SHORT COMMUNICATION

Spontaneous Complete Regression of Aleukaemic Cutaneous Myeloid Sarcoma without Progression to Leukaemia Over a Long-term Follow-up Period

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Cutaneous myeloid sarcoma typically occurs in patients with leukaemia (1). However, there are rare cases where tumour cells do not appear in the bone marrow or peripheral blood, a condition known as aleukaemic cutaneous myeloid sarcoma (1). Most cases of aleukaemic cutaneous myeloid sarcoma progress to leukaemia within a few months (1). Here, we report a sporadic rare case of aleukaemic cutaneous myeloid sarcoma that completely regressed following biopsy and did not recur or progress to leukaemia over a long-term follow-up period.

CASE REPORT

A 47-year-old man presented to our department with an 8-month history of a nodule in the right upper abdomen. Physical examination revealed a 25 x 20 mm slightly elevated erythematous nodule in the right upper abdomen (**Fig. 1**A). Additionally, a 40 x 35 mm reddish-brown nodule and discrete macules were noted on the upper back (Fig. 1B). Laboratory findings were as follows: white blood cell, 4100 /μL (32% lymphocytes, 0% abnormal cells, 0% blasts), haemoglobin 15.4 g/dL, serum interleukin-2 receptor, 212 U/mL (normal range: 121–613 U/mL). Human T-cell leukaemia/lymphotropic virus was not detected. A biopsy was performed from the nodule in the right upper abdomen. Histopathologically, medium to large lymphoid cells infiltrated in a nodular pattern or diffusely between collagen fibres in the dermis (Fig. 1C, D). This infiltration was accompanied by small lymphocytes. There was no apparent epidermotropism, and the grenz zone between the epidermis and the infiltrate remained intact (Fig. 1D). In the subcutaneous tissue, extensive infiltration of the neoplastic cells was observed within fat lobules. The neoplastic cells had densely infiltrated the perifollicular regions (Fig. 1E) and subcutaneous adipose tissue. The neoplastic cells exhibited fine nuclear chromatin (Fig. 1F). Immunohistochemically, the neoplastic cells were positive for myeloperoxidase (MPO), CD33, CD99, CD3 (weakly positive), CD7, TdT (scattered) (Fig. 1G, H), but negative for CD2, CD4, CD5, CD8, CD10, CD20, CD79a, CD30, CD56, CD68, CD163, granzyme B, lysozyme, cytokeratin AE1/AE3, and cytokeratin 20. The fraction of Ki-67-positive neoplastic cells was 40% (not shown). On molecular analysis, T-cell receptor gene rearrangement was not detected. Bone marrow examination revealed no proliferation of neoplastic cells. A computerized tomography scan detected no other lesions.

A diagnosis of aleukaemic cutaneous myeloid sarcoma was made. A biopsy was also performed on one of the macules scattered across the back. Histopathological examination revealed focal parakeratosis, mild acanthosis, and focal spongiosis in the epidermis. Additionally, infiltration of small lymphocytes and eosinophils was observed around the small vessels in the superficial dermis. No evidence of neoplastic cell infiltration was observed (not shown). Based on these findings, we diagnosed the lesion as subacute eczema.

Following the initial biopsy, the nodules on the right upper abdomen and upper back demonstrated spontaneous regression, almost disappearing after 7 weeks. A follow-up biopsy was performed 12 weeks after the initial biopsy at the sites of previous nodules. Both the right upper abdomen and upper back showed perivascular infiltration of small lymphocytes without evidence of neoplastic cell infiltration. The lymphocytes comprised a mixture of CD4-positive and CD8-positive cells, with negative MPO staining, suggesting a reactive lymphocytic infiltrate. The patient has been followed up for 7 years with no recurrence of skin nodules or development of leukaemia.

DISCUSSION

Cutaneous myeloid sarcoma predominantly occurs in association with various myeloid malignancies, with a particularly high incidence in acute myeloid leukaemia (AML) (1). Histopathologically, the neoplastic cells typically infiltrate the dermis in diffuse or nodular patterns or insinuate between collagen fibres. The lesions characteristically lack epidermotropism and exhibit a grenz zone formation. Perivascular and periadnexal infiltration, as well as extension into subcutaneous adipose tissue, are frequently observed. Immunohistochemically, while MPO positivity is typical, negative cases are not uncommon (2, 3). High positivity rates are observed for CD33, CD68, and lysozyme (2, 3). It is worth noting that T-cell markers may occasionally be expressed, necessitating careful differentiation from lymphoblastic lymphoma and cutaneous T-cell lymphoma (4). Consequently, an extensive immunohistochemical panel is essential for accurate diagnosis.

The temporal relationship between cutaneous myeloid sarcoma and leukaemia diagnosis is variable. While it often coincides with or follows the diagnosis of leukaemia, there are instances where cutaneous manifestations precede detectable neoplastic cells in peripheral blood or bone marrow, a phenomenon termed aleukaemic cutaneous myeloid sarcoma. The majority of aleukaemic cases progress to overt leukaemia within a year. Spontaneous regression of aleukaemic cutaneous myeloid sarcoma, while occasionally reported in congenital and neonatal cases (5), is exceedingly rare in adults, including the present case. A comprehensive literature review revealed only 4 reported cases in adults (6–8). Among these, only 1 case, the author's own experience, demonstrated complete regression without treatment and

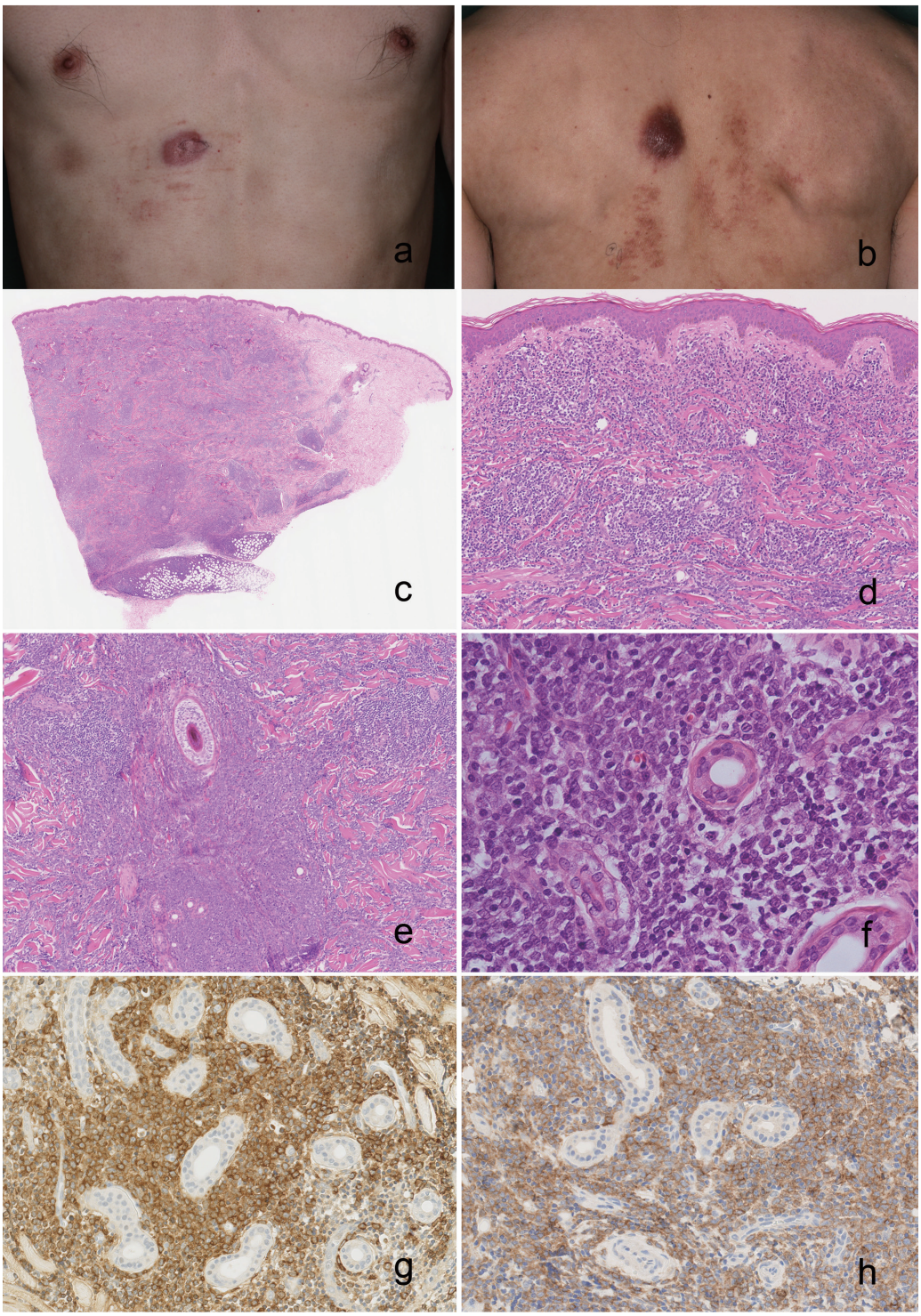

Fig. 1. (A) An erythematous nodule in the right upper abdomen. (B) A reddish-brown nodule and discrete macules on the upper back. (C) Dense cellular infiltration throughout the entire dermis and subcutaneous fat tissue (haematoxylin-eosin, original magnification × 20). (D) Medium to large lymphoid cells infiltrating the dermis in a nodular pattern and between collagen fibres (haematoxylin-eosin, original magnification × 100). (E) Extensive neoplastic cell infiltration surrounding adnexal structures (haematoxylin-eosin, original magnification × 100). (F) Medium to large lymphoid cells with fine nuclear chromatin and prominent nucleoli (haematoxylin-eosin, original magnification × 400). (G) Immunostaining for myeloperoxidase (original magnification × 200). (H) Immunostaining for CD33 (original magnification × 200).

freedom from recurrence or haematological malignancies for a long-term period of 7 years. Two cases progressed to AML or myelodysplastic syndrome within months of skin lesion regression, ultimately resulting in fatality (6, 7). Another case demonstrated partial regression of skin lesions, followed by surgical excision of the remaining lesions. This patient remained free of leukaemia development for 2 years post-intervention (8). The prognostic

implications of spontaneous regression in aleukaemic cutaneous myeloid sarcoma remain unclear due to the paucity of reported cases. Given the potential for leukaemia development following spontaneous regression of cutaneous lesions, vigilant follow-up is imperative for these patients.

REFERENCES

1. Aboutalebi A, Korman JB, Sohani AR, Hasserjian RP, Louissaint A, Jr., Le L, et al. Aleukemic cutaneous myeloid sarcoma. J Cutan Pathol 2013; 40: 996–1005. https://doi.org/10.1111/cup.12231
2. Bénet C, Gomez A, Aguilar C, Delattre C, Vergier B, Beylot-Barry M, et al. Histologic and immunohistologic characterization of skin localization of myeloid disorders: a study of 173 cases. Am J Clin Pathol 2011; 135: 278–290. https://doi.org/10.1309/AJCPFMNYCVPDEND0
3. Amador-Ortiz C, Hurley MY, Ghahramani GK, Frisch S, Klco JM, Lind AC, et al. Use of classic and novel immunohistochemical markers in the diagnosis of cutaneous myeloid sarcoma. J Cutan Pathol 2011; 38: 945–953. https://doi.org/10.1111/j.1600-0560.2011.01809.x
4. Sadahira Y, Sugihara T, Yawata Y, Manabe T. Cutaneous granulocytic sarcoma mimicking immunoblastic large cell lymphoma. Pathol Int 1999; 49: 347–353. https://doi.org/10.1046/j.1440-1827.1999.00871.x
5. D'Orazio JA, Pulliam JF, Moscow JA. Spontaneous resolution of a single lesion of myeloid leukemia cutis in an infant: case report and discussion. Pediatr Hematol Oncol 2008; 25: 457–468. https://doi.org/10.1080/08880010802104494
6. Takahashi A, Nakajima K, Togitani K, Aoki N, Miyoshi K, Sano S. Spontaneous remission of aleukemic cutaneous myeloid sarcoma followed by crisis of acute monoblastic leukemia. J Dermatol 2016; 43: 452–453. https://doi.org/10.1111/1346-8138.13202
7. Allard T, Ezine E, Baudry A, Rioult G, Joly E, Anger E, et al. Régression spontanée d'un sarcome myéloïde cutané. Ann Dermatol Venereol 2020; 147: 755–759. https://doi.org/10.1016/j.annder.2020.07.006
8. Hayder F, Zaouak A, Frioui R, Chamli A, Jouini R, Hammami H, et al. Exceptional outcome in cutaneous myeloid sarcoma. Clin Case Rep 2023; 11: e7154. https://doi.org/10.1002/ccr3.7154