referred to our department to identify the nature of persistent skin lesions of 1-month duration on his arms. Multiple, painless, 1–2.5-cm, movable skin-colored nodules of rubbery consistency were arranged in a linear fashion (Fig. 1). He had just recently been diagnosed with AML (without maturation, M0), and was on combined chemotherapy composed of idarubicin and cytosine arabinoside. The skin lesions were said to develop on the needle puncture sites (points of blood sampling and peripheral i.v line insertion) after an average interval of 2 days. At first we considered lymphocutaneous sporotrichosis and atypical mycobacterial infection because of the linear nature of the skin lesions. To confirm the diagnosis, we performed a skin biopsy with tissue culture.

The punch biopsy specimen showed extensive infiltration of atypical cells in the dermis with minimal interruption of the epidermis (Fig. 2a). The cells dissecting the collagen bundles and surrounding the adnexal structures were morphologically identical to the blastic cells from the bone marrow. Immunohistochemically, the blasts were focally positive with myeloperoxidase (MPO), chloroacetate esterase (Leder’s stain) and CD117 (Fig. 2b–d). CD15 was negative. With such findings, we made a final diagnosis of AML (M0) cutis. Our patient was not able to receive full-dose chemotherapy due to the subtle signs of pneumonia at the time of AML diagnosis, but even with the titrated dose, he eventually developed Aspergillus pneumonia. Following a rapidly fatal clinical course, he died as a result of disease progression and associated complications such as acute renal failure and pulmonary hemorrhage.

Fisher et al. have mentioned that leukemic infiltrates can arise in scars from mechanical or surgical trauma and from i.m. injection points. The mechanism of tumor cell implantation and proliferation at the needle puncture site is not clear. The release of chemotactic factors such as interleukin (IL)-1 and cell activating factors including IL-3, IL-6, granulocyte-macrophage colony-stimulating factor from the injured and activated keratinocytes has been suggested to enhance adherence and chemotaxis as well as maturation of the leukemic cells at the traumatized site.4

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Non-specific skin lesions are commonly associated with leukemia, and from our experience, swelling along the catheter tract or needle puncture site in a leukemic patient most commonly reveals an infection or a hematoma. The linear distribution of asymptomatic erythematous papules in this patient mimicked both lymphocutaenous sporotrichosis and atypical mycobacterial infection. These were excluded later based on histology as well as the negative culture results and tissue stains with periodic acid Schiff.

In conclusion, we report an interesting case of AML (M0) cutis limited to prior needle puncture sites. As this case illustrates, dermatologists should have a low threshold for performing biopsies on persistent skin lesions in patients with a history of leukemia.

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REFERENCES


