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Case Report

A baffling referral from dermatology- aleukemic leukemia cutis with literature review

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ABSTRACT

Aleukemic leukemia cutis (ALC) is a rather uncommon condition that is characterized by leukemic cell invasion into the skin which primarily precedes the peripheral blood and marrow infiltration by leukemic cells. We present a 35-year-old male with maculopapular skin lesions with a normal bone marrow and peripheral smear. Skin lesions were positive for leukemic cells. Bone marrow infiltration was identified 1 month after the skin diagnosis which showed Acute Myeloid leukemia with Monocytic differentiation. The patient succumbed to tumor lysis syndrome before initiation of treatment. ALC portends a very poor prognosis. Prompt diagnosis with skin biopsy is essential to improve survival in ALC.

Keywords: Acute myeloid leukemia, Myeloid sarcoma, Aleukemic leukemia cutis

INTRODUCTION

Aleukemic leukemia cutis (ALC) is a rather uncommon condition that is characterized by leukemic cell invasion into the skin which primarily precedes the peripheral blood and marrow infiltration by leukemic cells. Leukemia cutis (LC) is commonly associated with acute myelogenous leukemia (AML). ALC is also known by the term primary extramedullary leukemia. Skin manifestation which is generally a singular or multiple nodular lumps of tumor is also historically known as granulocytic sarcoma.[1] This has recently been termed as myeloid sarcoma.[2] The sites most commonly involved in myeloid sarcoma are orbit, head and neck, periosteum, skin and bones.[3] Aleukemic variety is seen in 7% of all Leukemia Cutis cases.[4] We present a case of ALC who initially developed skin lesions with no leukemic bone marrow involvement.

CASE REPORT

A 35-year-old male was referred from the dermatology outpatient department (OPD) to our OPD with papular skin lesions on face and back of 1 month duration (Figure 1). Complete blood count (CBC) at presentation of skin lesions was normal. Bone marrow biopsy (BMB) showed no blasts which was re-confirmed by immunohistochemistry.

A punch biopsy of skin lesion revealed a thick subepidermal proliferation composed of mainly nests and sheets of tumor cells suggestive of monocytic malignant infiltration in the subcutaneous and dermis tissue (Figure 2). His skin lesions continued to increase in number and size. CBC repeated after 1 month showed leucocytosis of 30×10^3 /µl, thrombocytopenia of 50×10^3/µl and anemia of 8 g/dl. Peripheral smear was suggestive of Acute leukemia with 70% blasts (Figure 3).

His flow cytometry was positive for CD45, CD123, CD38, CD4, CD56, CD13, CD33, HLADR, CD36, CD64 and CD15 which thereby established the diagnosis of acute myeloid leukemia with monocytic differentiation. There was a latent period of 1 month between leukemic skin lesions and leukemic infiltration in bone marrow. The

patient went into tumor lysis syndrome (TLS). Although he received appropriate treatment for TLS, he succumbed to death.

Review of literature

Leukemia cutis (LC) is a rare manifestation of leukemia which is predominantly extra-medullary. Seen in this are varied skin lesions: multiple papules, nodules, or infiltrated plaques. This was originally documented in a case series between 1969 and 1986 at Roswell Park Memorial Institute.

Only 2 cases of this retrospective series had ALC. The patients received radiation or palliative chemotherapy and did not do well with future relapses. ALC has also been named primary extramedullary leukemia.[5]

Another retrospective case series of 17 patients in Spain between 1994 and 2014 evaluated the patient characteristics of leukemia cutis. It showed a male preponderance, with ages varying between 1 year and 85 years. 5 patients had ALC. Almost all cases were AML, while 3 cases were chronic myelomonocytic leukemia, 1 case was chronic lymphocytic leukemia and 1 case was dendritic cell leukemia. After 1 year of diagnosis, 7 out of 17 had expired.[6]

A case series published in 2021 evaluated 42 patients of Leukemia cutis in Taiwan. This series mentioned the clinical and pathological profiles of patients treated in their centre. Majority of the patients were diagnosed with AML.

Other diagnoses seen in leukemia cutis were acute lymphoblastic leukemia, chronic myeloid leukemia, chronic lymphocytic leukemia, myelodysplastic syndrome and also a few adult T cell Leukemia /lymphoma. The mean age of presentation was 55.7 years. Except AML cases all other patients were younger in this study. The median survival in AML cases in this series was found to be 7.5 months.[7]

A recently published series of 75 clinical cases of Leukemic cutis in Korea in 2022- showed that there is an increasing tendency of males getting affected by Leukemia Cutis and mean age was found to be 37 years. This retrospective series in fact showed a 2:1 male to female proportion. Majority of the patients died within 1 year of diagnosis, mean being 8.3 months in this series.[8]

Data published closer home by Madakshira MG, et Al in 2020 displayed a profile of 23 cases diagnosed with leukemia cutis who were treated in North India. Again, majority of the cases were diagnosed with AML. There was on patient with acute promyelocytic leukemia.

Other cases were acute lymphoblastic leukemia and chronic myeloid leukemia. The mean age of presentation was 45 years. This series showed a latent period of 2.75 months between appearance of cutaneous lesions and leukemic diagnosis. Lactate dehydrogenase was found to be consistently high in all cases which was a noteworthy point in this study.[9]

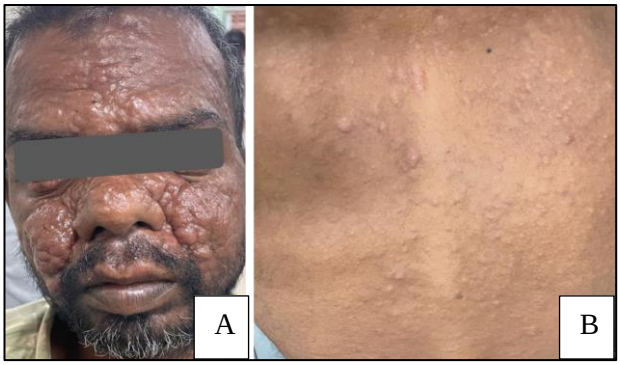

Figure 1 (A and B): Maculopapular lesions on face and back of patient.

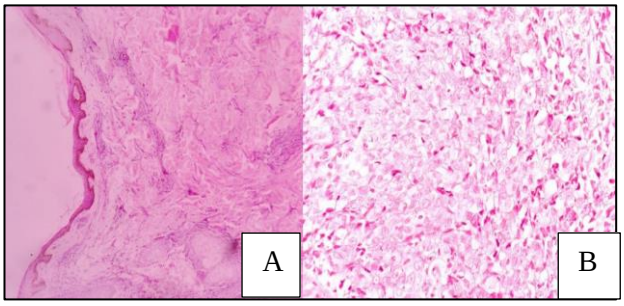

Figure 2 (A and B): Skin biopsy showing neoplastic cell infiltration into dermis. (10X on left panel and 40X on right panel).

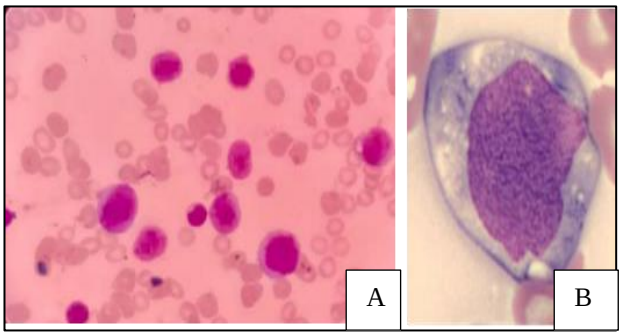

Figure 3 (A and B): Bone marrow showing 70% blasts (Left panel) and Monoblast (right panel).

DISCUSSION

All the above studies indicated the most common presenting skin lesions were papules, papulonodular lesions, nodules. Our patient had mostly papules to few papulonodular presentation. These lesions were predominantly found in trunk and extremities in nearly all of the case series. In contrast our patient had a predominant distribution of lesions on face which later on went on to involve trunk and back as well.

Premature bone marrow and cutaneous relapses and inferior responses to standard chemotherapy treatment regimens are the usual outcomes in ALC. The mean overall survival from diagnosis is found to be between 3 and 30 months once bone marrow or peripheral blood is infiltrated by leukemic cells.[10] Our patient unfortunately died within 1 month of diagnosis.

CONCLUSION

ALC portends a poor prognosis. Aggressive clinical astuteness and prompt diagnosis with skin biopsy are cardinal to diagnose and improve survival in ALC.

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