

Ulcerative Kaposi's Sarcoma in the Lower Extremity of an AIDS Patient

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Kaposi's sarcoma is the most common neoplasm seen in the AIDS population and was reported in 20% to 50% of AIDS patients prior to the advent of highly active antiretroviral therapy (HAART).^{1,2} Since 1996, the incidence of Kaposi's sarcoma in the AIDS population has diminished substantially.^{3,4} The clinical course of Kaposi's sarcoma ranges from an incidentally discovered disease with minor clinical manifestations to a more aggressive growth pattern with potentially significant morbidity and mortality. The skin remains the most common site of presentation but can be preceded by nodal, oral, or visceral disease.¹ The ulcerative form of Kaposi's sarcoma remains rare and is often mistaken for other disease entities and mistreated in its initial stages. One previously reported case of ulcerative Kaposi's sarcoma, which was located on the hallux, was diagnosed after a traumatic injury.⁵ We report a rare case of ulcerative Kaposi's sarcoma presenting as a primary soft tissue infection in the foot of an AIDS patient.

CASE PRESENTATION

History

A 43-year-old African-American man presented to the emergency department with an open, painful, and ulcerated lesion on the left foot (**Figure 1**). The patient stated that the ulceration began as a clear, fluid-filled blister, which broke open and began to drain a straw-colored fluid with associated malodor. He noted a gradual increase in bilateral lower extremity edema over the previous month. The wound was self treated with foot soaks and controlled-release oral morphine sulfate, which had been prescribed by an outside physician for uncertain indications 1 month previously. The morphine sulfate failed to provide pain relief. The pain was isolated to the left lower extremity. He also noted occasional fevers and night sweats during the past month. He denied any previous history of deep venous thromboembolism, leg pain, previous ulceration, or recent infection.

Past medical history was significant for AIDS diagnosed 2 years prior to this admission. His original AIDS-defining diagnosis was *Pneumocystis carinii* pneumonia.

The patient stated that he had not been taking the HIV medications (ritonavir, nevirapine, and saquinavir) prescribed by his primary care physician. His last known CD4+ cell count (1 year ago) was 274 cells/mm³. At that time, the viral load was 100,000 copies/mm³. The patient previously was diagnosed with Kaposi's sarcoma of the upper extremities and chest, with ulcerative Kaposi's sarcoma of the penis 15 months earlier. The patient had no known drug allergies.

There was a positive family history of prostate carcinoma. The social history was significant for smoking 1 pack of cigarettes daily for 1 year. The patient also related a history of heavy alcohol use, averaging 6 to 8 cans of beer daily. The patient was bisexual and denied condom use. He denied recent travel outside his city of residence.

Physical Examination and Laboratory Results

Physical examination revealed a well-nourished African-American man who was in no apparent distress. Vital signs were stable with an oral temperature of 97.9°F (36.6°C), blood pressure of 130/86 mm Hg, heart rate of 92 bpm, and a respiratory rate of 18 breaths/min. Slightly elevated purpuric plaques were present on the upper extremities and chest (**Figure 2**). A small ulcerative hyperpigmented lesion was present on the penis. Strength of all muscle groups was +5/5, and the results of the neurologic examination were non-focal, with sensation intact to bilateral lower extremities. Lower extremity examination revealed brawny, non-pitting edema bilaterally. His left foot had an open, draining ulceration on the medial arch area. Multiple deep bullae were noted on the feet, with more present on the left foot. The open skin lesion on the left foot had serous drainage and a verrucous appearance with irregular undermined margins.

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Figure 1. Ulcerations of the case patient's left lower extremity. The foot is not gangrenous, and vascular examination demonstrates adequate arterial perfusion.



Figure 2. Slightly elevated purpuric lesions on the upper extremities of the case patient.

The base of the ulceration was necrotic and fibrotic with no visible granulation tissue. No sinus tracts were found. An odor that was characteristic for *Pseudomonas* bacteria was noted. Mild erythema was observed peripheral to the open lesion and no purulence was noted.

Admission laboratory results included a hemoglobin concentration of 12.7 g/dL, hematocrit of 37.7%, and mean platelet volume of 8.6 μm^3 . Differential blood count included the following: monocytes, 9.7%; granulocyte, 38.8%; eosinophil, 9.9%; and band neutrophils, 1%.

Hospital Course

The patient was admitted to the medical service and intravenous piperacillin/tazobactam was initiated at 4.5 g every 8 hours. Plain film radiographs of the left foot showed no gas in the soft tissues and no evidence of osseous involvement. Podiatric surgery was consulted for evaluation of the lower extremity ulceration. Wound cultures taken prior to antibiotic therapy grew *Pseudomonas aeruginosa*. Given the diffuse edema, verrucous appearance, and lack of purulent discharge with a medical history significant for HIV, a fungal infection was included in the differential diagnosis. Also included in the differential diagnosis were a primary soft tissue bacterial infection and a neoplastic etiology. The patient was taken to the operating room for an incisional biopsy. The biopsy results were still pending at the time of discharge.

The patient had an otherwise uneventful hospital

stay. He had a maximum temperature of 100.4°F (38.0°C) during the hospital course that had resolved by the time of discharge. No elevation of leukocyte cell count was observed. Pain was controlled with oxycodone. Daily wet-to-dry dressing changes were performed with normal sterile saline. The fibrotic and necrotic material in the left foot ulceration was periodically débrided. The patient was discharged with oral ciprofloxacin and clindamycin. A visiting nurse was consulted to assist with daily dressing changes and instruct the patient how to perform daily wound care of wet-to-dry dressing changes.

Biopsy Results

Biopsy results showed an ulcerated hyperkeratotic squamous epithelium with underlying necrotic dermis and granulation tissue. Microcapillary changes also were observed along with spindle cells (Figure 3). Surgical pathology findings were compatible with ulcerative Kaposi's sarcoma. Special staining showed gram-positive cocci with fungal elements. However, prior fungal cultures were negative.

Outpatient Treatment and Management

The patient continued to visit the podiatry clinic on a weekly basis for wound evaluation. He also continued to take his outpatient regimen of ritonavir and nevirapine. Based upon infectious disease consultation, saquinavir was discontinued. He was referred for radiation therapy of the left lower extremity ulcerative Kaposi's sarcoma. Treatment for the lesions on the patient's upper extremities and penis was not required.

The patient began radiation therapy 1 month after diagnosis of ulcerative Kaposi's sarcoma. The radiation field size was 35 × 35 cm with a 6-mV beam. He received a 3000 cGy dose in 15 fractions over 25 days. Significant improvement was noted at 2 months after completing radiation. He tolerated the treatment well and without complications. The patient followed up with podiatry for wound débridement. The drainage from the wound slowly diminished after radiation therapy and the dimensions of the wound grew smaller until the wound had fully granulated. Bilateral edema remained unchanged along with the continued presence of multiple deep bullae in the lower extremities.

DISCUSSION

Clinical features of Kaposi's sarcoma in AIDS patients (epidemic Kaposi's sarcoma) differ markedly from those seen in the classic and endemic forms.⁶ AIDS-related Kaposi's sarcoma tends to be multicentric, often involving mucous membranes of the entire

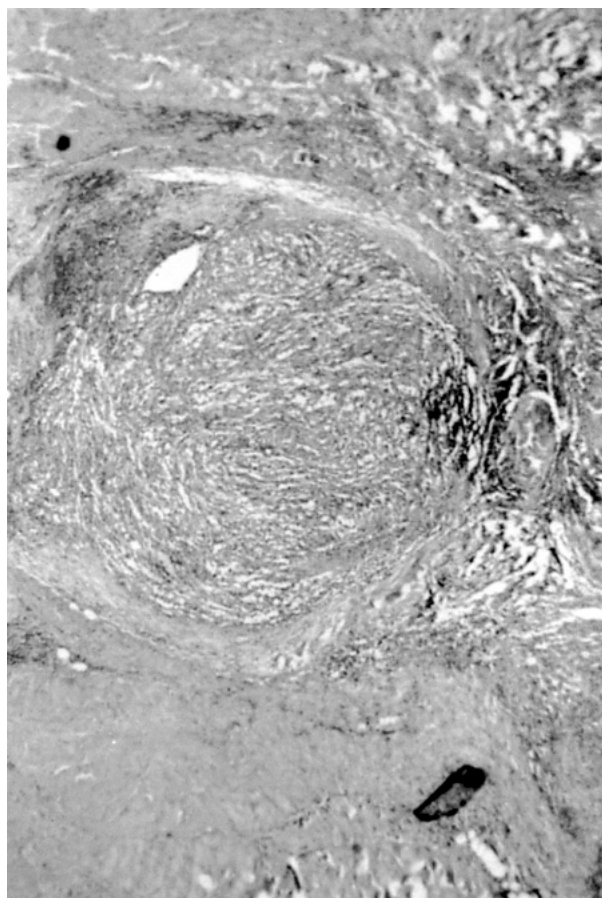


Figure 3. Biopsy results for the case patient show a large occluded vessel with microcapillary changes. Spindle cells were observed but are not visible at this magnification.

gastrointestinal tract and occurring in atypical locations. The skin lesions seen in homosexual/bisexual men tend to be multifocal purplish, nodular lesions.⁷ They are most often made up of predominantly spindle cells, giving a more sarcomatous appearance. The AIDS-related Kaposi's sarcoma tends to have more widely dispersed lesions with frequent lymph node involvement and a poorer response to therapy than the classic forms.⁸ A previous report of lymphedema attributed to AIDS-related Kaposi's sarcoma states that lymphedematous limbs are particularly susceptible to bacterial and fungal infections.⁹ The patient in our case study showed bacterial growth on culture as well as fungal elements on pathologic examination, although no growth occurred with fungal cultures.

Skin lesions in immunocompromised patients may be the only visible manifestation of a more serious systemic infection. Cryptococcosis affects the skin in 10% of patients who have the systemic infection.¹⁰ Skin lesions of

Cryptococcus neoformans can mimic Kaposi's sarcoma, and *C. neoformans* actually has been demonstrated within Kaposi's sarcoma lesions. Immunocompromised patients who have histoplasmosis demonstrate a 10% to 17% incidence of skin lesions that may appear ulcerative.¹¹ *Histoplasmosis capsulatum* also has been described within Kaposi's sarcoma lesions. Disseminated blastomycosis has been reported in immunocompromised patients and may manifest as verrucous papules.⁴

Although approximately 8% of bacteremia in HIV-positive patients can be attributed to *P. aeruginosa*, *Staphylococcus aureus* remains the most common cutaneous and systemic bacterial infectious agent in HIV-positive patients.⁴ The colonization of *S. aureus* in the nares of HIV-positive patients approaches twice that observed in HIV-negative individuals.¹²

Initial therapy for bacterial infections in the immunocompromised patient should be broad spectrum and bactericidal.¹³ Piperacillin/tazobactam was chosen for this patient in the emergency department. This drug combination demonstrates gram-positive and pseudomonal coverage. Once culture results had been obtained, clindamycin and ciprofloxacin were initiated.

Kaposi's sarcoma is a radiosensitive tumor, with isolated skin lesions tending to be especially radiosensitive. Single-dose electron beam therapy has been shown to be effective for localized indolent lesions as well as ulcerative forms.⁸ Palliative radiation therapy is an excellent treatment choice, with response rates from 80% to 90% in most lesion types.⁹ The patient in this case study returned to his baseline footwear 2 months after completion of radiation therapy.

CONCLUSION

Ulcerative Kaposi's sarcoma is an unusual clinical diagnosis. This particular case presented as a primary bacterial infection. Although biopsy demonstrated the presence of fungal elements, no growth occurred on culture, and the lesion cleared with antibiotic and radiation therapy.

Clinical suspicion along with the patient's immunocompromised status should lead the physician to investigate multiple and unusual etiologies in open wounds of the lower extremity of an HIV-positive patient. **HP**

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