

Pyogenic Granuloma like Kaposi Sarcoma: A Diagnosis Easily Missed

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ABSTRACT

Pyogenic granuloma-like Kaposi sarcoma (PG-like KS) is a clinicopathologic variant of Kaposi sarcoma (KS), a vascular tumor caused by human herpesvirus-8 (HHV-8). PG-like KS is a challenging entity to diagnose because its clinical and histological features encompass features of both pyogenic granuloma (PG) and KS. Distinction between the two entities is clinically important as the management is different. KS patients require evaluation of their immunodeficiency status and follow-up. Throwing a HHV-8 LNA-1 immunohistochemistry helps in clinching the diagnosis. Recognition of the precise histological features and clinical correlation can facilitate the correct diagnosis.

Keywords: *Pyogenic Granuloma, Kaposi Sarcoma, HHV-8*

Introduction

Pyogenic granuloma (PG) and Kaposi sarcoma (KS) in their own characteristic clinical setting exhibit definite histological features and seldom create diagnostic confusion to the general surgical pathologist.

Pyogenic granuloma-like Kaposi sarcoma (PG-like KS) is a variant of KS where pyogenic granuloma-like areas mask the classic histology of KS, sometimes resulting in a misdiagnosis of PG.^[1-5] Distinction between the two entities is clinically important as the management is different. We report two cases of PG-like KS in immunocompetent patients highlighting the histological features to help avoid a misdiagnosis.

Case Report

The first case was that of a 54-year-old man who presented to the emergency department with an ulcerated polypoidal soft tissue mass at the medial aspect of the sole of right foot. The second case was a 60-year-old woman who presented with a polypoidal soft tissue mass on the lateral aspect of right great toe. Both were clinically diagnosed as PG.

The excised specimens were sent to the histopathology department. Both lesions appeared grossly polypoidal unoriented soft tissue masses covered by ulcerated skin, each measuring 1.5 x 1.2 x 0.7 cm and 1 x 1 x 0.7 cm each. Microscopy showed a superficial dermal lesion rimmed by an ulcerated epidermal collarette (Figure 1a & 1b).

High magnification examination showed areas of lobular vascular proliferation with well-formed vascular lumen (Figure 2a) and granulation tissue formation in the superficial ulcerated areas (Figure 2b). Hemosiderin deposition and interstitial lymphoplasmacytic infiltrate

were also noted in these foci (Figure 2b). The deeper aspect appeared cellular with spindle cell proliferation (Figure 2c) and RBC extravasation (Figure 2d).

The spindle cells are positive for CD31 (Figure 3a) and negative for SMA immunostain (Figure 3b). HHV-8 latent nuclear antigen-1 (LNA-1) immunostain was done on both cases which showed characteristic speckled nuclear positivity thus verifying the diagnosis of pyogenic granuloma-like Kaposi sarcoma (Figure 3c & 3d). Subsequent tests for HIV were negative in both cases.

Discussion

Classically, histology of PG consists of a usually exophytic, lobulated dermal mass made up of numerous small capillaries, often radiating from larger central vessels set in a loose edematous collagenous matrix and can show mitotic activity and focal degenerative atypia. Epidermal collarette, inflammation and granulation tissue like areas are seen in ulcerated lesions.

The microscopic appearances of KS go through 3 phases (patch, plaque and nodular), often related to the duration of the lesion. There is morphological overlap between patch and plaque phases but nodular lesions appear distinct which is characterized by dermal based proliferation of eosinophilic spindle cells and scattered between these cells are numerous slit-like vascular spaces, which lack an endothelial lining, but often contain extravasated red cells. Readily identifiable ectatic vessels may still be apparent at the periphery of the nodule along with a conspicuous chronic inflammatory infiltrate and amorphous eosinophilic globules.^[6] HHV-8 (KS-associated virus) is positive in all types of KS.

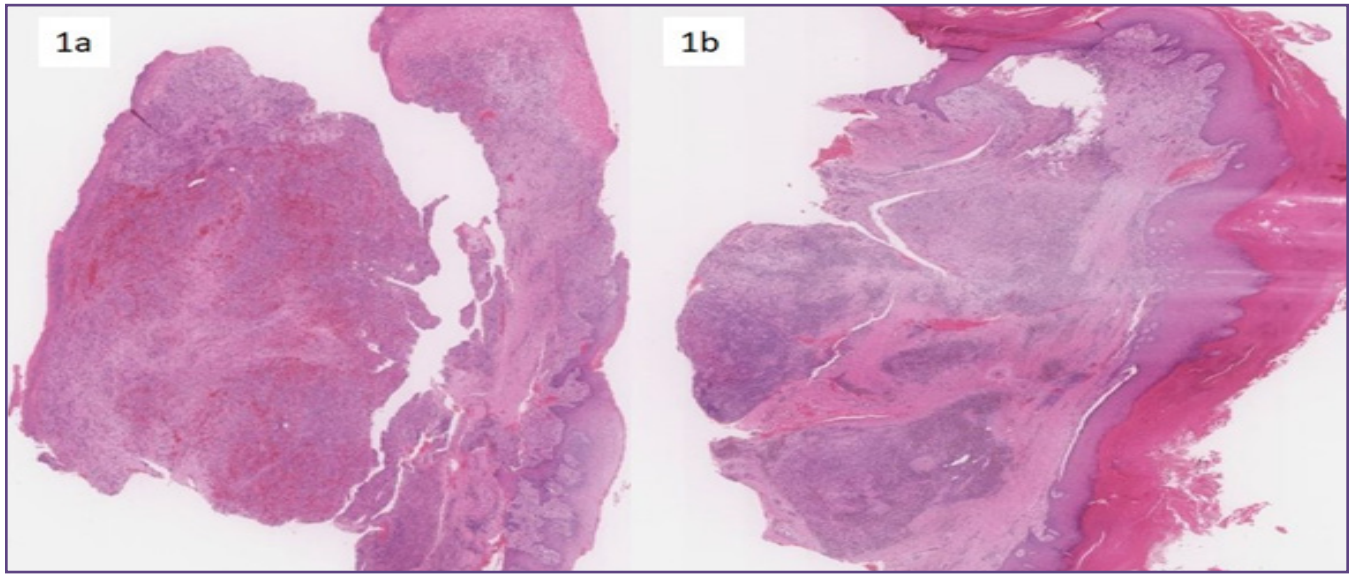


Fig. 1 a&b: Superficial dermal lesion rimmed by an ulcerated epidermal collarette (H and E, x 40).

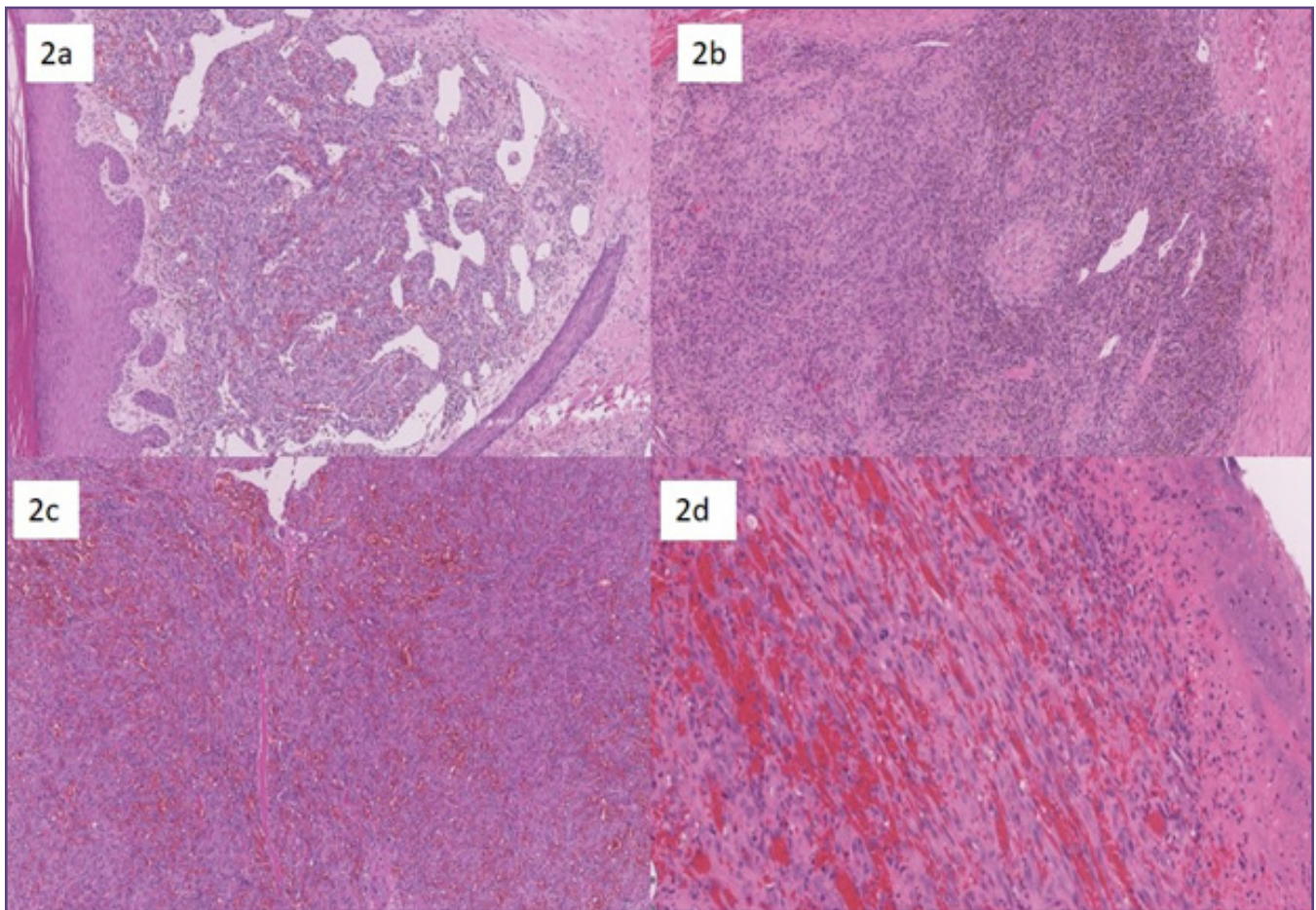


Fig. 2: a: Lobular vascular proliferation with well-formed vascular lumen (H and E, x 100), 2b: Granulation tissue formation and hemosiderin deposition (H and E, x 100), 2c: Deep cellular foci with spindle cell proliferation (H and E, x 200), 2d: Cellular spindle areas with RBC extravasation (H and E, x 400).

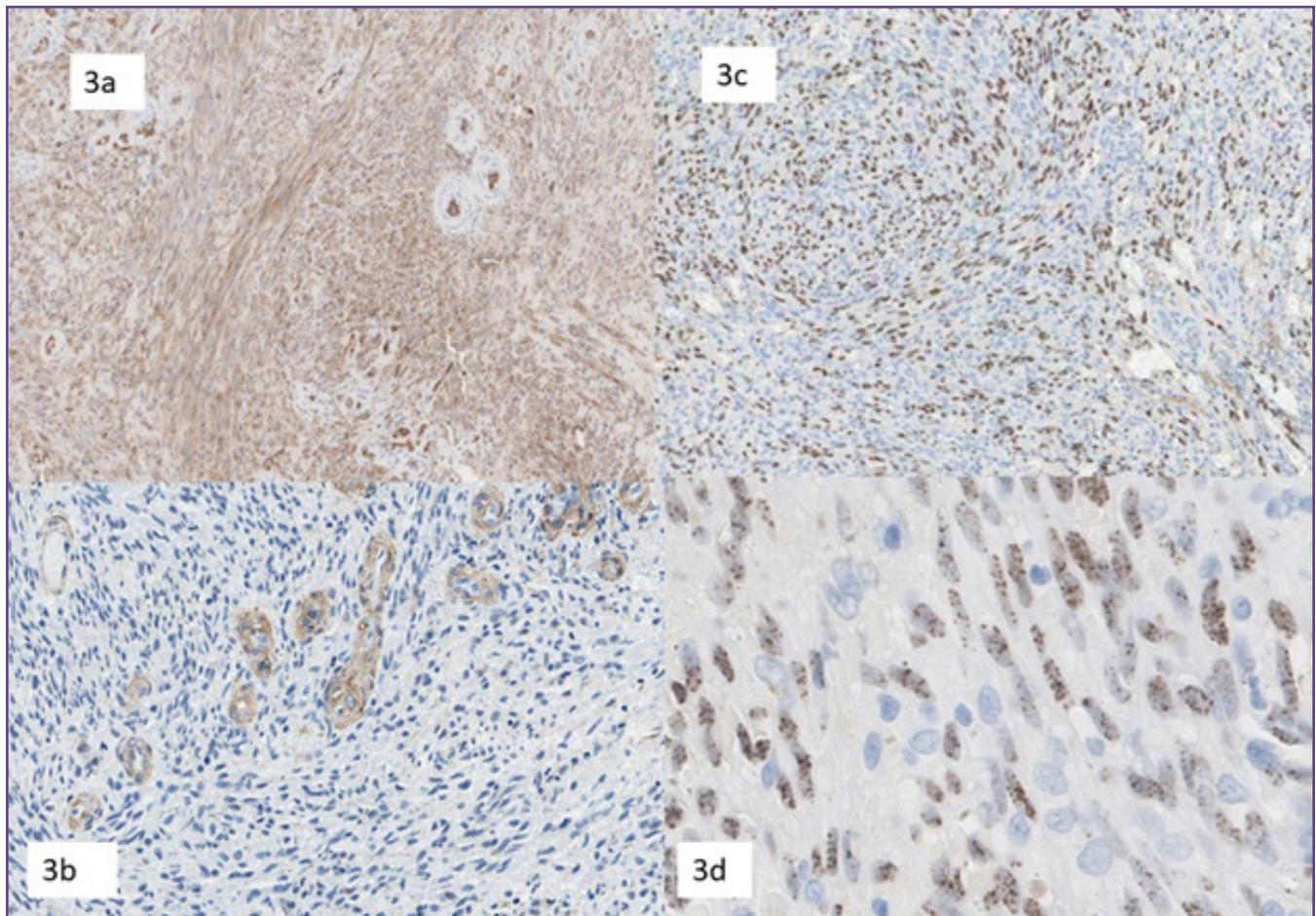


Fig. 3: a: CD31 immunostain highlights the spindly cells (H and E, x 200), 3b: The spindly cells are negative for SMA immunostain (H and E, x 200), 3c & 3d: HHV-8 immunostain with speckled nuclear positivity in the spindly cells (x 200, x 400).

PG- like KS is a rare variant of KS showing clinical and histopathological features of both PG and KS. They are reported in hand, foot, men more than 60 years and can occur in both HIV positive and negative cases.^[2, 4] To date, less than 25 cases of PG- like KS has been reported in the English literature. This low number may be due to the underdiagnosis of this entity.^[1-5]

In PG- LIKE KS, areas characterized by epidermal collarette, lobular vascular proliferation and granulation tissue occur secondary to trauma and ulceration. These areas overrun the cellular spindle cell areas which can be focal and is easily overlooked and mistaken for conventional pyogenic granuloma.

Careful evaluation of the entire lesion particularly finding focal areas of cellular spindle cell proliferation should signal the pathologist to do immunohistochemistry for HHV-8. HHV-8 has been detected almost in all cases of KS and never reported in PG.^[7] In PG, immunohistochemical

markers such as SMA and Factor VIII highlights the pericytes and mature endothelial cells both of which are absent in KS. However, expression of these markers can occur in PG- like KS.^[8] Our case showed SMA positivity in the well-formed vessels in the PG like areas but spindle cells in between were negative. In cases where PG like area overrun the classic morphology of KS, the clinical milieu such as multiplicity of the lesion, immune status and geographic location should help in raising the level of suspicion of KS and lower the threshold of ordering a HHV-8 immunostain.

Apart from PG, a differential diagnosis to be entertained is Spindle cell hemangioma (SCH) which classically presents in acral locations on young adults and histologically, SCH is a circumscribed dermal tumor composed of irregularly sized thin-walled vascular spaces, commonly with thrombi, and solid spindled areas. Another component is the presence of epithelioid cells with intracytoplasmic vacuoles. Compared with lesions of KS, the vessels in

SCH are less slit-like and the spindle cell component is cytologically bland. Additionally, since SCH is a vascular proliferation, and thus composed of both endothelial cells and pericytes, SMA staining demonstrates the retention of this pericyte population (as compared to KS which is an exclusively endothelial cell proliferation and negative for SMA). The spindle cells of SCH are negative for HHV8.

Another diagnostic consideration in the differential of KS is acroangiokeratitis, especially in a patient with history of venous insufficiency. Acroangiokeratitis, a reactive angiodyplasia of cutaneous vessels, also show overlapping histology such as increased small vessels with a lobular architecture and intervening fibrous stroma and spindled cells surrounding vessels.^[9] Hemosiderin deposition and a lymphocytic infiltrate are often identified in the stroma. The lesional cells are negative for HHV8 while positive for SMA.

The distinction between the two tumors is important as the clinical management differs. KS patients requires evaluation of their immunodeficiency status and follow-up. Throwing a HHV-8 LNA-1 immunohistochemistry helps in clinching the diagnosis. Recognition of the precise histological features can facilitate the correct diagnosis.

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