A case of red ears

A 49-year-old lady, newly diagnosed with acute myeloid leukemia, was admitted for the first cycle of induction chemotherapy using daunorubicin (days 1 to 3) and cytarabine (days 1 to 7). She had no significant past medical history. On day 7, she developed marked erythema and edema over both her ears [Figure 1]. There were no auditory complaints, and otoscopic examination reviewed clear tympanic membranes with no effusions. The condition was associated with pruritic purpura over her limbs and trunk, with 5% of body surface area involvement [Figure 2]. There was no positive Nikolsky's sign or mucositis. Histology of the affected skin over the trunk demonstrated spongiosis and superficial perivascular mixed infiltrates composed of lymphocytes, histiocytes, plasma cells and neutrophils [Figure 3].

What Condition is this?

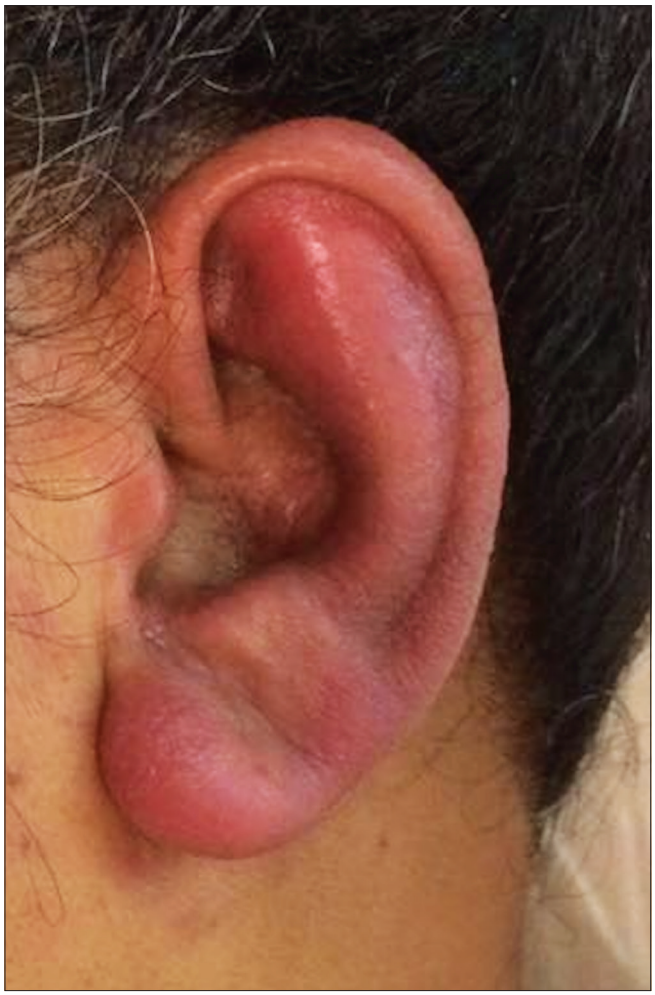

Figure 1a: Left ear erythema and edema

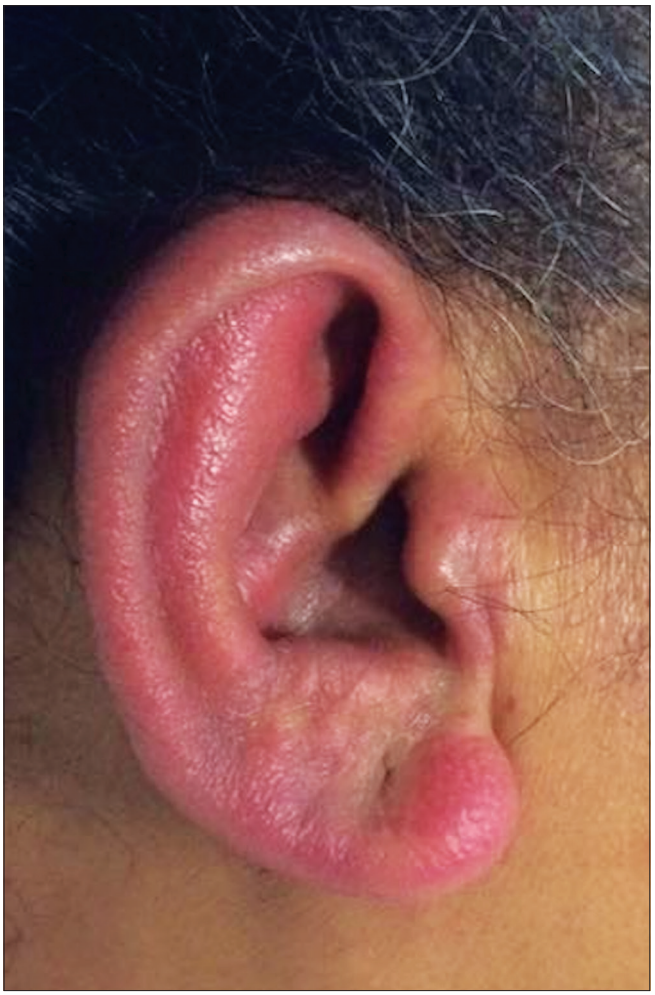

Figure 1b: Right ear erythema and edema

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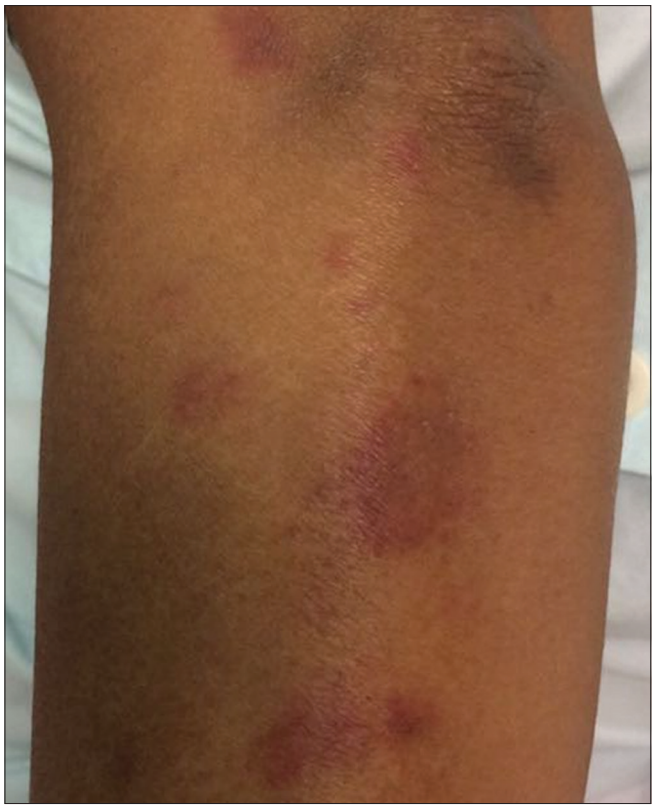

Figure 2: Purpura on the upper limb

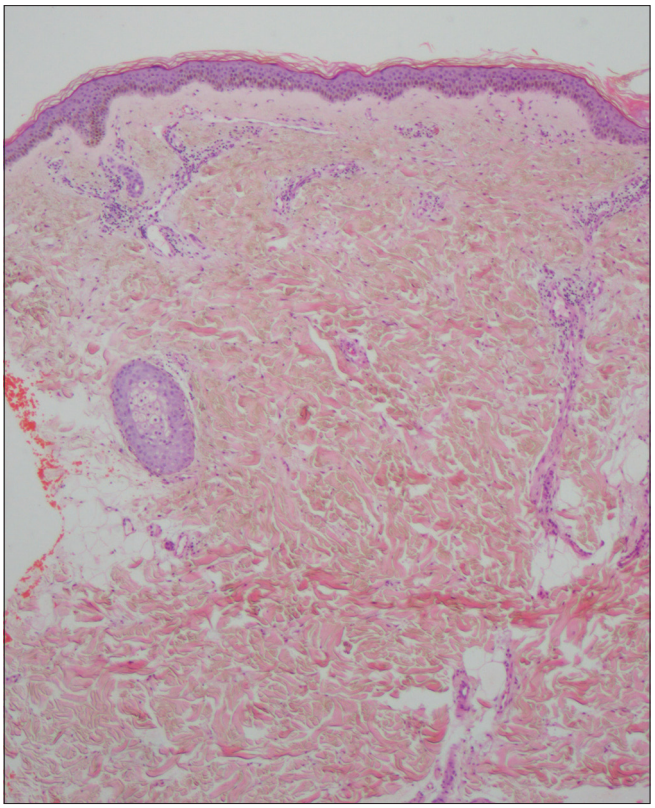

Figure 3a: Histology showing superficial perivascular mixed infiltrates composed of lymphocytes, histiocytes and plasma cells with occasional neutrophils (Hematoxylin and eosin stain, ×40)

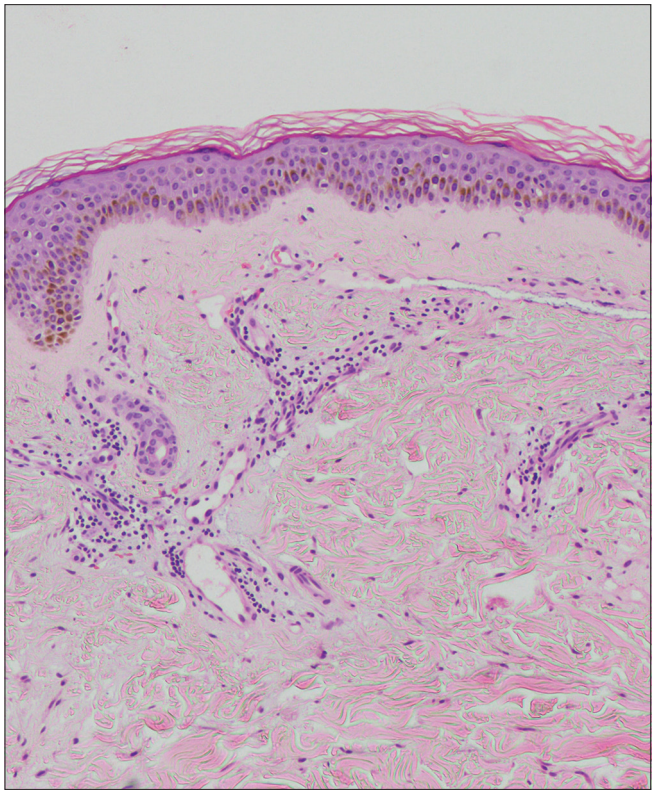

Figure 3b: Histology showing superficial perivascular mixed infiltrates composed of lymphocytes, histiocytes and plasma cells with occasional neutrophils (Hematoxylin and eosin stain, ×100)

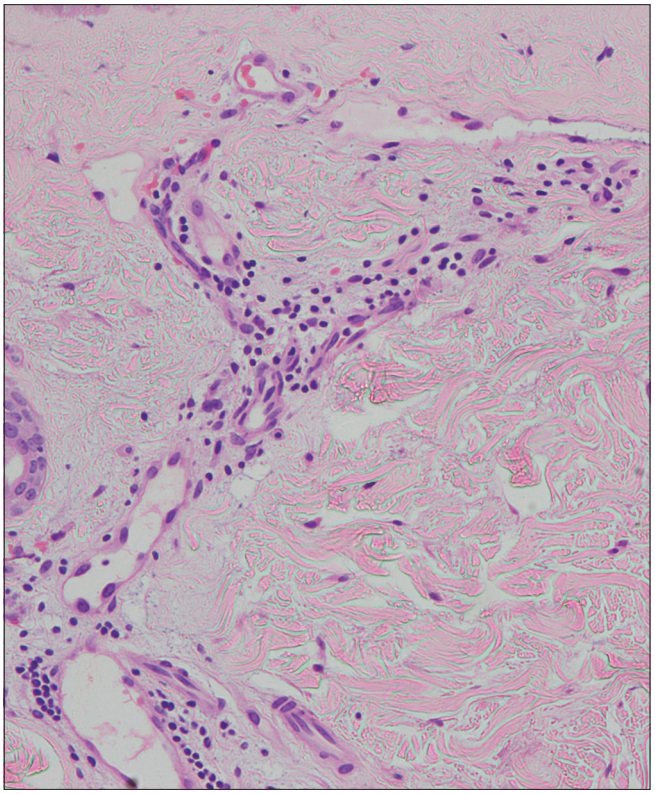

Figure 3c: Histology showing close-up of dermal superficial perivascular mixed infiltrates composed of lymphocytes, histiocytes and plasma cells with occasional neutrophilss (Hematoxylin and eosin stain, ×200)

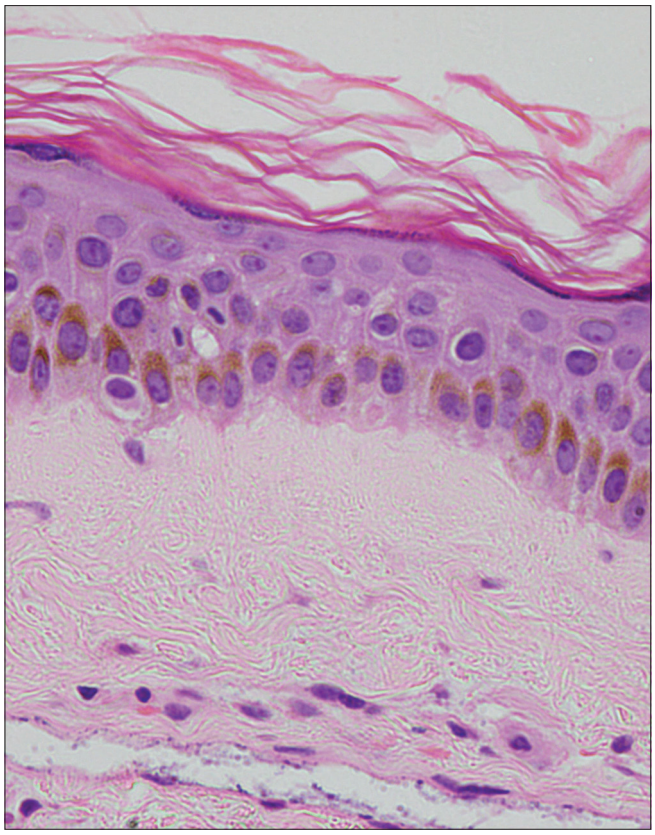

Figure 3d: Histology showing spongiosis and superficial perivascular mixed infiltrates composed of lymphocytes, histiocytes and plasma cells with occasional neutrophils (Hematoxylin and eosin stain, ×400)

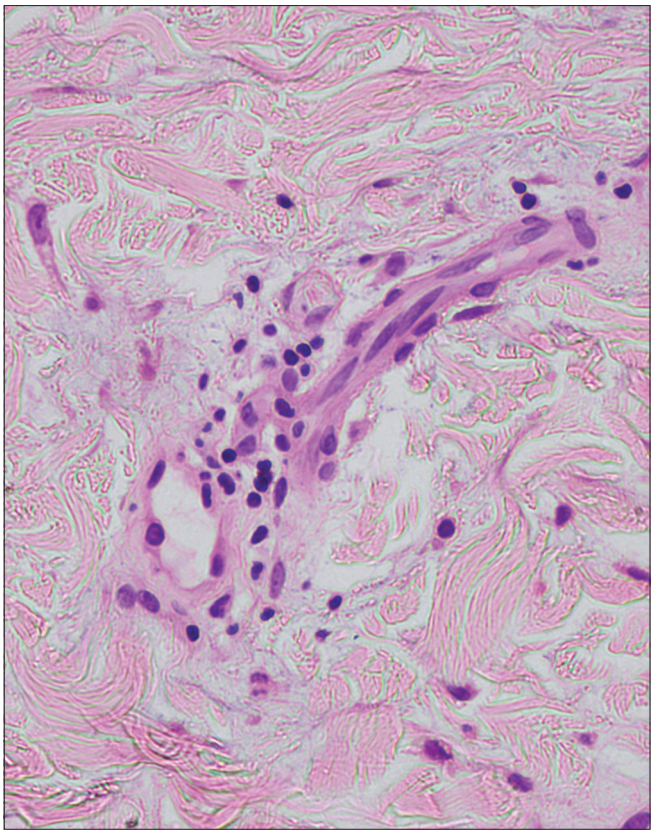

Figure 3e: Histology showing close-up of dermal superficial perivascular mixed infiltrates composed of lymphocytes, histiocytes and plasma cells with occasional neutrophils (Hematoxylin and eosin stain, ×400)

Diagnosis

This is a classical case of ara-c ears where "ara-c" stands for the chemotherapeutic agent arabinosylcytosine, commonly known as cytarabine; our patient was on this chemotherapeutic agent.

Discussion

Ara-c ears is a cutaneous toxicity caused by chemotherapeutic agents, most commonly cytarabine. It is a rare subset of toxic erythema of chemotherapy, which is a well-established cutaneous side effect of chemotherapeutic agents. This reaction has been described most commonly in patients on cytarabine, pegylated liposomal doxorubicin, capecitabine or 5-fluorouracil.[1]

Toxic erythema of chemotherapy presents 2–12 days after initiation of chemotherapy and spontaneously resolves in a 1–2-week period. It usually presents as erythematous patches or edematous plaques on the hands and feet as well as the intertriginous regions of the body. Rarely, it involves the ears, elbows and knees. Notably, our patient had marked involvement of her ears. Associated symptoms of pain, burning, paresthesia, pruritus and tenderness may be present. In severe cases, the skin may desquamate. There is a possibility of recurrence of the condition if a new cycle of chemotherapy is initiated. As the severity of signs and symptoms is dose-related, recurrence in post-remission chemotherapy tends to be more severe due to higher doses of drugs used as per the treatment protocol.[2]

The diagnosis of toxic erythema of chemotherapy is clinical. When the diagnosis is not clear, a skin biopsy is done. In typical cases, vacuolar interface dermatitis with necrotic keratinocytes is seen, with superficial dermal edema and perivascular lymphocytic infiltrate.[3] In this case, our biopsy did not demonstrate the full histologic features of interface dermatitis as it was taken early on the first day of the rash. However, in view of the clinical morphology and the classical drug etiology, the diagnosis of ara-c ears was made.

The exact mechanism of ara-c ears is not well understood. It is postulated to result from a toxic effect of chemotherapy agents on eccrine cells and epidermis.[4] Temperature of the body also seems to play a role in the pathological process as induced hypothermia of the affected regions often help reduce the symptoms and signs.

The treatment of toxic erythema of chemotherapy is symptomatic due to its benign course.[5] Nonpharmacological treatment entails cooling of the affected regions and reduction in activity and friction in the affected areas. Pharmacological treatment includes topical and systemic agents. Topical agents include emollients, steroids and analgesics. Systemic agents include oral corticosteroids and analgesics. There are usually no complications of the condition, although palmoplantar keratoderma may develop as a result of long-standing toxic erythema of chemotherapy. Oral corticosteroids have been used as prophylaxis for recurrence in new cycles of chemotherapy but are not routinely prescribed.

Our patient was treated with betamethasone valerate 0.1% cream for symptomatic relief and her symptoms resolved gradually over the next 6 days. As both ears were affected at the same time and they resolved spontaneously after cessation of chemotherapy, this suggests an inflammatory rather than an infective cause. In view of the temporal relationship of the rash and ear swelling with cytarabine therapy, this is consistent with the diagnosis of "ara-c ears".

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that name and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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