

# Kaposi's Sarcoma in an Atopic Dermatitis Patient: A Case Report and a Review of Literature

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**Abstract:** A 7-year-old girl suffering from atopic dermatitis developed multiple lesions of Kaposi's sarcoma, which could not be categorized under any one of the four known types of Kaposi's sarcoma (classic, human immunodeficiency virus-associated, endemic, or iatrogenic). We propose that atopic dermatitis may cause susceptibility to human herpes virus 8 infection, which is related to the pathogenesis of Kaposi's sarcoma.

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## CASE REPORT

A 7-year-old girl was complaining of skin lesions of 5 months' duration over both extremities with a rapidly progressive course. The patient had a long history of atopic dermatitis (AD) since late infancy. For AD, she received intermittent short courses of topical and occasional low doses of systemic corticosteroids, which were stopped 1 month prior to presentation.

Generally, the patient appeared well, with no lymph node enlargement, nor organomegaly. Examination revealed multiple dusky red, well-defined soft plaques, partially compressible, 1 to 3 cm in diameter over the anterior and inner aspects of both thighs (Fig. 1A), extensor aspects of both legs (Fig. 1B), dorsal aspects of both feet (Fig. 1C), and the flexor aspects of both forearms (Fig. 1D), while eczematous lesions of atopic dermatitis were seen on the trunk and extremities. No mucous membrane involvement was seen.

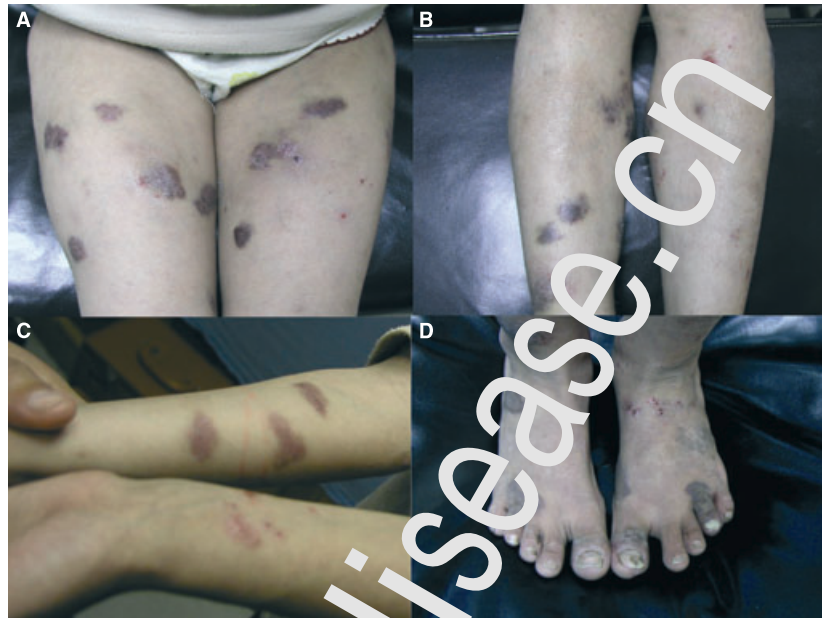
Investigations revealed eosinophilia: 14% of 9400/cmm TLC (normal: 1–6% of 4–11 × 1000/cmm TLC); lymphocytes: 30% (normal: 20–45%); total IgE was 401 IU/mL (normal <100 IU/mL); repeated tests for human immunodeficiency virus (HIV) were negative; normal LFT: SGOT: 27 U/L (normal: 5–35 U/L); normal chest radiograph; and normal abdominal US.

Skin biopsy revealed vascular spaces (slitlike) in the dermis, with flat endothelial cell lining and spindle shaped cells in between the vascular slits (Fig. 2A). Higher magnification showed vascular spaces with flat endothelial lining spindle-shaped cells with mild atypia and extravasated red blood cells (RBCs) (Fig. 2B,C).

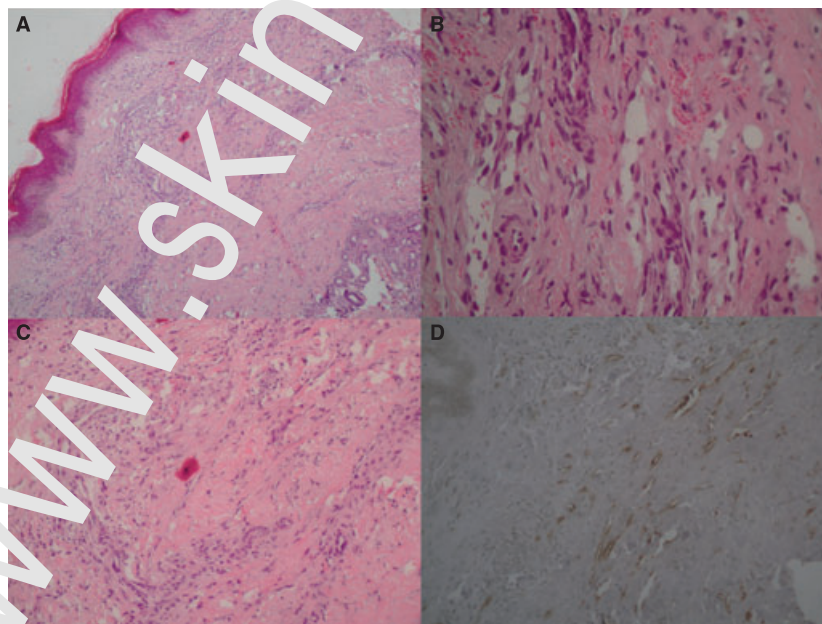
Immunohistochemical staining for CD34 showed positively stained flattened endothelial cells lining the vascular slits (Fig. 2D).

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**Figure 1.** (A) Multiple dusky red, well-defined, soft plaques, partially compressible, 1 to 3 cm in diameter over the anterior and inner aspects of both thighs. (B) Similar lesions on both legs. (C) Lesions on the dorsum of both feet. (D) Lesions on the flexor aspect of the forearms.



**Figure 2.** (A) Vascular spaces (slitlike) in the dermis; flat endothelial cell lining; spindle-shaped cells in between the vascular slits. (B) Vascular spaces with flat endothelial lining; spindle-shaped cells with mild atypia; extravasated RBCs. (C) Vascular spaces with flat endothelial lining; spindle-shaped cells with mild atypia; extravasated RBCs. (D) Immunohistochemical staining for CD34: positively stained flattened endothelial cells lining the vascular slits.

### Final Diagnosis

Kaposi's sarcoma (KS) in an atopic dermatitis patient. The patient received radiotherapy for 6 months and showed improvement.

### DISCUSSION

Kaposi's sarcoma is a multifocal endothelial proliferation involving skin and other organs associated with formation of vascular channels and proliferation of

spindle-shaped tumor cells. Kaposi's sarcoma herpes virus (KSHV/HHV8) is etiologically linked to Kaposi's sarcoma (1).

Our patient could not be categorized under any one of the four types of Kaposi's sarcoma: the HIV-associated type; the iatrogenic type; the endemic type (Egyptian patient with no lymphoedema or systemic involvement); or the classic type (affects elderly men with a slower course and limited lesions). To our knowledge, only one case has been reported of KS in a patient with atopic dermatitis. He was an HIV-negative homosexual man who developed KS during azathioprine therapy for AD (2). However, the only risk factor in developing KS in our case is atopic dermatitis.

Patients with atopic dermatitis are prone to disseminated viral skin infections. This may be due to:

- Over production of T helper cell 2 (TH2) cytokines (evidenced in our patient by eosinophilia and increased immunoglobulin E [IgE] level) with impaired generation of IFN $\gamma$  leading to ineffective antiviral immune responses (3).
- Subverted innate immune response via inhibiting the induction of the human cathelicidin LL-37 (an antimicrobial peptide that kills vaccinia virus and herpes simplex virus) (4).
- Downregulation of macrophage inflammatory protein-3 (MIP-3) alpha (a chemokine expressed by keratinocyte that exhibits antimicrobial activity against vaccinia virus) (5).

Therefore, we may add HHV8 to the other viruses that have increased aggressiveness in atopic dermatitis, or we may suggest a new type of Kaposi's sarcoma: the atopic dermatitis associated Kaposi's sarcoma.

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