A Case of Classic Kaposi's Sarcoma Treated with Electron Beam Radiation Therapy

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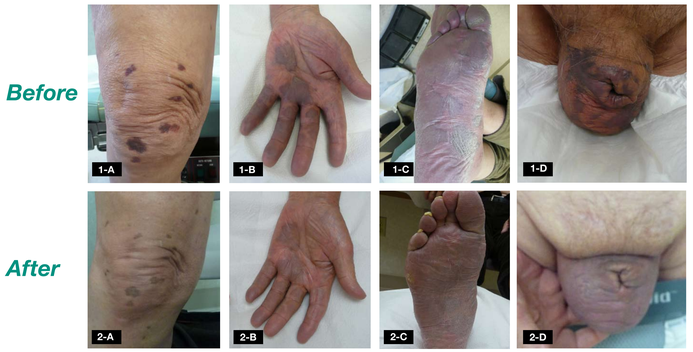

Figure 1: (A-D) Well-demarcated violaceous plaques on the left palm extending onto the fingers along with violaceous patches and plaques on the right knee, right sole, penis and scrotum.

Figure 2: (A-D) Lesions after local field electron beam radiation therapy.

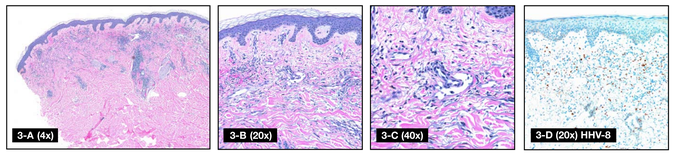

Figure 3: (A-C) H&E punch biopsy of right lower back shows a subtle proliferation of jagged, slit-like vascular channels configured as a band across the superficial portion of a full-thickness punch biopsy. As seen in 2-C, some of these are situated around pre-existing vessels (promontory sign).

Figure 3: (D) HHV-8 immunohistochemical stain demonstrates unequivocal scattered single cell nuclear positivity.

Table 1: Types of Kaposi's Sarcoma

KS Type	Demographics	Clinical Features	Prognosis
Classic KS	Males >50 years of age, Mediterranean or Eastern European origin	Early lesions most common on toes, soles. Arms, hands involved later and rarely face, trunk, genitalia	Slowly progressive. Rare lymph nose or visceral involvement
African cutaneous KS	Middle-aged African males 20-50 years of age. Seen in Sub-Saharan Africa	Lesions mostly on extremities. Can be accompanied by edema of legs and bone involvement	Locally aggressive. Systemically indolent
African lymphadenopathic KS	Young patients, usually children <10 years of age in Sub-Saharan Africa	Skin lesions lmay or may not be present. Lymph nodes involved. Can develop lesions on eyelids and conjunctiva	Aggressive, often fatal within 2 years of onset
Immunosuppression-associated KS	Iatrogenically immunosuppressed patients, i.e. transplant patients	Lesions similar to classic KS. Sites are more variable	Variable. May resolve with discontinuation of immunosuppression
AIDS-associated KS	AIDS patients, homosexual men	Violaceous macules rapidly progressing to papules, nodules, plaques. Head, neck, trunk, mucous membranes more commonly affected	Progressive with nodal and systemic involvement expected

Table 2: Summary of Treatment Outcomes

Study	No. Patients	Treatment	Radiation Dose	CR/PR (%)
Lo Et al.	60	LF/EF	2-15 Gy	46/46
Weshler Et al.	28	EF	30 GY/10 fractions	89/11
Hamilton Et al.	37	LF/EF	8 Gy, single fraction	73/NR
Tur and Brenner	11	Subcutaneous IFN-alpha	N/A	63/18
Zidan Et al.	10	Vinblastine	N/A	50/40
Kreuter Et al.	12	Pegylated, liposomal, doxorbucin	N/A	67/25

CR = complete response; LF = local field; EF = extended field; IFN = interferon; PR = partial response

Adopted from Hauerstock D, Gerstein W, Vuong T.

Case Presentation:

Patient: C.L. is a 91 year old male of Lithuanian/Baltic ancestry.

History of Present Illness: The patient presented to our office in April 2011 complaining of a one to two year history of a non-pruritic "rash" on his palms, trunk, right knee, and feet. He had been started on aspirin and clopidogrel in November 2010 after a stroke but denied any other recent medication changes. No previous treatments were reported. A review of systems was negative for fever, night sweats, lymphadenopathy, nausea, abdominal pain, hematochezia, or other systemic symptoms.

Medical History/Surgical History: Hypertension, CVA, hepatitis B, seasonal allergies, appendectomy, tonsillectomy

Medications: Allopurinol, olmesartan, loratadine, furosemide, amlodipine, aspirin, clopidogrel, propoxyphene napsylate/acetaminophen

Physical Examination: There are several well-demarcated violaceous plaques on the palms extending onto the fingers with the left hand more involved than the right. Scattered violaceous papules and patches are seen on the back, arms, right knee, feet, soles, penis and scrotum (Figure 1).

Laboratory Data: HIV-1,2 Ab (04/21/11): Nonreactive; CBC (10/31/11): WNL except platelets: 105 (150-400 Thousand/uL), CMP (10/31/11): WNL except total bilirubin: 2.6 (0.2-1.0 mg/dL); INR (10/31/11): 1.53 (0.86-1.16); Hepatitis panel (12/01/11): HBsAg: nonreactive, HBcAb: reactive, HBcAb IgM: nonreactive, HCAb: nonreactive

Studies: CT of chest, abdomen, and pelvis with contrast (04/26/11) revealed no visceral involvement or lymphadenopathy. Chronic elevation of the right hemidiaphragm was noted. Repeat CT of chest, abdomen, and pelvis with contrast (11/09/11) was also negative with an incidental finding of a developing right pleural effusion and mild ascites.

Biopsy:

Advanced Dermatology Associates, LTD. (AD11-03586, 04/01/2011) Left lower back: "A subtle proliferation of jagged, slit-like vascular channels is configured as a band across the superficial portion of a full-thickness punch biopsy. This is vaguely wedge-shaped...some of these are situated around pre-existing vessels (promontory sign), and small numbers of erythrocytes are present within...immunohistochemical stains demonstrate unequivocal scattered single cell nuclear positivity with HHV8. There is also scattered cytoplasmic positivity for alpha-1 antitrypsin and smooth muscle actin (figure 3)."

Diagnosis: Classic Kaposi's Sarcoma

Treatment: After being cleared of visceral and lymph node involvement, the patient was referred to radiation oncology for localized electron-beam therapy to his involved sites. 2700 cGy in 15 fractions over 16 days were administered to the hands and feet, 1800 cGy in 6 fractions over 7 days to the right knee, 4800 cGy in 17 fractions over 18 days to the right upper back, 2000 cGy in 10 fractions over 12 days to the penis and scrotal skin, and 3000 cGy in 15 fractions over 14 days to the forearms and central and lower back. In addition, one hyperthermia treatment was administered to the left palm, right foot, left foot, and right knee to intensify the effect of radiotherapy (Figure 2).

Prognosis: Minor skin toxicity secondary to therapy in the form of several bullae on the hands and feet were reported but resolved spontaneously. Overall, the patient saw significant improvement of his KS at all treated sites. He remains with some residual violaceous patches on his left palm, posterior arms, and right knee but there is no sign of recurrence at this time. Given the propensity of new lesions to appear after local field radiation therapy, he continues to follow up with his primary care physician every 3 months and at our office every 6 months.

Discussion:

Kaposi's sarcoma (KS), a rare neoplasm of abnormal vascular endothelial cells, was first reported by Moritz Kaposi in 1872. Since then, five subtypes of the disease, all with varying epidemiology, distribution, and prognoses have been described: classic KS, African cutaneous KS, African lymphadenopathic KS, immunosuppressive therapy or lymphoma associated KS, and AIDS-associated KS (Table 1). Patients that are HIV-negative, non-immunosuppressed, middle aged to elderly males of Mediterranean or Eastern European origin can be appropriately classified as classic KS.

Lesions in classic KS typically present as violaceous macules and patches evolving into nodules and plaques and most frequently involve the lower extremities or feet. Later, the arms and hands can become involved and rarely, the trunk, face, genitalia, and soft palate. Nonpitting edema may accompany the lesions. Visceral and lymph node involvement is rare but when present, the small intestine is the most likely site. The course in classic KS is slowly progressive if left untreated.

Treatment depends on the stage of the disease. For patients with only small, solitary lesions, local excision, cryotherapy, laser ablation, or intralesional interferon-alpha, vinblastine, or doxorubicin can be effective. In patients with larger lesions not amenable to surgery or in patients with many lesions, radiation therapy is the most commonly used and successful treatment modality. Previous studies investigating both local and extended field therapy with varying dose fractionation schedules that ranged from a single dose of 8 Gy to 30 Gy over 10 daily fractions showed complete response (CR) rates of 31-89%, with a median CR of 65%. This is comparable to the CR rate for intralesional interferon-alpha and chemotherapy which ranges from 50-70%. Most studies investigating radiation therapy demonstrate at least a partial response in all lesions (Table 2). Skin toxicity secondary to radiation in the form of blistering, dermatitis, and lymphedema is not uncommon and must be monitored for and treated appropriately. For patients with rapidly developing lesions (>10 in 1 month) or visceral involvement, systemic chemotherapy is the recommended therapeutic option. Prognosis for classic KS patients is favorable but given the propensity for new lesions to appear at previously treated sites, patients must be followed by their primary care physician regularly. Lymphoreticular malignancy (i.e. Hodgkin disease, non-Hodgkin lymphoma, leukemia) is about 10-20 times greater in KS patients and is another reason for close follow-up.

References:

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