Successful treatment of bacillary angiomatosis with oral doxycycline in an HIV-infected child with skin lesions mimicking Kaposi sarcoma

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CASE REPORT

A 12-year-old boy presented for treatment of widespread papules and fungating, ulcerating nodules (Fig 1). Seven months before referral, HIV was diagnosed, and he started antiretroviral therapy (ART), with a baseline CD4 count of 76 cells per microliter (5%). Per history, the rash began 1 month after ART initiation and progressively worsened in the 6 months after ART therapy started. The patient was referred to the Baylor Tanzania Center of Excellence in Mbeya, Tanzania because of concern of possible Kaposi sarcoma (KS).

A skin biopsy was performed. The patient underwent chest radiography, abdominal ultrasound scan, and liver/renal function tests, the results of which were normal. A complete blood count was notable for severe anemia (hemoglobin level of 4.0 g/dL) requiring blood transfusion. The clinical diagnosis of bacillary angiomatosis (BA) was favored, and the patient was prescribed doxycycline, 100 mg twice daily. Although KS was also in the clinical differential diagnosis, chemotherapy was withheld pending biopsy results. Histologically, the lesion biopsy result was consistent with BA, and bacilli were observed with Warthin-Starry staining.

At the 1-week follow-up appointment, a dramatic improvement in the appearance of the lesions was noted (Fig 2). The patient continued doxycycline with continued improvement over 7 additional weeks, with near complete resolution of the sores and lesions (Fig 3).

Abbreviations used:

ART:	antiretroviral therapy
BA:	bacillary angiomatosis
HHV-8:	human herpes virus 8
KS:	Kaposi sarcoma

DISCUSSION

BA is a rare multisystem bacterial infectious vasculoproliferative disorder caused by *Bartonella henselae* and *Bartonella quintana* and is most commonly seen in HIV-infected individuals with CD4 counts less than 200 cells per microliter.[1] BA commonly presents in the skin but may affect almost any visceral organ, including liver, spleen, or nasal cavity.[2] Although there is no consensus treatment for BA, clinicians experienced in treating this condition recommend therapy with oral erythromycin or doxycycline for 8 to 12 weeks to avoid relapses.[3]

KS is a rare angioproliferative opportunistic infection caused by human herpes virus 8 (HHV-8) also seen in HIV-infected patients with low CD4 counts. The overlapping constellation of cutaneous manifestations of BA and KS make them clinically indistinguishable from each other when presenting as single or multiple violaceous papules, nodules, plaques or tumors.[4] Occasionally, clinical clues can lead toward one diagnosis or the other. KS may cause prominent lymphedema of the legs and oral lesions. BA may have a very rapid onset with swift growth of lesions, which may occur with immune reconstitution inflammatory syndrome, further complicating

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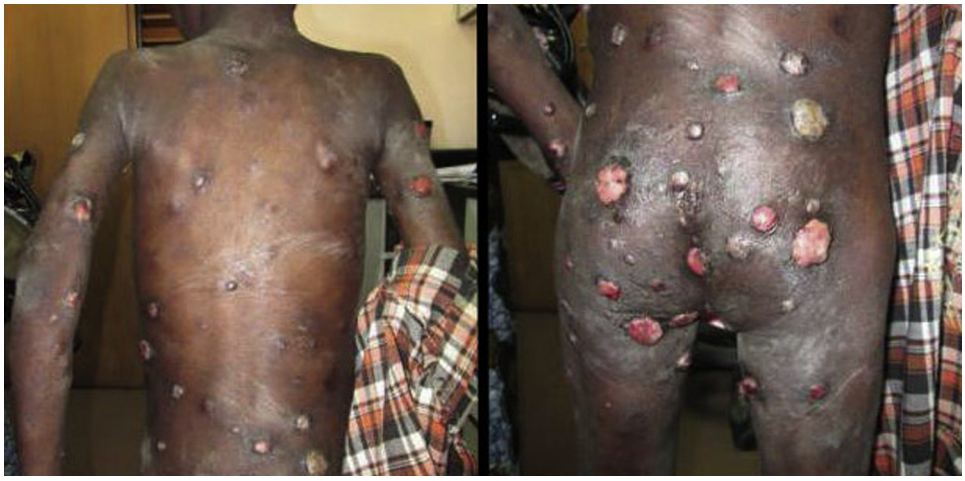

Fig 1. Clinical images from patient at presentation and after treatment with oral doxycycline. This case shows BA presenting with widespread papules and fungating, ulcerating nodules mimicking KS.

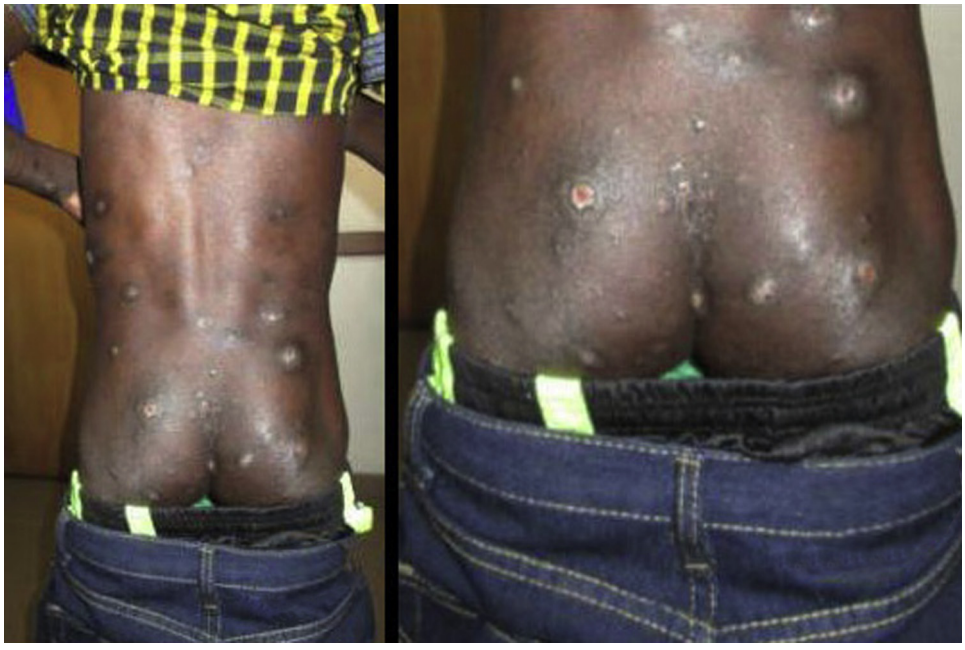

Fig 2. A dramatic improvement in the appearance of the cutaneous lesions was noted within 1 week of treatment with oral doxyxycline.

the difficulty in distinguishing these entities without pathology. However, KS can also develop rapidly in severely immunocompromised patients and during immune reconstitution, and BA can have oral lesions that mimic KS. In addition, other HIV-associated dermatologic conditions, such as disseminated mycobacterial or fungal infections can have similar presentations to those of KS or BA.

A study on the seroprevalence of HHV-8 in a general population of Ugandan children suggests that infection with the virus often occurs during early childhood and reaches a level of approximately 50% before puberty.[5] Tanzania, like other East African countries, has a high HHV-8 seropositivity rate, with one study estimating the prevalence of evidence of HHV-8 infection to be 66% among adults.[6] In Malawian children, HIV infection has been significantly associated with KS with an estimated odds ratio of 93.5, emerging as one of the most common pediatric cancers in sub-Saharan Africa in the context of the HIV epidemic.[7]

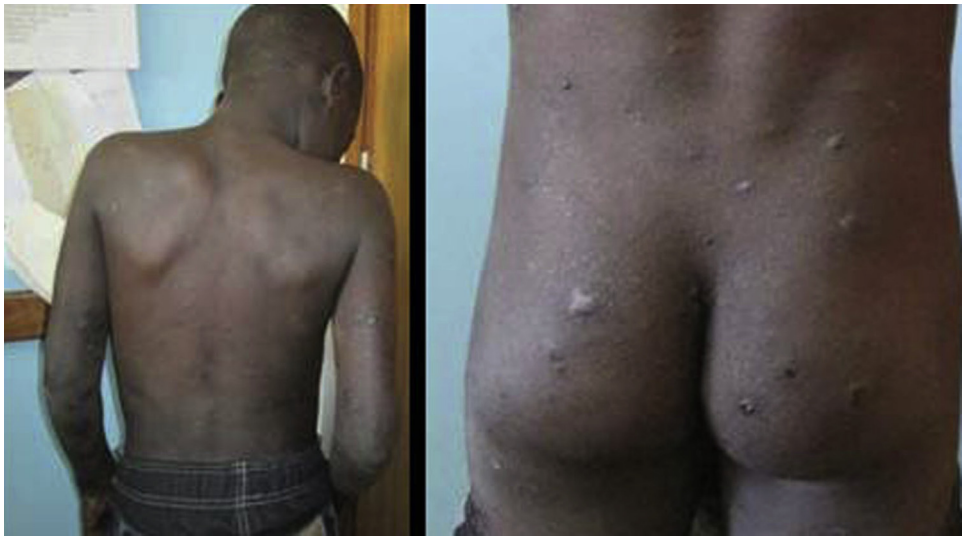

Fig 3. The patient's skin showed near complete resolution of the sores and lesions after 8 weeks of treatment with oral doxycycline.

Given the frequency of KS in this clinical scenario and the aggressive nature of KS, particularly in children, health care providers in many regions of Africa are often correct when they render a clinical diagnosis of KS and begin chemotherapy, whereas other potential diagnoses such as BA may not be considered. The differentiation of BA and KS histologically may still be difficult in early lesions, particularly if HHV-8 immunostaining or Warthin-Starry staining are not available. BA and KS can also present simultaneously, further complicating the clinical diagnosis, as antibiotic therapy may resolve the BA but not treat the KS and associated systemic symptoms. Conversely, BA lesions in a patient being empirically treated with chemotherapy for KS may initially respond because of the vascular nature of BA lesions, but the lesions would likely not completely resolve, creating a clinical quandary.[8]

A skin biopsy reviewed by a dermatopathologist with special stains is necessary to definitively differentiate between BA and KS; however, this is not often available in the settings in which these patients present. In those cases in which a patient cannot be definitively diagnosed, and the clinical differential diagnosis includes both BA and KS, we propose that initial empiric treatment with erythromycin or doxycycline may be a viable option. Although a study assessing the efficacy of empiric erythromycin or doxycycline therapy in cases such as this has not yet been performed, both antibiotics are often readily available, even in resource constrained settings. If the patient does have BA, this therapy typically leads to complete resolution of the BA with minimal negative side effects and may result in a response in as little as 7 days, as in the case of our patient. The rapid clearance of BA with doxycycline observed by our patient is not unusual and has been previously reported.[9] Ultimately, if the patient does not respond to empiric erythromycin or doxycycline, the clinician may confidently proceed with treatment for KS or other conditions.

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