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RESEARCH LETTER

Human immunodeficiency virus infection may be a contributing factor to monkeypox infection: Analysis of a 42-case series

To the Editor: An outbreak of monkeypox has emerged, and more than 13,000 cases have already been confirmed worldwide.

In our department, we have 42 confirmed cases so far. All of them are cisgender males presenting with lesions in the genital, perianal, or perioral areas (Fig 1). Interestingly, we observe a disproportionate number of individuals living with the human immunodeficiency virus (HIV). Below, we present a retrospective analysis of our confirmed cases with their clinical and epidemiological characteristics (Table I). Differences between groups were analyzed using the Mann–Whitney U test and the t-test for discrete variables according to distribution. Independence between categorical variables was assessed with Fisher's exact test. All tests were performed for a confidence level of 95% in SPSS 22 (IBM Statistics).

Of the 42 patients, 22 (52.4%) had concomitant HIV infection, corresponding to a prevalence of HIV infection more than 100 times higher than that of the general Portuguese population (0.4%).¹ One individual was diagnosed with acute HIV infection concurrently with monkeypox, while the others were already receiving appropriate antiretroviral treatment.

The HIV-infected patients tended to be older, but this did not reach statistical significance. This could



Fig 1. Perianal monkeypox. Multiple umbilicated vesicles with crystalline fluid over an erythematous base.

Table I. Characteristics of the confirmed cases of monkeypox infection in this cohort

	With HIV infection (n = 22)	Without HIV infection (n = 20)	P-value
Epidemiological variables			
Age (years; mean \pm SD)	37.7 \pm 9.2	32.5 \pm 8.1	.059
Cisgender male	22 (100%)	20 (100%)	1.000
MSM	20 (90.1%)	17 (85%)	.656
Number of sexual partners over the last 21 d—Mean, [95% Confidence Interval]	6.1 [3.0-9.3]	3.8 [1.1-6.5]	
Vaccinated against smallpox	5 (22.7%)	0	.049*
Prior history of other STI (other than HIV)	9 (40.9%)	10 (50.0%)	.757
Symptoms			
Genital lesions	16 (72.7%)	12 (60.0%)	.515
Perianal lesions	11 (50.0%)	11 (55.0%)	.767
Perioral lesions	6 (27.2%)	6 (30.0%)	1.000
Lesions in other anatomical areas	14 (63.6%)	6 (30%)	.037*
Fever	10 (45.5%)	12 (60.0%)	.374
Myalgias/Arthralgias	11 (50.0%)	12 (60.0%)	.551
Headache	11 (50.0%)	10 (50.0%)	1.000
Enlarged lymph nodes	16 (72.7%)	12 (60.0%)	.515

Unless otherwise specified, values are expressed in absolute number (% of the column total) format; *HIV*, Human Immunodeficiency Virus; *MSM*, Men who have Sex with Men; *SD*, Standard Deviation; *STI*, Sexually Transmissible Infection.

*Highlights variables where differences between groups were significant at a 5% level.

explain the differences in smallpox vaccination between the 2 groups.

The prevalence of genital, perianal, and perioral lesions was similar overall. All patients had lesions in at least one of these sites, which are typically affected by sexually transmitted infections.

A marked difference between the 2 cohorts was in the prevalence of the disseminated form of the disease. Lesions at sites other than the genital, perianal, and perioral areas were found more frequently in patients with HIV infection (63.3% vs 30.0%; P-value 0.037). The frequency of constitutional symptoms (fever, myalgias/arthralgias, and headache) and lymph node enlargement was similar in both groups.

These data suggest individuals living with HIV infection are at higher risk of acquiring monkeypox.

Although the number of sexual partners in the past 21 days did not differ significantly between groups, we cannot rule out reporting a bias that could affect the interpretation of these results. Similarly, HIV infection could be a surrogate marker for increased sexual risk behavior, which is a recognized risk factor for acquiring monkeypox, rather than a risk factor itself.

Additionally, monkeypox may have a more pronounced clinical presentation in HIV-infected persons regardless of prior smallpox vaccination. This may be due in part to the relative immunodeficiency characteristic of HIV infection, even in treated patients.² While HIV infection may be a risk factor for monkeypox, monkeypox lesions may also facilitate the transmission of HIV and other sexually transmitted infections.

Our data suggest that the current outbreak differs in epidemiology and clinical presentation from a typical endemic monkeypox infection.^{3,4} Monkeypox should be considered in the differential diagnosis of vesicular and ulcerative lesions in the perianal, genital, and perioral areas. Effective communication strategies for vulnerable populations and immunization of at-risk individuals with vaccines already licensed for this disease may improve outcomes.⁵

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Conflict of interest

None disclosed.

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