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Metastatic Kaposi's Sarcoma with Perirectal Involvement Diagnosed with Endoscopic Ultrasound-Guided EchoBrush Cytology Sampling

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Key Words

Kaposi's sarcoma · Metastasis · Human immunodeficiency virus · Acquired immunodeficiency · Human herpesvirus 8 · Endoscopic ultrasound · EchoBrush

Abstract

AIDS-related Kaposi's sarcoma (KS) is a low-grade vascular tumor that occurs in association with human herpesvirus 8 infection. Here we report the case of a 21-year-old male with recently diagnosed cutaneous KS who presented with rectal bleeding and anal pruritus. Initial endoscopic evaluation was nondiagnostic. CT imaging showed diffuse lymphadenopathy including perirectal involvement which was suspicious for metastatic KS. Echoendoscopy with needle biopsies and EchoBrush sampling of the lymph nodes revealed spindle cells confirming metastatic KS. Treatment was initiated with liposomal doxorubicin resulting in rapid improvement of the skin lesions. After treatment completion, repeat CT imaging showed improved lymphadenopathy. No further rectal bleeding or perianal pruritus was reported. Although the EchoBrush has previously been used to aid in the diagnosis of pancreatic lesions, this report describes a novel use of EchoBrush to diagnose KS from perirectal lymph nodes.

Introduction

Kaposi's sarcoma (KS) is a low-grade vascular tumor of mesenchymal origin which often affects mucocutaneous sites although it can manifest anywhere in the body. The pathogenesis of KS has been linked to human herpesvirus 8 (HHV-8) infection [1]. Four distinct forms have been characterized including classic KS, endemic or African KS, organ transplant-associated KS and AIDS-related KS. HHV-8 has been found in all forms of KS [2]. Classic KS typically occurs in older men of Mediterranean, Eastern European or Jewish origin. Endemic or African KS is prevalent in sub-Saharan Africa and is not associated with immune deficiency. Organ transplant-associated KS occurs after solid organ transplantation. AIDS-related KS preferentially affects homosexual or bisexual men compared with women, children, heterosexual drug users, or transfusion recipients [3].

The exact mode of transmission of HHV-8 remains unclear. Suspected modes of transmission include saliva, sexual transmission, blood transfusions and solid organ transplantation [4]. Seroprevalence depends on geography, with higher rates documented in Africa compared to North America and Northern Europe. HHV-8 infects a variety of cell types including lymphocytes, endothelial cells and keratinocytes which are thought to play a role in the pathogenesis of the disease. It has been speculated that circulating HHV-8-infected T cells may account for the multicentric nature of the lesions [1]. Although HIV infection is not required for the development of KS, co-infection is linked with a higher incidence of the disease and a more aggressive clinical course.

AIDS-related KS was first described in 1981 and is the most common neoplasm associated with HIV infection [5]. It is an AIDS-defining illness and occurs more frequently in patients with lower CD4 counts. Factors not associated with developing AIDS-related KS include the duration of HIV infection and patient age, unlike in classic KS where age is the main risk factor [6]. AIDS-related KS frequently involves the skin, although extracutaneous spread is common and can also be seen in the absence of cutaneous disease. Cutaneous lesions most often arise on the lower extremities, face and genitalia. The lesions are typically papular but can also rarely be plaque-like and may occur in linear arrangements. Visually these lesions may appear red, purple, pink, or brown [7]. Extracutaneous sites of disease include the oral cavity, gastrointestinal (GI) tract and respiratory tract, although any organ system may be involved. Disease of the GI tract is typically asymptomatic but can also lead to weight loss, nausea and vomiting, malabsorption, lower GI bleeding, obstruction, diarrhea and abdominal pain [8]. The most common site of GI tract involvement is the small bowel, followed by the colon and stomach [9]. Here we report the case of a patient with AIDS-related KS presenting with lower GI bleeding and anal pruritus.

Case Report

A 21-year-old male with AIDS and newly diagnosed cutaneous KS was referred by his oncologist for evaluation of intermittent bright red blood per rectum and anal pruritus. He had only recently begun antiretroviral therapy and cutaneous KS had been diagnosed 2 weeks prior. Examination revealed diffuse erythema of the face and neck, two purpuric nodules on the hard palate, multiple dusky purple and red, nonblanchable, firm nodules on his back, chest, hands, feet, arms, legs, buttocks, and proximal nail folds. He had a benign abdomen and no palpable lymphadenopathy. Laboratory analysis showed a low CD4 count of 230/ μ l (reference range 481–1,464/ μ l) and a HIV viral load of copies/ml. His

hemoglobin was 13.9 g/dl (reference range 13.6–17.2 g/dl). On upper endoscopy, thickened antral folds with small erosions were seen although the biopsies were unremarkable. The colon showed patchy nonspecific erythema in the rectum and an anal fissure with normal biopsies. Contrast-enhanced CT scan of his chest, abdomen and pelvis revealed lymphadenopathy in the axillae, pelvis, perirectal and inguinal regions along with a 1.8 cm hypervascular left adrenal lesion which was suspicious for metastatic KS.

Based on these findings he underwent rectal endoscopic ultrasound (EUS) (Flex Sig Endoscope Olympus™ GUE160 radial echoendoscope) with fine needle aspiration (FNA) cytopathology sampling of the perirectal lymph node. Endoscopic visualization showed new areas of nodular erythema in the rectum. Forceps biopsies were taken. Rectal EUS revealed hypoechoic iliac and posterior perirectal lymph nodes ranging in diameter from 6 × 8 to 10 × 12 mm ([fig. 1](#)). Initially, four FNA passes were made into the largest lymph node using a Wilson-Cook™ 22-gauge FNA needle. Subsequently two additional passes were made using the Wilson-Cook™ 19-gauge FNA needle (ECHO-19). The first pass occurred in combination with the EchoBrush™ (Cook Medical, Bloomington, Ind., USA) ([fig. 2](#), [fig. 3](#)) to enhance cytologic yield while the second was done to obtain a core tissue sample. The mucosal rectal biopsies were nondiagnostic and immunohistochemical staining for human HHV-8 was negative. Likewise, the lymph node core biopsy was unremarkable. Cytologic examination of the sample using ECHO-19 and EchoBrush showed spindle cells which were consistent with the patient's known history of KS ([fig. 4](#)).

Based on these findings the patient was treated with 6 cycles of liposomal doxorubicin at 20 mg/m² every 21 days. He had a brisk improvement in cutaneous lesions after cycle 1. Following treatment a CT scan showed complete resolution of the adrenal lesion along with decreased axillary and pelvic lymphadenopathy. A transthoracic echocardiogram was normal. His rectal bleeding and perianal pruritus also resolved.

Discussion

AIDS-related KS is more common in men and tends to have a variable clinical course. Patient's with lower CD4 counts are more likely to be newly diagnosed with KS [6]. The causative agent is HHV-8. It is theorized that co-infection with HIV promotes the oncogenic capabilities of HHV-8, leading to the development of KS [1]. HHV-8 infects a wide variety of cells, including lymphatic cells and vascular endothelial cells, resulting in the production of lymphangiogenic growth factors. Histopathology of nodular KS reveals a predominance of spindle cells with narrow irregular channels containing erythrocytes as a defining feature [4]. Immunohistochemical staining for HHV-8 may be used to confirm the diagnosis [10]. GI involvement is seen in 40% of patients with untreated AIDS upon initial diagnosis of KS and portends a worse prognosis [11]. Other prognostic factors, in addition to the extent of tumor involvement, include immune status and the severity of systemic illness. A worse outcome is seen in patients with T1 disease (ulcerated KS, associated edema, nodular oral KS or visceral involvement), CD4 count <200/μl, positive serum HHV-8 DNA, a history of opportunistic infections, fevers, night sweats, weight loss, diarrhea for more than 2 weeks, a performance status <70, or any other HIV-related illness [12, 13]. Treatment includes highly active antiretroviral therapy for all patients with KS regardless of the extent of disease. Chemotherapy is considered for more advanced disease using liposomal doxorubicin as the first line of treatment [14, 15].

Although a high suspicion for GI tract involvement existed in our patient, the histopathologic diagnosis of KS remained elusive given the lack of classic endoscopic findings and nonspecific biopsy findings. The EchoBrush has been used in the past to enhance the diagnostic yield of EUS-guided FNA sampling of pancreatic cystic lesions [16, 17]. To our knowledge this is the first report using the EchoBrush to diagnose KS

from a solid perirectal lymph node. In summary, GI tract involvement is common in AIDS-related KS and is an important prognostic factor that influences treatment options and may require ultrasound-guided biopsies to confirm the diagnosis.

Disclosure Statement

None of the authors have received funding for this study or have conflicts of interest to disclose.

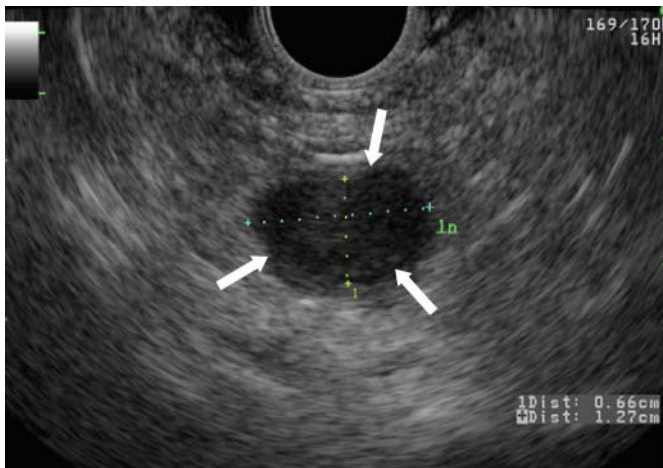


Fig. 1. Rectal EUS. Perirectal lymphadenopathy (arrows) identified using the Flex Sig Endoscope Olympus™ GUE160 radial echoendoscope. The hypoechoic node shown measures 10 × 12 mm.



Fig. 2. 19-gauge EchoBrush™ FNA needle (image courtesy of Wilson-Cook, Bloomington, Ind.; USA). The EchoBrush™ was used in combination with the Wilson-Cook™ 19-gauge FNA needle to enhance cytologic yield during lymph node sampling.

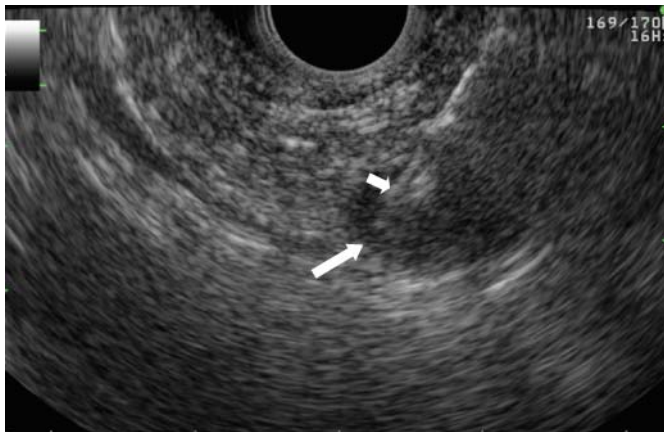


Fig. 3. FNA sampling of the perirectal lymph node. The perirectal lymph node (long arrow) was sampled using the Wilson-Cook™ 19-gauge needle in combination with the EchoBrush™ (short arrow).

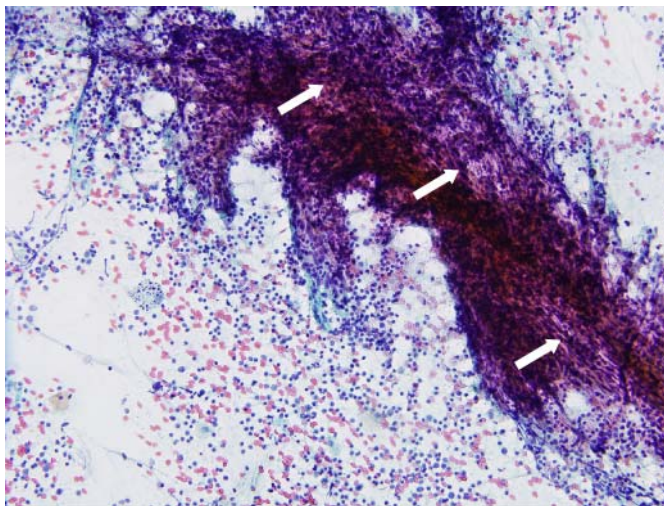


Fig. 4. Perirectal lymph node cytopathology. A predominance of spindle cells is demonstrated (arrows). Spindle cells are often known to form narrow irregular channels containing erythrocytes which are a defining feature of KS.

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