Urology Case Reports 51 (2023) 102554

Contents lists available at ScienceDirect

Urology Case Reports

journal homepage: www.elsevier.com/locate/eucr

Inflammation and infection

Penile necrosis due to monkeypox

María Carolina Moreno-Matson [a,*], María A. Ocampo [a,b], Dayana Sáenz Rengifo [c], Hernán Patricio Valero [d]

[a] School of Medicine and Health Sciences, Universidad del Rosario, Bogotá, Colombia
[b] Department of Urology, School of Medicine and Health Sciences, Universidad del Rosario, Bogotá, Colombia
[c] Department of Urology, Universidad Nacional de Colombia, Bogotá, Colombia
[d] Department of Urology, Hospital Universitario Mayor Méderi, Bogotá, Colombia

ARTICLE INFO

Keywords:
Monkeypox
HIV
Penile necrosis
Genitourinary lesions
Immunodeficiency

ABSTRACT

Since 2022 Monkeypox virus (MPXV) infection incidence of cases has increased. Genitourinary lesions and penile edema are one of the main causes of emergency room visits. We aim to describe a 36-year-old man with MPXV infection and newly diagnosed with HIV and low $CD4^+$ count, who developed a rapidly extensive penile necrosis. Extensive surgical debridement was performed and necrosis compromise was confirmed in the histopathological findings. We provide novel forms of presentation of MPXV, improving data collection and awarding health workers for a correct differential diagnosis.

1. Introduction

Human Monkeypox (MPX) is a zoonotic disease caused by the monkeypox virus (MPXV).[1] In 1970 was isolated in humans for the first time and it is endemic in Central and West Africa,[1] but since May 2022 an increasing incidence of cases has been reported in almost 87 non-endemic countries.[1] It is transmitted between humans through close contact with skin lesions, fomites, droplets, or fluids.[1] The majority are homosexual men, aged 30–39 years, and it has been postulated that Human Immunodeficiency Virus infection (HIV) with severe immunosuppression could support infection or aggravate symptoms.[2–4] MPX infections have been described as a spectrum of clinical presentations from mild to severe, and genitourinary lesions like penile edema are one of the main symptoms prompting medical consults.[1,] There are no case reports of penile necrosis associated with MPX infection reported in the literature. We aim to describe the first case of penile necrosis in a patient with a HIV/MPXV coinfection.

2. Case report

A previously healthy 36-year-old man, Fitzpatrick phototype V, non-smoker with confirmed MPXV infection developed penile necrosis compromise. He visited the emergency room (ER) due to a progressively worsening rash and painful umbilicated papules with a necrotic center disseminated through the face (Fig. 1a), which began four days before, associated with low-grade fever. Three days later the lesions spread to the trunk and extremities (Fig. 1b) with penile and scrotal edema, and penile dark coloration (Fig. 1c). Before consulting the ER, a polymerase-chain-reaction test (PCR) was done for MPXV, which was positive and confirmed the diagnosis. Physical examination revealed widespread umbilicated pox-like lesions, with palpable inguinal lymphadenopathy, swollen penis, and scrotum with indurated areas. Extended studies were performed with positive serum cryptococcal antigen, new HIV diagnosis with an elevated viral load (644.690 copies/mL), low $CD4^+$ count (9 cells/cm^3); and hidden hepatitis B infection. The remaining sexually transmitted infection studies (STIs) were negative. During in-patient treatment he presented penile necrosis with increased edema of the foreskin, penis, and scrotum, therefore he was taken to surgical debridement from the foreskin to the base of the penis and pubis, with evidence of necrotic penile skin without scrotal necrosis, emphysema nor purulent drainage (Fig. 1d).

Histopathological analyses of the specimen revealed extensive necrosis of both superficial and deeper tissues, with evidence of polymorphonuclear infiltration and intracytoplasmic eosinophilic inclusion suggesting viral changes related to poxvirus infection (Fig. 2).

Postoperative care was assured by a multidisciplinary team. He had persistent fever despite the management with broad-spectrum antibiotics and antifungals (Vancomycin, piperacillin/tazobactam, and amphotericin B) administered parenterally, supportive measures, and wond cares by the institutional wound clinic. The surgical cultures were

* Corresponding author.
E-mail addresses: mariacarom9608@gmail.com, mariacaro.moreno@urosario.edu.co (M.C. Moreno-Matson).

https://doi.org/10.1016/j.eucr.2023.102554
Received 21 August 2023; Received in revised form 31 August 2023; Accepted 5 September 2023
Available online 12 September 2023

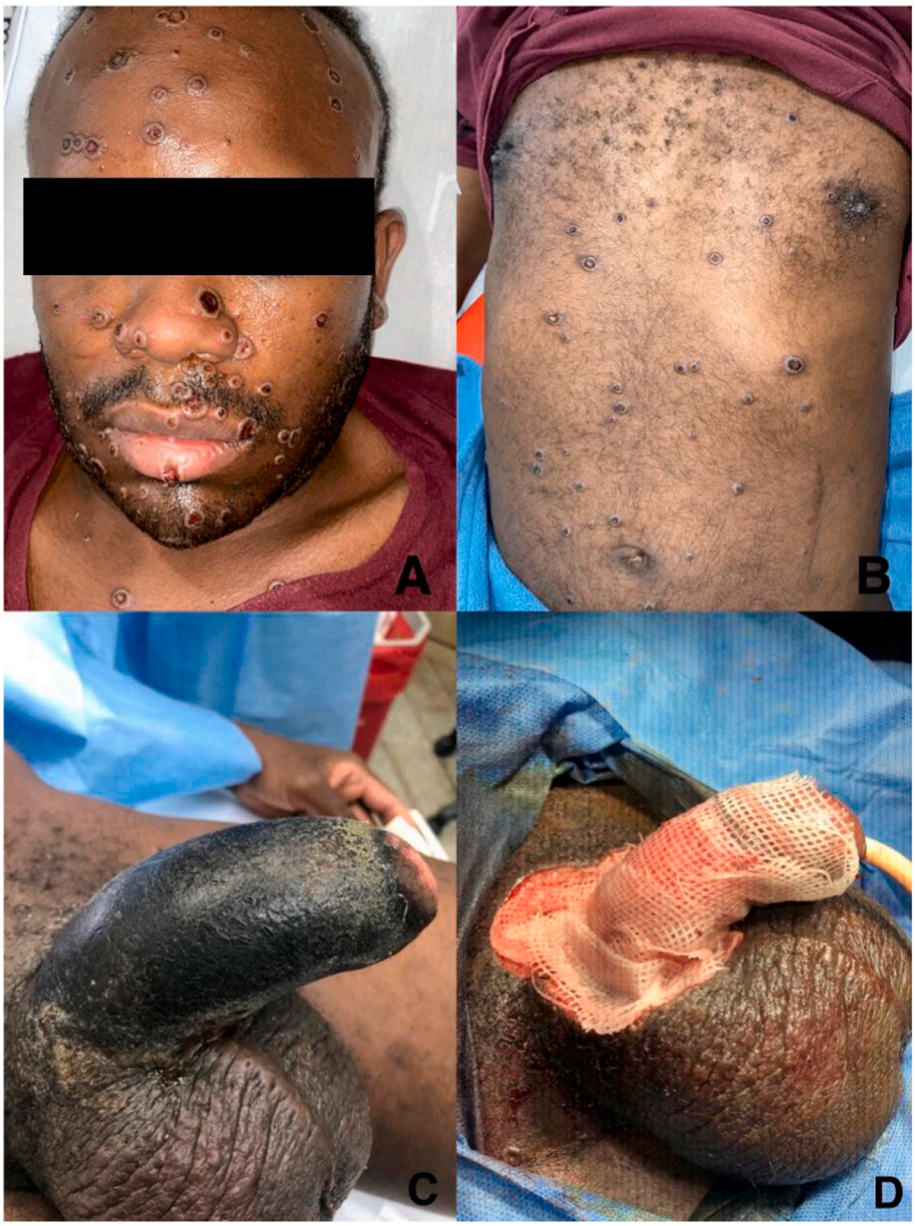

Fig. 1. A: Umbilicated papules on the forehead, the lips, and perioral region. B: Umbilicated papules on the trunk. C: Penile necrosis. D: Post-surgical changes and an umbilicated papule in the right inguinal region.

negative and a contrasted pelvis MRI was performed showing inflammatory subcutaneous cellular tissue changes, without collections or abscesses (Fig. 3). His general condition worsened despite these treatments and he died in multiple organ failure states four weeks after admission.

3. Discussion

MPX infections have been described as a spectrum of clinical presentations from mild to severe. The most recent studies has described genitourinary involvement in some cases.[1]

Gomez-Garberi et al.[1] described 14 cases of men with confirmed MPXV infection and genital area involvement. Most of them were HIV-positive and the main reason for consulting was lesions in the genitourinary area, comparable to our case. Furthermore, Patel et al.[5] described a series of 197 patients with MPXV with genitourinary involvement, but none of them presented penile necrosis.[1] The median age was 38 years, with an interquartile range of 32–42 years,[1] similar to our patient. They described penile swelling and rectal pain as the most frequent symptom for hospital admission, equal to our case in which the main reason of the patient to go to the ER was the penile edema and the umbilicated lesions.

As mentioned above, there have been described associations between MPX infection severity and HIV. *de Sousa* et al.[3] described a recent case of a 24-year-old man with non-medical history who had PCR-confirmed MPX infection concomitant with newly diagnosed HIV infection, identical to our case. The remaining STIDs were negative and he presented fatigue, anal pain, fever, and umbilicated papules in the face, trunk and a grouped whitish papules on the perianal area in a "kissing lesion distribution". The authors attributed the severity of the disease and the form of presentation to the HIV co-infection, and considered that the distribution of the lesions might be related to the local inoculation of the virus.[3]

Mubenga LE, Maheshe G, Murhula A et al.[4] described a case of a 47-year-old man with HIV infection and low CD4 count (less than 200 cells/cm^3) who presented penile gangrene. A total penectomy was

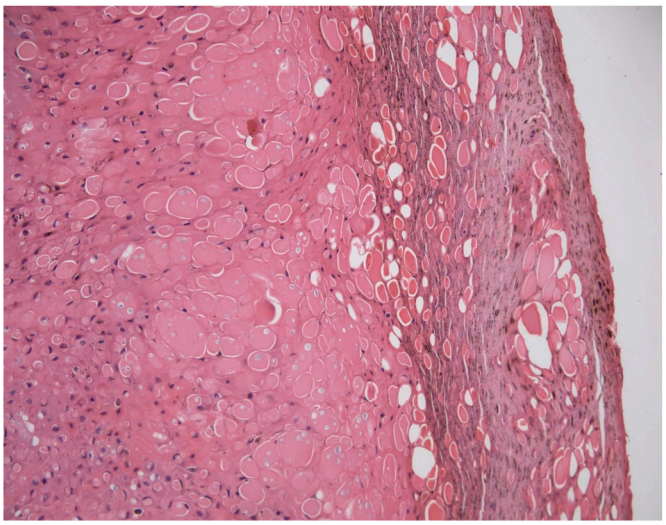

Fig. 2. Histopathological findings. A: Hematoxylin and eosin stain with poxvirus inclusions.

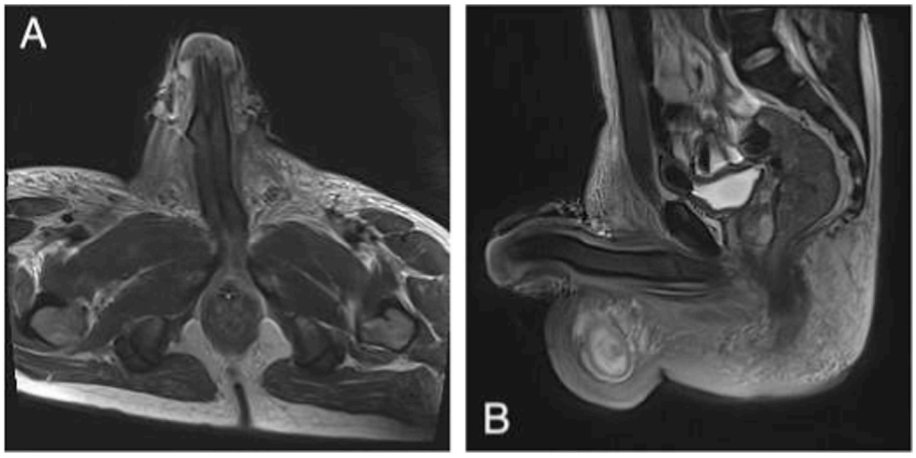

Fig. 3. Magnetic resonance imaging shows marked thickening of subcutaneous cellular tissue of the penis and tunica albuginea. A: Coronal plane. B: Sagittal plane.

performed, with evidence of extensive necrosis of both superficial and deeper tissues in the histopathological findings. The authors attributed the cause of penile gangrene to the HIV infection, but the mechanisms were unclear and conferred to multifactorial causes.[4]

In our case the patient had HIV coinfection and a low $CD4^+$ count similarly; and when the edema increased and penile necrosis appeared, an extensive surgical debridement was performed given the differential diagnosis of Fournier's gangrene, ruled out by the surgical and histopathological findings.

The genitourinary lesions that have been described in the literature are penile edema, umbilicated lesions, lymphadenopathies, perianal abscesses and/or proctitis.[1,5] Until now, no case of penile necrosis associated with MPX infection has been reported.

The most similar case according to a necrotic compromise in relation to MPX infection was described by Boesecke et al.[2] who illustrated a case of a 40-year-old man with a nasal red area that progressed to necrosis. The remaining STIDs were positive for syphilis and an advanced HIV infection with low $CD4^+$ count; and presented typical MPX lesions spread through the body with infection of the penis and oral mucosa, but they don't mention any necrotic compromise in genital area.

We consider Monkeypox/HIV co-infection might explain the heterogeneity forms of presentations from mild to severe, to a dysregulated immune system response that could facilitate the worst presentation of the disease in the setting of severe immunosuppression and untreated HIV infection[4,5] But it is necessary to keep expanding the data on different clinical presentations of this new human disease to establish a direct relationship between penile necrosis and MPXV infection, however, this case shows the potential severity of this new disease.

4. Conclusions

There are no cases of penile necrosis associated with MPX infection reported in the literature. Therefore urologists need to be aware of this disease's presentation for a correct differential diagnosis and a proper approach to the genitourinary lesions.

Source of study

Urology Department, Méderi University Hospital.

Conflicts of interest

No conflicts of interest nor financial conflicts to declare.

Funding

No funding statements to declare.

Author's contributions

The authors confirm contributions to the article as follows: Conceptualization and methodology: MC Moreno-Matson. Data collection and consent sign: MC Moreno-Matson. Writing: MC Moreno-Matson, MA Ocampo, D Sáenz-Rengifo, H Valero.

Ethical approval

Patient signed a written consent to participate, use his photograph, and be published. This study was approved by the Institutional Ethics Committee.

References

1. Gomez-Garberi M, Sarrio-Sanz P, Martinez-Cayuelas L, et al. Genitourinary lesions due to Monkeypox. *Eur Urol.* 2022;82(6):625–630. https://doi.org/10.1016/j.eururo.2022.08.034.
2. Boesecke C, Monin MB, van Bremen K, Schlabe S, Hoffmann C. Severe Monkeypox-virus infection in undiagnosed advanced HIV infection. *Infection.* 2022;50(6):1633–1634.

3. De Sousa D, Patrocínio J, Frade J, Correia C, Borges-Costa J, Filipe P. Human Monkeypox coinfection with acute HIV: an exuberant presentation. *Int J STD AIDS*. 2022;33(10):936–938.
4. Mubenga LE, Maheshe G, Murhula A, Chimanuka D. Penile gangrene in a HIV patient. *Afr J Urol*. 2017;23(2):175–178. https://doi.org/10.1016/j.afju.2016.09.005.
5. Patel A, Bilinska J, Tam JC, et al. Clinical features and novel presentations of human Monkeypox in a central London Centre during the 2022 outbreak: descriptive case series. *BMJ*. 2022. https://doi.org/10.1136/bmj-2022-072410.