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Case Report

The first case of acute HIV and monkeypox coinfection in Latin America



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ABSTRACT

Monkeypox (MPX) transmission outside non-endemic countries has been reported since May 2022, rapidly evolving into a multi-country outbreak. A potential role of sexual contact in transmission dynamics, as well as a predominance of anogenital lesions, are remarkable features of current cases. Screening for sexually transmitted infections (STIs) plays an important role in the evaluation of patients with suspected MPX infection. Herein we report the first case of a patient diagnosed with both MPX and acute HIV infection in Latin America. He had no major complications during his clinical course, and antiretroviral therapy was promptly initiated. Diagnosis of acute HIV requires a high level of suspicion and appropriate laboratory investigation. Health practitioners need to consider this diagnosis while evaluating patients with suspected MPX with a recent unprotected sexual contact.

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Introduction

In 2022, a multi-country monkeypox (MPX) outbreak was detected in territories that had reported no MPX cases before, with no travel history to endemic countries in Central and West Africa. Current cases differed in clinical and epidemiological characteristics from those previously reported. MPX puts a disproportional burden on bisexual, gay and other men who have sex with men (MSM), with most cases presenting

with anogenital symptoms, raising concerns about potential sexual transmission.¹⁻¹²

Thus, it is of utmost importance to provide a comprehensive sexual health assessment for MPX suspected cases, offering testing for HIV, syphilis, viral hepatitis, chlamydia and gonorrhea. Herein we report a case of a patient diagnosed with acute HIV infection while being evaluated for MPX at our center. To our knowledge, this is the first case of a concurrent diagnosis of HIV acute viral and MPX coinfection reported in Latin America. Another case was registered in Portugal in a 24-year-old man without previous known comorbidities, who presented with typical MPX lesions.¹³ This patient's HIV test yielded a positive HIV-1 antigen with a negative anti-HIV 1/2 antibody result, with HIV RNA levels higher than

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Table 1 – Laboratory exams at baseline and follow-up of medical assessment.

| | August 15, 2022 | August 24, 2022 | September 22, 2022 |
|--|--|--------------------------------------|--------------------|
| Hemoglobin (g/dl) | 17.6 | 17.3 | 16.3 |
| Total Leukocytes Count (/mm ³) | 4,790 | 9,510 | 5,540 |
| Platelets (/mm ³) | 116,000 | 229,000 | 212,000 |
| Creatinine (mg/dl) | 0.96 | 0.91 | 1.15 |
| C-Reactive Protein (mg/dl) | 0.2 | NA | NA |
| AST (U/L) | 68 | 37 | 42 |
| ALT (U/L) | 82 | 69 | 71 |
| HIV RNA (copies/ml) | 5,419,072 (log 6.734) | > 10,000,000 | 350 (log 2.544) |
| CD4 count (/mm ³) | NA | 366 (11.45%) | 593 (24.37%) |
| CD4/CD8 ratio | NA | 0.22 | 1.26 |
| HIV Serology | Nonreactive (ABON – Immunocromatopgrahic Method) | Reactive (ARCHITECT HIV Ag/Ab Combo) | NA |

10,000,000 copies/mL, consistent with acute HIV infection. The CD4⁺ cell count was 208 cells/mm³. This patient evolved with a flourished MPX clinical presentation, with disseminated and painful lesions, mainly on the oral cavity and perianal area. Similarly, an Italian patient has been diagnosed with recent HIV infection in the context of MPX assessment; nevertheless, he yielded a positive anti-HIV serology, not fulfilling the classic definition of an acute HIV infection.¹⁴

Case report

A 49-year-old cisgender man residing in Rio de Janeiro, Brazil, was initially assessed on August 15, 2022, as a suspected MPX case. The patient referred fever and asthenia, which had initiated within the prior seven days, progressively developing odynophagia, painful inguinal adenopathy, pustules in chest and limbs, as well as pustular penile lesions that evolved into ulcers in glans. The first cutaneous lesion was first noticed by August 12, 2022. No other genital signs or symptoms were reported. Despite presenting with conjunctival redness, he had no other ophthalmologic abnormalities at specialist evaluation.

He was in an open relationship with a cisgender man and reported another frequent sexual partner with whom he had condomless anal sex (insertive and receptive), both with negative serology for HIV by July 2022. The patient also reported 22 other sexual partners mainly with condom use for insertive anal sex within the prior 30 days. However, on July 30 and 31, 2022, he had condomless sexual contact with occasional partners with unknown status for HIV infection. He had no sexual contacts with suspected MPX individuals, and the last sexual contact occurred three days before the first genital symptom appeared.

At physical examination, he presented the following findings: diffuse erythema, pustule skin lesions on chest and limbs and two genital ulcers, located in the patient's glans. As part of the routine laboratory initial assessment, he collected an HIV rapid test, which was negative, and an HIV RNA (Abbott RealTime HIV-1) that yielded 5,419,072 copies/mL (log 6.734), consistent with a diagnosis of acute HIV infection. MPX PCR was detectable in a sample from a penile ulcer and was not detectable in other collected samples (conjunctival swab, chest skin lesion and rectal swab).

As soon as the HIV RNA result was released, the patient was scheduled for an urgent appointment on August 24, 2022, when a thorough laboratory workup was conducted and antiretroviral treatment (ART) with tenofovir, lamivudine and dolutegravir was initiated. At this time, HIV RNA (Abbott RealTime HIV-1) was higher than 10,000,000 copies/ml and CD4 cell count was 336 cells/mm³ (11.45%), with a CD4/CD8 ratio of 0.22. Other laboratory results showed a reactive 4th generation serology for HIV (ARCHITECT HIV Ag/Ab Combo Abbott) and the GEENIUS HIV 1/2 BIO-RAD Immunoblot test showed the presence of gp160, p24, p41 and gp120 bands. The patient tested negative for hepatitis B (non-reactive anti-HBs and anti-HBc), hepatitis C (non-reactive anti-HCV), and both nontreponemal (VDRL) and treponemal tests (DPP rapid test) negative for syphilis. Coinfection with chlamydia and gonorrhea was discarded based on negative Abbott RealTime PCR for *Neisseria gonorrhoeae* and *Chlamydia trachomatis* in rectal swab. CBC and biochemistry showed no abnormalities (Table 1). He evolved with no complications related to MPX, and lesions were fully resolved by August 31, 20 days after the first lesion was reported. On September 22, about one month after ART initiation, HIV RNA (Abbott RealTime HIV-1) was 350 copies/ml (log 2.544), and CD4 cell count was 593 cells/mm³ (24.37%), with a CD4/CD8 ratio of 1.26.

Discussion

In contrast with the case described in Portugal¹³, our patient diagnosed with MPX in the setting of acute HIV infection did not progress with a more severe MPX disease clinical course. Furthermore, the patient's complete healing of skin lesions did not take longer when compared to current literature on clinical course of MPX cases reported.

Importantly, our case points to a potential concomitant acquisition of acute HIV and MPX infections. Sexually transmitted infections (STIs) have a well-established synergistic relationship with HIV infection. Co-infection with HIV and an STI can lead to a higher probability of HIV transmission to an uninfected partner by increasing HIV concentrations in genital lesions, genital secretions, or both.^{15,16} An STI can also increase the likelihood of HIV acquisition by breaching mucosal barriers. Among patients with acute HIV, coinfection with an STI may be frequent in the 4–6 weeks interval in the HIV

disease course, when the virus can be detected in the blood prior to seroconversion.¹⁷⁻¹⁹

Conclusions

Considering acute HIV infection as a differential or even concomitant diagnosis during assessment of MPX suspected cases is of extreme importance. This might be challenging due to overlapping symptoms of these two infections and a potential common exposure, as epidemiological features of the current MPX outbreak points to a very frequent history of sexual contact. Our case report highlights the importance of MPX initial assessment as an opportunity to screen for other STIs, including acute HIV infection, reinforcing the need for a comprehensive sexual health assessment.

Authors' contributions

We consider that all authors equally contributed on this manuscript.

Ethical aspects

The study was approved by the Ethical Committee from Instituto Nacional de Infectologia Evandro Chagas – Fundação Oswaldo Cruz (IRB n° 61290422.0.0000.5262).

Conflicts of interest

The authors declare no conflicts of interest.

REFERENCES

1. Girometti N, Byrne R, Bracchi M, Heskin J, McOwan A, Tittle V, et al. Demographic and clinical characteristics of confirmed human monkeypox virus cases in individuals attending a sexual health centre in London, UK: an observational analysis. *Lancet Infect Dis.* 2022;22:1321–8.
2. Noe S, Zange S, Seilmaier M, Antwerpen MH, Fenzl T, Schneider J, et al. Clinical and virological features of first human monkeypox cases in Germany. *Infection.* 2022. <https://doi.org/10.1007/s15010-022-01874-z>. Online ahead of print.
3. Orviz E, Negrodo A, Ayerdi O, Vázquez A, Muñoz-Gomez A, Monzón S, et al. Monkeypox outbreak in Madrid (Spain): clinical and virological aspects. *J Infect.* 2022;85:412–7.
4. Martínez JI, Montalbán EG, Bueno SJ, Martínez FM, Juliá AN, Díaz JS, et al. Monkeypox outbreak predominantly affecting men who have sex with men, Madrid, Spain, 26 April to 16 June 2022. *Euro Surveill.* 2022;27:2200471.
5. Thornhill JP, Barkati S, Walmsley S, Rockstroh J, Antinori A, Harrison LB, et al. Monkeypox virus infection in humans across 16 countries — April–June 2022. *N Engl J Med.* 2022;387:679–91.
6. Mailhe M, Beaumont A-L, Thy M, Le Pluart D, Perrineau S, Houhou-Fidouh N, et al. Clinical characteristics of ambulatory and hospitalised patients with monkeypox virus infection: an observational cohort study. *Clin Microbiol Infect.* 2022. <https://doi.org/10.1016/j.cmi.2022.08.012>. Online ahead of print.
7. Perez Duque M, Ribeiro S, Martins JV, Casaca P, Leite PP, Tavares M, et al. Ongoing monkeypox virus outbreak, Portugal, 29 April to 23 May 2022. *Euro Surveill.* 2022;27:2200424.
8. Tarín-Vicente EJ, Alemany A, Agud-Dios M, Ubals M, Suñer C, Antón A, et al. Clinical presentation and virological assessment of confirmed human monkeypox virus cases in Spain: a prospective observational cohort study. *Lancet.* 2022;400:661–9.
9. Català A, Clavo-Escribano P, Riera-Monroig J, Martín-Ezquerria G, Fernandez-Gonzalez P, Revelles-Peñas L, et al. Monkeypox outbreak in Spain: clinical and epidemiological findings in a prospective cross-sectional study of 185 cases. *Br J Dermatol.* 2022;187:765–72.
10. Patel A, Bilinska J, Tam JCH, Fontoura DS, Mason CY, Daunt A, et al. Clinical features and novel presentations of human monkeypox in a central London centre during the 2022 outbreak: descriptive case series. *BMJ.* 2022:e072410.
11. Philpott D, Hughes CM, Alroy KA, Kerins JL, Pavlick J, Asbel L, et al. CDC multinational monkeypox response team. Epidemiologic and clinical characteristics of monkeypox cases — United States, May 17–July 22, 2022. *MMWR Morb Mortal Wkly Rep.* 2022;71:1018–22.
12. Hammerschlag Y, MacLeod G, Papadakis G, Sanchez AA, Druce J, Taiaroa G, et al. Monkeypox infection presenting as genital rash, Australia, May 2022. *Euro Surveill.* 2022;27:2200411.
13. 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;33:936–8.
14. Brundu M, Marinello S, Scaglione V, Ferrari A, Franchin E, Mazzitelli M, et al. The first case of monkeypox virus and acute HIV infection: should we consider monkeypox a new possible sexually transmitted infection? *J Dermatol.* 2022. <https://doi.org/10.1111/1346-8138.16556>. Online ahead of print.
15. Cohen MS, Hoffman IF, Royce RA, Kazembe P, Dyer JR, Daly CC, et al. Reduction of concentration of HIV-1 in semen after treatment of urethritis: implications for prevention of sexual transmission of HIV-1. *Lancet.* 1997;349:1868–73.
16. Gray RH, Wawer MJ, Brookmeyer R, Sewankambo NK, Serwadda D, Wabwire-Mangen F, et al. Probability of HIV-1 transmission per coital act in monogamous, heterosexual, HIV-1-discordant couples in Rakai, Uganda. *Lancet.* 2001;357:1149–53.
17. Stekler J, Collier AC. Primary HIV infection. *Curr HIV/AIDS Rep.* 2004;1:68–73.
18. Pilcher CD, Price MA, Hoffman IF, Galvin S, Martinson FEA, Kazembe PN, et al. Frequent detection of acute primary HIV infection in men in Malawi. *AIDS.* 2004;18:517–24.
19. Pilcher CD, Joaki G, Hoffman IF, Martinson FEA, Mapanje C, Stewart PW, et al. Amplified transmission of HIV-1: comparison of HIV-1 concentrations in semen and blood during acute and chronic infection. *AIDS.* 2007;21:1723–30.