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Kaposi sarcoma in the gastrointestinal tract: Challenges in diagnosis and treatment - A case report

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Abstract:

Kaposi sarcoma is a vascular neoplasm involving the endothelial cells of blood and lymphatic vessels, associated with various aetiologies. While cutaneous manifestations are common, gastrointestinal involvement particularly in the stomach and colon is rare among HIV-infected individuals, accounting for only 0.2-1.2% of gastrointestinal malignancies. Epidemiologically, Kaposi sarcoma is more prevalent in males, typically between 50 and 70 years of age. We report a suspected case of gastrointestinal Kaposi sarcoma in a 22-year-old HIV-positive male presenting with chronic diarrhoea and significant weight loss. Upper and lower gastrointestinal endoscopy revealed dark red macular lesions in the stomach and infiltrative, ulcerative lesions with a reddish appearance in the sigmoid colon. This represents a rare case of gastrointestinal Kaposi sarcoma in a young individual, both in Vietnam and globally. Based on this case, we present a brief literature review of Kaposi sarcoma, with particular emphasis on gastrointestinal involvement in HIV-infected patients.

Keywords: **gastrointestinal malignancies, HIV/AIDS, Kaposi sarcoma.**

Classification number: **3.2**

1. Introduction

Human herpesvirus-8 (HHV-8), also known as Kaposi sarcoma-associated herpesvirus (KSHV), is a gammaherpesvirus that establishes lifelong latency in host cells and is primarily transmitted through saliva, though transmission via blood, sexual contact, and organ transplantation has also been documented. KSHV is associated with several malignancies, notably KS, primary effusion lymphoma, and multicentric Castleman disease. Recently, a new syndrome named KSHV inflammatory cytokine syndrome (KICS) was described in patients co-infected with HIV and KSHV. KICS is a rare and life-threatening inflammatory disorder associated with Human Herpesvirus-8 (HHV-8), primarily seen in immunocompromised individuals, especially those with HIV/AIDS [1].

Kaposi sarcoma is a multifocal angioproliferative disorder, classified into four main types: classic (sporadic), AIDS-related (epidemic), non-epidemic and endemic (primarily in Africa), and iatrogenic (post-transplant, immunosuppression-related) [2]. Diagnosis is typically confirmed by tissue biopsy. While management of superficial, non-painful lesions may include cryotherapy, electrocautery, surgical excision, or radiation therapy, treatment primarily involves antiretroviral therapy targeting HIV in AIDS-related KS [3, 4]. Gastrointestinal KS associated with HIV is considered an AIDS-defining illness; however, it is rarely reported in Vietnam.

Kaposi sarcoma of the stomach and colon is a rare manifestation in HIV-infected patients who have not yet progressed to the AIDS stage. Among such individuals, chronic diarrhoea and weight loss are the most common presenting symptoms that prompt gastrointestinal evaluation. On clinical examination, patients often exhibit non-specific signs resembling those of inflammatory bowel disease, without any overt features suggestive of KS. Gastric endoscopy typically reveals characteristic red macular lesions, while colonoscopy may show inflammatory and ulcerative changes. Definitive diagnosis and disease staging are achieved through histopathological analysis and immunohistochemical staining, particularly for HHV-8. Treatment involving a combination of chemotherapy

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and immunotherapy has shown favourable outcomes in managing gastrointestinal KS [5, 6].

Gastrointestinal KS in HIV-infected patients at the AIDS stage is a rare clinical entity. Diagnosis is primarily based on endoscopic biopsy and histopathological evaluation. However, routine pre-endoscopy HIV testing is often impractical in many clinical settings. Therefore, it is crucial to consider HIV testing when characteristic red macular lesions are observed on the gastrointestinal mucosa during endoscopy, as these may be indicative of underlying KS [7, 8]. This case report aims to illustrate the diagnostic complexity of gastrointestinal KS in a young patient with HIV and compare it to previously published data.

2. Case presentation

A 22-year-old male presented with a three-month history of dull abdominal pain and a palpable mass in the right lower abdomen, which had been noticeable for the past two months. He also reported intermittent episodes of vomiting and frequent diarrhoea. Urinary function was normal. The patient had a poor appetite and severe weight loss, but no fever. On physical examination, he was thin and pale. Cardiopulmonary auscultation revealed no abnormalities. Abdominal examination revealed a soft, non-tender abdomen without signs of peritoneal irritation. No visible bowel loops or peristaltic waves suggestive of intestinal obstruction

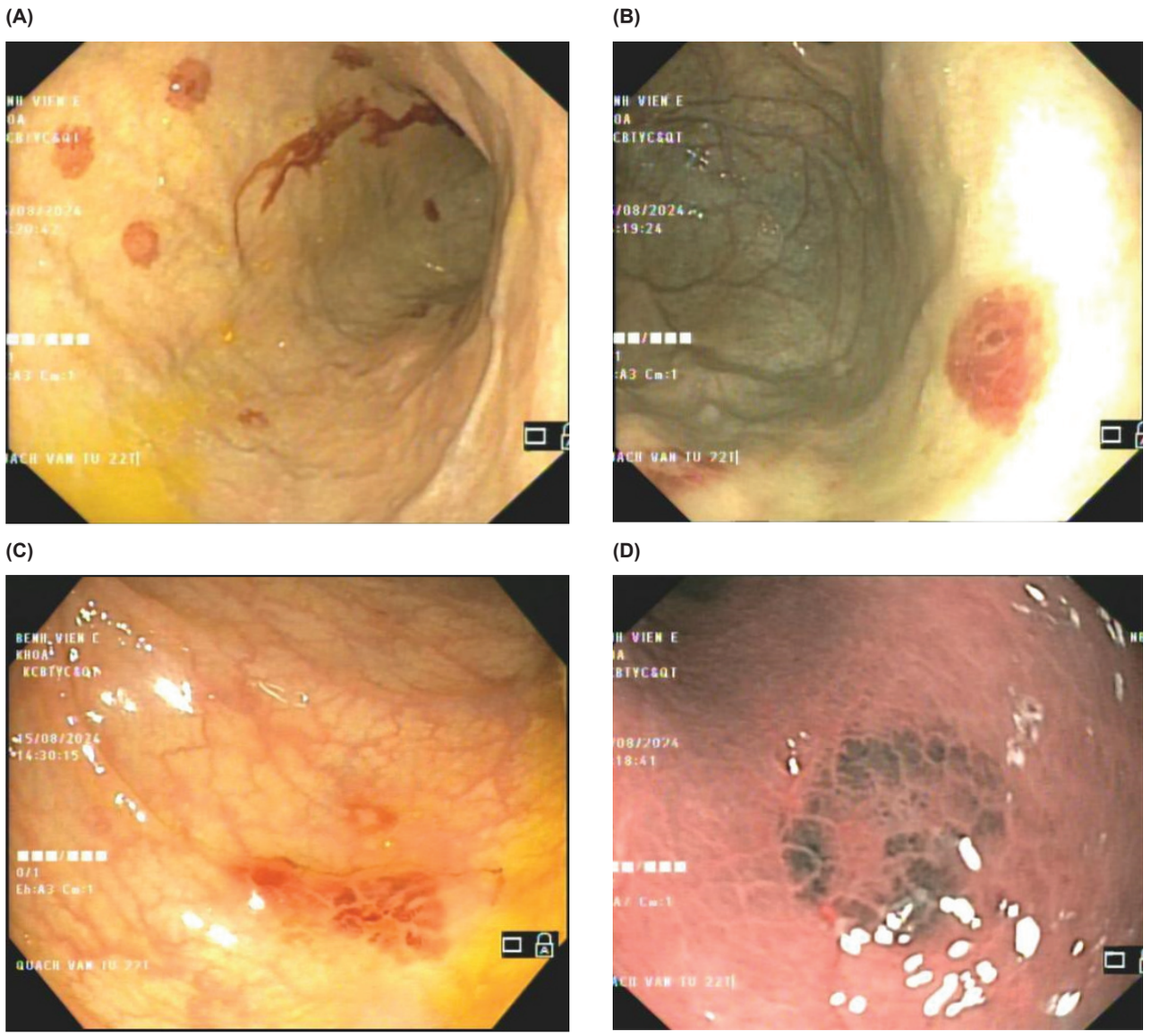

Fig. 1. Upper gastrointestinal endoscopic findings: red patch lesions in the body of the stomach (A), fundus (B), antrum (C), narrow-band imaging findings (D), indicated by black arrows.

were noted. Rectal examination was unremarkable. Routine haematologic and biochemical tests were within normal limits, except for a haemoglobin level of 91 g/dl. HIV ELISA testing was positive. Sputum smear for acid-fast bacilli was negative. Serologic tests for hepatitis B, hepatitis C, and syphilis were all non-reactive. The CD4 + T-cell count was 173 cells/mm^3. Chest X-ray and abdominal ultrasound were normal. Neck ultrasound revealed multiple lymph nodes posterior to the sternocleidomastoid muscle, with the largest one measuring approximately 28×19 mm. These lymph nodes still displayed normal internal architecture. Upper and lower gastrointestinal endoscopy revealed dark red macular lesions in the stomach and infiltrative, ulcerative lesions with a reddish appearance in the sigmoid colon (Figs. 1 and 2). However, histopathological examination of the gastric biopsy was conclusive: haematoxylin and eosin (H&E) staining and immunohistochemistry for HHV-8 were both negative (Fig. 3). Only inflammatory cell infiltration and submucosal red blood cell

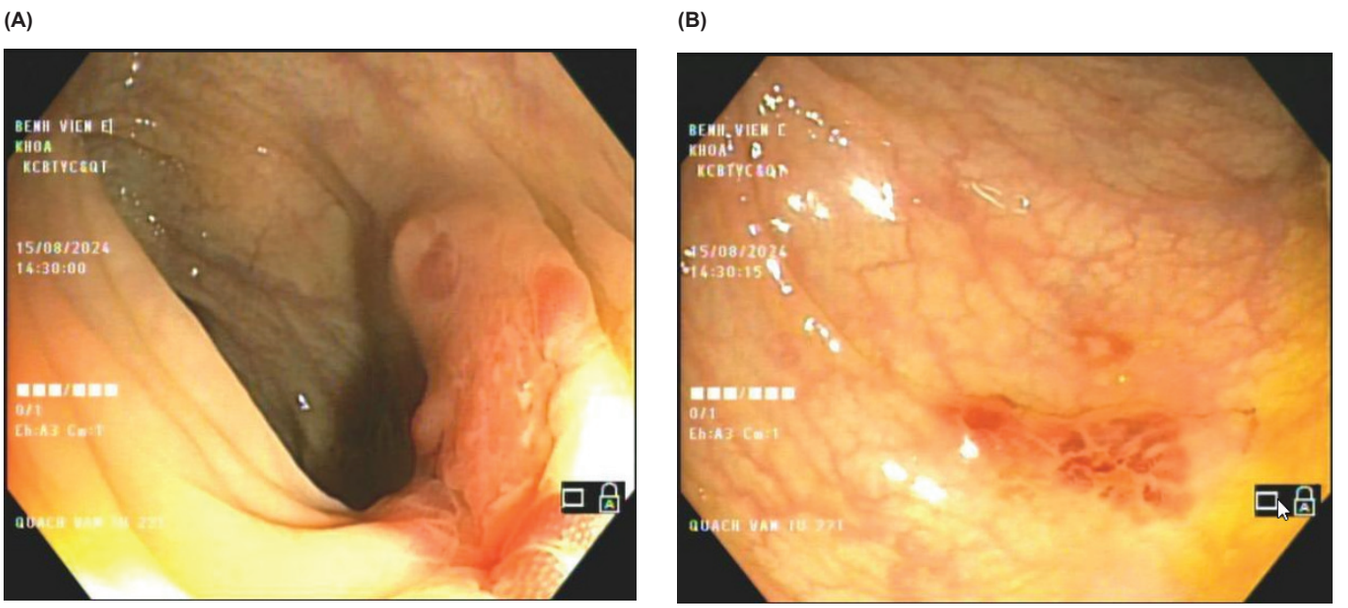

Fig. 2. Colonoscopy findings: ulcerative lesion in the sigmoid colon (A), erythematous patch in the sigmoid colon (B), indicated by black arrows.

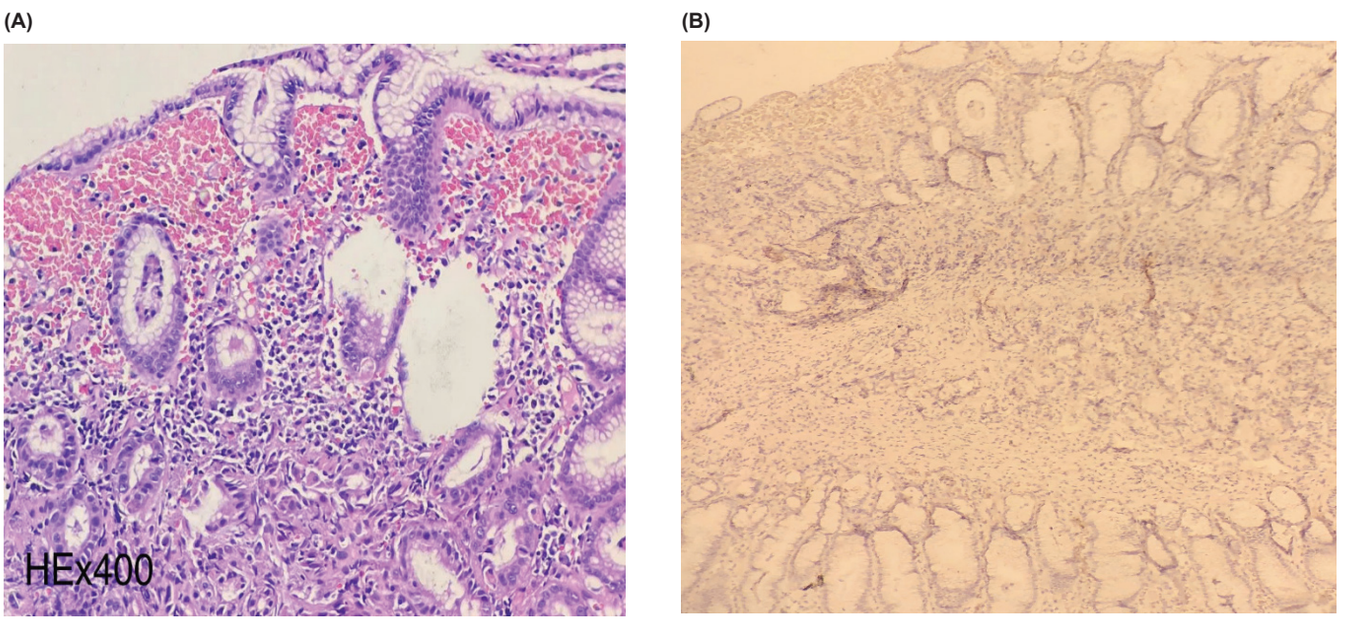

Fig. 3. Histopathology findings: extravasated red blood cells and scattered chronic inflammatory cells on haematoxylin and eosin stain, with no spindle cell proliferation observed at ×400 magnification) (A); negative immunohistochemical staining for HHV-8 (B).

extravasation were observed, with no evidence of spindle cells. The patient was subsequently referred to the National Hospital of Tropical Diseases for further treatment under an appropriate therapy.

3. Discussion

Gastrointestinal KS (GI-KS) represents a diagnostic challenge due to its variable presentation and the often-subtle findings on histology, especially in the absence of cutaneous lesions. It occurs in up to 50% of AIDS patients with cutaneous KS, but may also be the initial presentation of HIV/AIDS in some individuals, as seen in our patient. As immunodeficiency progresses, patients may present with systemic symptoms such as cachexia, persistent fever, and anaemia. Clinical manifestations may include abdominal pain, nausea, vomiting, diarrhoea, peripheral lymphadenopathy, gastrointestinal bleeding, or even intestinal perforation. Endoscopy combined with biopsy enables histopathological and immunohistochemical analysis for diagnosis of GI-KS. The absence of skin involvement and the presence of non-specific gastrointestinal symptoms such as diarrhoea and weight loss made diagnosis reliant on endoscopic and clinical suspicion. The endoscopic appearance of characteristic dark red macular and ulcerative lesions was strongly suggestive of KS. However, histopathology was inconclusive, lacking the hallmark spindle cell proliferation and HHV-8 positivity. This underlines a well-documented limitation in diagnosing GI-KS, particularly in haemorrhagic lesions where extensive red blood cell extravasation may obscure typical features. Therefore, in some cases, the diagnosis of gastrointestinal KS relies primarily on characteristic endoscopic findings and histopathological examination with H&E staining, even when HHV-8 immunohistochemistry yields a negative result. This highlights the fact that HHV-8 immunohistochemistry, while useful, may not always be positive, and clinicians should consider the overall clinicopathological context when establishing a definitive diagnosis. In our case, despite the negative HHV-8 immunohistochemistry, the endoscopic appearance was highly characteristic of KS. Therefore, the diagnosis was pursued in that direction, consistent with previous reports emphasising the diagnostic value of endoscopic features in select cases with inconclusive histopathology.

In haemorrhagic forms of KS, the proliferation of KS cells in the mucosa is often accompanied by extensive extravasation of red blood cells. This haemorrhagic background can be so prominent that it may obscure the underlying histopathological features of KS; biopsy specimens can be dominated by blood components, obscuring diagnostic features, thus making the diagnosis more challenging [1]. J. Carmo, et al. (2017) [6] and Z. Bozdag, et al. (2023) [9] reported similar GI-KS cases, primarily in older males with HIV. Unlike our patient, these reports often featured small intestinal involvement. Our case adds to the limited literature on young patients with predominant gastric and colonic lesions. In Vietnam, since the first HIV case was reported in Ho Chi Minh city in 1990, it is estimated that approximately 267,000 people have been diagnosed with HIV/AIDS to date. Despite this number, very few cases of AIDS-related KS have been documented. According to a ten-year study by J. Carmo, et al. (2017) [6], thirteen patients were diagnosed with gastrointestinal KS. Males accounted for 77% of the cases, with an average age of 55, and most of them (62%) were native Africans. In most cases (77%), GI-KS was associated with HIV/AIDS. This research revealed the presence of flat, elevated lesions characterised by a slightly raised mucosal surface in the stomach. Furthermore, according to the authors, gastrointestinal Kaposi sarcoma shows a high prevalence, particularly involving the upper gastrointestinal tract.

The American Cancer Society has reported that during the peak of the AIDS epidemic in the United States, the incidence of Kaposi sarcoma increased more than twentyfold compared to pre-epidemic levels. At its peak, the disease affected 47 individuals per million populations annually, with a 50% lifetime risk for individuals living with HIV. Since then, the incidence has declined significantly to approximately 6 cases per million people per year. The widespread use of antiretroviral therapy in HIV-positive patients has contributed significantly to the control and prevention of this disease.

The progression of KS associated with AIDS depends on the tumour burden, the degree of immunosuppression, the presence of opportunistic infections, and the management of HIV infection [9]. The AIDS Clinical Trials Group of the National Institute of Allergy and Infectious Diseases developed a system to predict the prognosis of KS. This system evaluates three factors: tumour extent, immune system status, and the presence or absence of systemic illness. A favourable prognosis is expected when the CD4 count is greater than 200 cells/mm^3, lesions are limited to the skin, and there are no systemic symptoms such as unexplained fever, night sweats, or weight loss [10]. In our case, after two months of antiretroviral therapy, the patient's CD4 count increased from 138 to 176 cells/mm^3, indicating partial immune recovery.

Regarding the differential diagnosis, the presentation may mimic inflammatory bowel disease, gastrointestinal lymphoma, cytomegalovirus colitis, or other vascular lesions. This necessitates a broad differential and emphasises the importance of endoscopy and biopsy. In addition, due to the vascular nature of KS lesions, endoscopic biopsy may induce significant bleeding. Therefore, the use of enhanced imaging techniques like narrow-band imaging and a cautious biopsy approach is advised.

Most patients with Kaposi sarcoma are infected with the human immunodeficiency virus. The advent of highly active antiretroviral therapy has significantly reduced the incidence of AIDS-associated KS. While cutaneous manifestations are the most common, gastrointestinal involvement is clinically significant and potentially life-threatening due to complications such as perforation and bleeding. Gastrointestinal KS is primarily observed in untreated stage 3 HIV patients. The prognosis for AIDS-related gastrointestinal KS is generally poor, with a six-month survival rate of approximately 40% [5, 11]. Upper gastrointestinal involvement is often asymptomatic, and endoscopic findings can be variable. These patients typically have a worse prognosis due to delayed diagnosis and advanced disease at the time of presentation.

4. Conclusions

Gastrointestinal Kaposi sarcoma often presents without specific symptoms and may exhibit a variety of endoscopic lesion appearances. In cases with typical or suspicious endoscopic findings during gastrointestinal evaluation, HIV testing should be considered. In this case, histopathological examination using H&E staining and immunohistochemistry did not reveal typical features of Kaposi sarcoma, leaving the diagnosis open to further investigation.

CRediT author statement

Hong Anh Vu: Conceptualisation, Writing - original draft preparation, Reviewing and Editing; Van Co Le: Visualisation, Data curation; Mai Ngoc Hoang: Methodology, Software.

COMPETING INTERESTS

The authors declare that there is no conflict of interest regarding the publication of this article.

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