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Correspondence

**Is sexual intercourse a major route of human Monkeypox transmission mode? – Correspondence**

Dear Editor,

Human Monkeypox Virus (HMPXV) is an Orthopoxvirus emerging as a rare zoonotic disease in Africa. This pathogen causes an illness with two distinct phases: flu-like illness followed by skin rash eruption lesions 3 days after fever [1]. Three months have elapsed since HMPXV has spilled over outside the African territories with atypical presentations and changing epidemiological characteristics. The number of human monkeypox in the current ongoing outbreak beyond Africa is reaching more than 37,632 laboratory confirmed cases in 85 non-endemic countries (compared with 38,019 in endemic African areas). Moreover, deaths caused by this pathogen have been reported in Brazil, Spain, India, and Peru [2]. Current evidence suggests that the recent HMPXV outbreaks were connected with the West African clade [3]. Human monkeypox is a self-limiting disease that does not seem to be fatal. However, recent reports reveal long-term viral shedding even after cutaneous lesion resorption [4]. Recently, we have seen a sudden twenty percent increase in the number of HMPXV cases that were severe in susceptible individuals.

The largest multiple human monkeypox outbreak in 2022 in non-African regions emerged in men who have sex with men (MSM) as well as in lesbian, gay, bisexual, and transgender (LGBT) sexual networks in Spain and Germany [5]. The number of new HMPXV cases have since dramatically increased in sexual health clinics [6]. Preliminary observations suggested presence of undetected potential sexual transmission as the cause to rapidly spreading of HMPXV across the globe. The previous literature discussed primarily on clinical characteristics of this pathogen, i.e., fever, lymphadenopathy, and skin rash. However, recent reports confirm the occurrence of meaningful association between HMPXV outbreak 2022 with potential sexual transmission or close contact during sex when compared to the previous outbreak in Africa [7]. Several reports of detecting HMPXV cases in sex workers have positive results on other sexual pathogens such as HIV/AIDS and Syphilis [8]. These findings claim a current transmission of human monkeypox during sexual intercourse. Asymptomatic carriers can also have detectable virus titers as in symptomatic cases, thus boosting the transmission chains [9].

Mailhe et al. in an observational cohort study found that the current monkeypox outbreak to be mostly affected by sexual contact [10]. In addition, Zapata et al. highlighted the potential role of sexual transmission as a clinical characteristic of HMPXV 2022 in a meta-analysis [7]. The large portion of HMPXV cases in 2022 is known to be young MSM individuals who had genital ulcers when admitted to sex health clinics. Interestingly, Ogoina et al. recently provided evidence by reviewing the sexual history of human monkeypox in Bayelsa, Nigeria during 2017–2019. They found that the majority of HMPXV in their study were male heterosexuals having sex within a month before their first symptom [11]. Thus, pre- and post-2022 multiple country

outbreaks provide evidence to confirm the role of sexual contact in transmission of monkeypox among the confirmed cases [10,11].

On the other hand, one question remains is the feasibility that skin rash can be unrecognizable at the early phase of clinical evolution. Hence, viral shedding occurs on the genital and perianal regions even before appearance of rash rather than during sexual intercourse.

Sah et al. recently revealed the high occurrence of HMPXV in seminal fluid specimens. They found the highest rates of HMPXV DNA in rectal, urinary, and nasopharyngeal samples in confirmed cases [12]. Lapa et al. reported existence of HMPXV in seminal specimens of patients that caused cytopathic effects after viral incubation [13]. It may be possible that HMPXV has a genital reservoir due to prolonged viral shedding, or otherwise NOE et al. could not grow human monkeypox virus from seminal samples in cell culture [14]. It is reasonable to assume that the presence of human monkeypox in seminal specimens might be related to passive diffusion from urine, blood, genital lesions, and cross-contaminations. Therefore, further investigations need to address the monkeypox viral infectivity of seminal specimens to find out the role of sexual intercourse in the HMPXV transmission chain. In addition, current evidence suggests many human monkeypox cases have lesions in the genital or anorectal areas [15]. We speculate that sexual relationships, for example, anal and oral intercourse, mainly cause re-emergence of HMPXV on a large scale rather than by skin-to-skin contact [15,16]. This speculation elucidates the urgency of vaccination among individuals with high-risk behaviors, such as sex workers, particularly those with multiple partners.

Ethical approval

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None.

Author contribution

Masoud Keikha: Study design, data collection, Writing and Editing the draft. All authors read and approved the final version of the manuscript.

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There is no conflict of interest.

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Registration of research studies

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All the authors of this paper accept full responsibility for the work and/or the conduct of the study, had access to the data, and controlled the decision to publish.

Consent

Not applicable for this study.

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