Leukemia Cutis Presenting in a Patient with Myelodysplastic Syndrome, Benzene Exposure, Erythropoietin Use, and Monocytosis

A history of exposures may offer a clue to the progression of refractory anemia with multilineage dysplasia to more advanced disease.

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Leukemia cutis (cutaneous involvement) is characterized by a leukemic infiltration into the epidermis, dermis, and sometimes even the subcutaneous tissues. The majority of leukemia cutis presents in patients with an established diagnosis of leukemia, most commonly Acute Myeloid Leukemia (AML), but can also present at the time of diagnosing leukemia, or very rarely can be seen in Myelodysplastic Syndrome. Exposure to benzene can cause bone marrow toxicity, leading to an increased risk for aplastic anemia and leukemia. Cutaneous lesions of leukemia cutis include flesh colored to violaceous papules, plaques, or nodules firm to rubbery in consistency, typically asymptomatic, but possibly pruritic. We report a case of a 78-year-old man with a history of Myelodysplastic Syndrome and a past exposure to benzene presenting with leukemia cutis.

CASE REPORT

A 78-year-old male with history of Myelodysplastic Syndrome developed violaceous, rubbery papules and plaques on his forehead, scalp, and trunk (Figures 1, 2, and 3). The patient had been diagnosed three years prior with refractory anemia with multilineage dysplasia. He had reported a past benzene expo-
sure from removing wall maps. He developed increasing fatigue and shortness of breath prompting re-evaluation. In the past, he had only required erythropoietin injections for anemia but blood transfusions were becoming more necessary.

Dermatology became involved when the asymptomatic papules started on the patient’s forehead and scalp. They then appeared on his trunk. They were firm, skin-colored to violaceous papules, nodules, and plaques (Figures 1, 2, and 3). Left inguinal lymphadenopathy was also present at the time of exam. The differential diagnosis includes leukemia cutis, Sweet’s syndrome, neutrophilic eccrine hidradenitis, and Kaposi’s sarcoma.

On initial evaluation, the patient’s white blood cell count was 1900 cells/ul (normal range: 3400-9800) with a monocytosis of 24 percent (normal range: 0-10 percent). Peripheral blood flow cytometry revealed phenotypically normal cells, but subsequent bone marrow biopsy was consistent with at least high grade myelodysplasia (blast count 18 percent). Peripheral blood flow cytometry revealed phenotypically normal cells, but subsequent bone marrow biopsy was consistent with at least high grade myelodysplasia (blast count 18 percent) with suggestion of evolution to acute myeloid leukemia.

A 4mm punch biopsy of the forehead and shave biopsies of the abdomen and back were notable for dense, diffuse mononuclear infiltration in the superficial and deep dermis (Figures 4 and 5). Cells were positive for CD 4/15/43/56 and negative for CD 5/10/34/117 and myeloperoxidase.

The patient developed mental status changes requiring hospital admission. Although his bone marrow biopsy was not confirmatory for leukemia, the skin findings of leukemia cutis portended a dismal prognosis. The patient refused any further bone marrow biopsy or treatment and was discharged to home hospice care.

DISCUSSION

The association between leukemia cutis and AML is well described in the literature. Although less common in Myelodysplastic Syndrome, it typically brings a poor prognosis and is a warning sign for progression to AML. Anemic leukemia cutis is even more rare when skin lesions precede any bone marrow involvement. Violaceous nodules, papules, and plaques with a rubbery quality are typical of leukemia cutis.

Benzene is a known cause of myelodysplasia and leukemia. Direct association with leukemia cutis has yet to be described. Typically inhaled, benzene is found in industry for cleaning or as an adhesive. Currently, the Occupational Safety and Health Administration has strict guidelines for benzene exposure in industry workers. Commonly used to treat refractory anemia in myelodysplasia, erythropoietin helps to overcome unproductive hematopoiesis. Although the association is not statistically significant, transformation to leukemia does occur in patients with myelodysplasia treated with erythropoietin. One particular case of refractory anemia with excessive blasts actually had resolution of leukemia cutis after termination of erythropoietin.

Patients with myelodysplasia and monocytosis are more likely to progress to leukemia. This includes patients that do not meet criteria for Chronic Myelomonocytic Leukemia (monocytosis of more than 1 x 109/l). This has led to the argument of refractory anemia with monocytosis as its own classification.

Our patient was initially diagnosed with refractory anemia with multilineage dysplasia, which transformed into refractory anemia with excessive blasts, a higher grade myelodysplasia. His benzene exposure, erythropoietin use, and monocytosis could have been subtle clues that transformation was more likely.

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