



Inflammation and infection

## Crossing genitourinary limits: First case of monkeypox diagnosed by a urology service in Mexico. A diagnostic challenge

César A. Silva-Mendoza<sup>a,\*</sup>, Alec Anceno<sup>a</sup>, Daniel R. Magdaleno-Rodríguez<sup>a</sup>, Pedro A. Alvarado-Bahena<sup>a</sup>, Héctor A. Miranda-Blasnich<sup>a</sup>, Marco A. Ascencio-Martínez<sup>a</sup>, Carlos D. Silva-Villarreal<sup>c</sup>, Alyx A. Garibay-Aponte<sup>b</sup>, Alicia Valdez-Gaona<sup>b</sup>, Abigail Granada-Vigueras<sup>b</sup>, Fernando Fernández Varela-Gómez<sup>b</sup>, Jorge G. Morales-Montor<sup>a</sup>

<sup>a</sup> Department of Urology, Hospital General Dr. Manuel Gea González, Mexico City, Mexico

<sup>b</sup> Faculty of Medicine, Universidad Nacional Autónoma de México, Mexico Escolar 411A, Copilco Universidad, Coyoacán, 04360, Mexico City, Mexico

<sup>c</sup> Faculty of Medicine and Biomedical Sciences, Universidad Autónoma de Chihuahua, Circuito Universitario 31109, Campus Uach II, 31125, Chihuahua, Mexico

### ABSTRACT

This case is the first documented instance of genitourinary monkeypox (Mpox) diagnosed by a urology service in Mexico, emphasizing the role of urologists in managing atypical genitourinary infections. A 28-year-old homosexual male with HIV developed penile swelling and pustular lesions, confirmed as MPXV infection by PCR. Symptomatic management was initiated, and the patient was referred for tecovirimat therapy under a clinical trial.

Mpox lesions often mimic sexually transmitted conditions, leading to diagnostic delays. Limited awareness among healthcare providers compounds these challenges. Urologists must consider Mpox in atypical genital cases, particularly in high-risk populations, to ensure timely diagnosis and treatment.

### 1. Introduction

This case marks the first documented instance of genitourinary monkeypox (Mpox) diagnosed and reported by a specialized urology service in Mexico, highlighting the pivotal role of urologists in identifying and managing this emerging condition. Mpox is a zoonotic viral disease caused by the monkeypox virus (MPXV), which belongs to the *Orthopoxvirus* genus. The virus was initially identified in research monkeys in 1958, with the first human case reported in 1970 in the Democratic Republic of the Congo. Historically, Mpox was confined to Central and West Africa, where it was transmitted through contact with infected animals or limited human-to-human transmission. MPXV is divided into two clades: Clade I (Congo Basin), known for its higher virulence, and Clade II (West African), which is associated with milder disease.<sup>1–4</sup>

In recent years, the global spread of Mpox has changed dramatically. In 2022, a significant outbreak led to more than 83,000 reported cases across 110 countries, marking the largest Mpox epidemic recorded outside its endemic regions. This unprecedented situation prompted the World Health Organization (WHO) to declare Mpox a public health emergency of international concern.<sup>5–10</sup>

In Mexico, the first confirmed case of Mpox was reported on May 28,

2022. By December 27 of the same year, 3637 cases were documented across all 32 states, with Mexico City and Jalisco accounting for the majority of cases. In Quintana Roo, the first case was reported in Chetumal on July 18, 2022, and the region accumulated 174 confirmed cases by the end of that year.<sup>9</sup>

The virus spreads through close contact with respiratory droplets, bodily fluids, lesions, or contaminated surfaces. Genetic material from MPXV has also been identified in saliva, semen, urine, and feces, suggesting a strong potential for sexual transmission. In the current outbreak, most cases have been reported in men who have sex with men (MSM), many of whom are co-infected with HIV.<sup>9–12</sup>

Classically, Mpox presents after an incubation period of 5–24 days, followed by a febrile prodrome and a centrifugal rash affecting the palms and soles. However, the ongoing outbreak has revealed atypical presentations, such as isolated genital or perianal lesions without preceding systemic symptoms. These variations highlight the importance of considering Mpox in the differential diagnosis of genital lesions.<sup>13,14</sup>

Diagnosis is confirmed through polymerase chain reaction (PCR) testing of lesion swabs or other clinical specimens. While no specific antiviral therapy exists, current management strategies focus on symptomatic treatment, prevention of secondary infections, and supportive care.<sup>15–18</sup>

\* Corresponding author. Calz. de Tlalpan 4800, Belisario Domínguez Secc 16, Tlalpan, 14080, Mexico City, Mexico.

E-mail address: [drcesarsilva92@gmail.com](mailto:drcesarsilva92@gmail.com) (C.A. Silva-Mendoza).

<https://doi.org/10.1016/j.eucr.2025.103006>

Received 10 February 2025; Accepted 5 March 2025

Available online 6 March 2025

2214-4420/© 2025 The Authors. Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

## 2. Case presentation

A 28-year-old male, identifying as homosexual and with a history of HIV infection, presented to the urology clinic with a two-week history of ulcerative lesions on the penis, accompanied by penile swelling and mild discomfort in the right inguinal region. The lesions appeared nine days after his return from the Mardi Gras Parade in New Orleans, where he engaged in unprotected oral and anal intercourse with three male partners. He was on antiretroviral therapy with efavirenz/emtricitabine/tenofovir disoproxil fumarate (Atripla, 600 mg/200 mg/300 mg).

Approximately one week after returning, he experienced an abrupt onset of fever, headache, and generalized discomfort without respiratory symptoms. Two days later, he noticed painless swelling of the inner foreskin, which impeded retraction.

On examination, the patient had a fever of 38.5 °C, marked edema of the prepuce, and multiple ulcers, papules, and umbilicated pustules on the glans and inner foreskin (Fig. 1). No regional or generalized lymphadenopathy was present. A systemic rash was notably absent, including on the face, trunk, palms, and soles.

Laboratory investigations revealed normal complete blood count, kidney function, liver enzymes, and coagulation profile. HIV testing showed a CD4 count of 700 cells/mm<sup>3</sup>. Tests for syphilis (VDRL), herpes simplex virus (HSV), and gonorrhea/chlamydia (NAAT) were negative. A swab of the penile lesions tested positive for *Orthopoxvirus* by PCR, consistent with Mpox.

The patient initially received symptomatic treatment, including paracetamol for fever and pain relief, along with general supportive measures such as hydration and prevention of lesion superinfection. He was later referred to the infectious diseases department, where the diagnosis of Mpox was confirmed. Subsequently, he was redirected to a

specialized hospital conducting a clinical trial for tecovirimat, and he initiated therapy under the trial protocol.<sup>16</sup> Over two weeks of treatment, smaller lesions resolved and larger ones decreased in size. The patient later developed jaundice and acute kidney injury and was ultimately lost to follow-up.

## 3. Discussion

The identification and treatment of Mpox continue to pose challenges in clinical practice. Mpox lesions in the genitourinary area can mimic other dermatological or sexually transmitted conditions, complicating recognition. Studies indicate low awareness among healthcare professionals, with few identifying Mpox lesions correctly.<sup>19</sup> This diagnostic delay can increase transmission risk, especially in atypical cases presenting with penile edema or isolated anogenital lesions.<sup>6,8,13</sup>

Tecovirimat has shown efficacy in treating Mpox, yet resistance necessitates alternative therapeutic strategies.<sup>18,20</sup> Options such as cidofovir and brincidofovir are limited by severe side effects, including nephrotoxicity and hepatotoxicity, restricting their use to severe cases.<sup>16–18,20</sup> While supportive care remains key for mild infections, severe cases requiring surgical intervention underscore the need for expanded therapeutic approaches.<sup>6,8</sup> Infection control measures, including isolation, contact tracing, and targeted vaccination, effectively reduce transmission, particularly in high-risk populations.<sup>14,15</sup> Vaccines such as the modified vaccinia Ankara (MVA) vaccine can mitigate disease severity and spread.<sup>1,2,15</sup>

This case underscores the role of urologists in recognizing atypical Mpox presentations, providing crucial diagnostic insights, and promoting multidisciplinary collaboration. While the limited follow-up in this case constraints definitive conclusions on treatment, these findings encourage further research into tecovirimat and novel strategies for Mpox care.

## 4. Conclusion

The global monkeypox outbreak underscores the complexity of diagnosing and managing this re-emerging disease, particularly in atypical cases involving genital lesions. Urologists, with specialized expertise in genitourinary health, play a pivotal role in early identification, supported by collaboration with dermatology and infectious disease specialists to ensure comprehensive care.<sup>3–6,10,19</sup>

While antiviral therapies such as tecovirimat show promise, their limited availability and emerging resistance highlight the urgent need for novel treatments and enhanced diagnostic tools.<sup>17–19</sup> A multidisciplinary approach is essential for managing severe cases, minimizing complications, and addressing potential long-term sequelae such as scarring or functional impairment.

Prevention efforts, including isolation, contact tracing, and vaccination, are critical to controlling outbreaks. Continued education for healthcare providers and further investigation into innovative therapies and vaccine distribution will be key to improving the global response to Mpox and preparing for future public health challenges.<sup>2,19</sup>

## CRedit authorship contribution statement

**César A. Silva-Mendoza:** Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. **Alec Anceno:** Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Visualization, Writing – original draft, Writing – review & editing. **Daniel R. Magdaleno-Rodríguez:** Data curation. **Pedro A. Alvarado-Bahena:** Formal analysis. **Héctor A. Miranda-Blasnich:** Formal analysis. **Marco A. Ascencio-Martínez:**



**Fig. 1.** Penile lesions (ulcers, papules, and umbilicated pustules) on the glans and inner foreskin in a patient with Mpox.

Investigation. **Carlos D. Silva-Villarreal**: Methodology. **Alyx A. Garibay-Aponte**: Project administration. **Alicia Valdez-Gaona**: Software. **Abigail Granada-Vigueras**: Conceptualization. **Fernando Fernández Varela-Gómez**: Conceptualization, Writing – review & editing. **Jorge G. Morales-Montor**: Supervision, Validation.

## Consent for publication

Written informed consent was obtained from the patient for publication of this case and associated images. The report was conducted in accordance with the ethical standards of our institution.

## Declaration of generative AI and AI-assisted technologies in the Writing process

During the preparation of this work, the author, César Silva Mendoza, used ChatGPT-4 in order to assist in drafting and refining the manuscript. After using this tool/service, the author reviewed and edited the content as needed and takes full responsibility for the content of the publication.

## Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

## Declaration of competing interest

None.

## References

- Lu J, Xing H, Wang C, et al. Mpox (formerly monkeypox): pathogenesis, prevention, and treatment. *Signal Transduct Targeted Ther.* 2023;8(1). <https://doi.org/10.1038/s41392-023-01675-2>.
- Lum F, Torres-Ruesta A, Tay MZ, et al. Monkeypox: disease epidemiology, host immunity and clinical interventions. *Nat Rev Immunol.* 2022;22(10):597–613. <https://doi.org/10.1038/s41577-022-00775-4>.
- Leonardi R, Cafarelli A, Calarco A, et al. Monkeypox: ¿a new threat for healthcare and urology? *Arch Ital Urol Androl.* 2024;96(3). <https://doi.org/10.4081/aiua.2024.12936>.
- Catto JWF. Monkeypox and the urologist: playing an important role in this emerging global outbreak. *Eur Urol.* 2022;82(6):631–632. <https://doi.org/10.1016/j.eururo.2022.09.006>.
- 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>.
- Moreno-Matson MC, Ocampo MA, Rengifo DS, Valero HP. Penile necrosis due to monkeypox. *Urol Case Rep.* 2023;51, 102554. <https://doi.org/10.1016/j.eurcr.2023.102554>.
- White J, Rivero M, Mohamed AI, et al. Male sexual health implications of the 2022 global monkeypox outbreak. *Res Rep Urol.* 2022;14:415–421. <https://doi.org/10.2147/rru.s381191>.
- Poole M, Mehrmal S, Kremer M, Guo AM, West DA. An atypical presentation of monkeypox associated with scrotal and penile shaft edema. *JAAD Case Rep.* 2023;33: 36–38. <https://doi.org/10.1016/j.jidcr.2022.12.018>.
- Moreno-Matson MC, Cortázar-Olán O, Kuk-Moo A, Rosado-Rosado DA, Espinoza-Rodríguez JC. Case series of monkeypox in a primary care unit in Cancún, Quintana Roo, Mexico. *Rev Mex Med Fam.* 2023;10(2). <https://doi.org/10.24875/rmf.22000080>.
- Milano E, Belati A, De Santis L, et al. First case of paraphimosis as a severe complication of monkeypox. *Vaccines.* 2022;11(1):63. <https://doi.org/10.3390/vaccines11010063>.
- Sturgis MR, Mossack SM, Feng CL, Roadman DF, Salkowski ME, Olweny EO. Genital monkeypox superimposed on co-incident sexually transmitted infections in AIDS patient; a case report. *Urol Case Rep.* 2022;45, 102238. <https://doi.org/10.1016/j.eurcr.2022.102238>.
- Yu Z, Zhu B, Qiu Q, Ding N, Wu H, Shen Z. Genitourinary symptoms caused by monkeypox virus: what urologists should know. *Eur Urol.* 2023;83(2):180–182. <https://doi.org/10.1016/j.eururo.2022.11.005>.
- Wegrzyn GH, Kilianek M, Yallapragada S, Vidal P, Dobbs RW. Genitourinary Mpox: a case report & primer for urologists. *Urol Case Rep.* 2023;51, 102559. <https://doi.org/10.1016/j.eurcr.2023.102559>.
- Íñigo Martínez J, Gil Montalbán E, Jiménez Bueno S, et al. Monkeypox outbreak predominantly affecting men who have sex with men, Madrid, Spain, 26 April to 16 June 2022. *Euro Surveill.* 2022;27. <https://doi.org/10.2807/1560-7917.ES.2022.27.29.2200471>.
- Thornhill JP, Barkati S, Walmsley S, et al. Monkeypox virus infection in humans across 16 countries – April–June 2022. *N Engl J Med.* 2022;387:679. <https://doi.org/10.1056/NEJMoa2207323>.
- Fox T, Gould S, Princy N, et al. Therapeutics for treating Mpox in humans. *Cochrane Database Syst Rev.* 2023;3, CD015769. <https://doi.org/10.1002/14651858.CD015769.pub2>.
- Smith TG, Gigante CM, Wynn NT, et al. Tecovirimat resistance in Mpox patients, United States, 2022–2023. *Emerg Infect Dis.* 2023;29:2426. <https://doi.org/10.3201/eid2912.230948>.
- Garrigues JM, Hemarajata P, Espinosa A, et al. Community spread of a human monkeypox virus variant with a Tecovirimat resistance-associated mutation. *Antimicrob Agents Chemother.* 2023;67, e0097223. <https://doi.org/10.1128/aac.00972-23>.
- Hammad M, Miller JS, Amini E, et al. Awareness of monkeypox virus among international urology faculty and trainees is low: implications for early recognition and diagnosis. *J Sex Med.* 2024;21(Suppl 1):qdae001–193. <https://doi.org/10.1093/jsxmed/qdae001.193>.
- Federal Commission for the Protection against Sanitary Risks (COFEPRIS). COFEPRIS authorizes clinical trial for a medication against MPOX or monkeypox. [cited 2025 Feb 1]. Available from: <https://www.gob.mx/cofepris/articulos/cofepris-autoriza-ensayo-clinico-de-medicamento-contra-mpox-o-viruela-simica>.