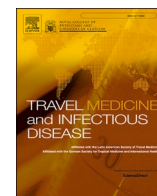




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Monkeypox virus: A novel sexually transmitted disease? A case report from France

ARTICLE INFO

Keywords

Monkeypox
Sexually transmitted disease
Virus
Orthopoxvirus
Epidemic
Human monkeypox virus

Human monkeypox virus (MPXV) is a double-stranded DNA virus of the Orthopoxvirus genus of the Poxviridae family. In 2022, cases of MPXV not directly linked to travel to Central or West Africa or people returning from travel have been reported in Europe and around the world, suspected cases are being assessed in many countries and the situation is therefore changing very rapidly [1]. As of June 21, 2022, 277 confirmed cases of MPXV have been reported in France. All were men, aged 20–63 years old (Image A). To date, as in other European countries, these cases have occurred, but non exclusively, in men who have sex with men (MSM), with no direct link to people returning from endemic areas.

MPXV infection most often begins with a fever, which is frequently high and accompanied by headaches, body aches and asthenia. After about 2 days, a blistering rash appears, made up of fluid-filled blisters that progress to drying out, scab formation and then scarring. The vesicles tend to be concentrated on the face, the palms of the hands and the soles of the feet but also in the mouth and the genital area. The incubation of the disease can range from 5 to 21 days. The disease most often heals spontaneously, after 2–3 weeks.

In our hospital center, the Foch hospital, the first case has been observed in an HIV positive MSM. The patient presented to outpatient clinic on June 2nd for fever, intense fatigue, chills, myalgia and sore throat that began 2 days earlier. The patient also developed severe anal pain. There were not any eruption on hand, face and genitals. Enlarged cervical lymph nodes were present. Tests for chlamydia and gonococcus on pharyngeal and self-collected anal swabs were negative. He had had sex with a man 5 days earlier and the partner developed typical lesions on the genitals at day 5 (Image B). The general signs of our patient improved fairly quickly, he remained at home without specific treatment. He is now cured. Concerning his partner, his eruption quickly worsened and generalized. He was not hospitalized and he is better now. According to the French guidelines, the patient was referred to a specialized consultation at Bichat Reference hospital. A real-time RT-PCR designed at the French National Reference Center of Orthopoxvirus was positive on pharyngeal swab on 3rd June. The patient remains free of rash.

The MPXV can be transmitted by direct contact with skin lesions or

mucous membranes of a sick person, as well as by droplets (saliva, sneezing, sputters, etc.). Cases can also become contaminated through contact with the patient's environment. It is therefore important that patients respect isolation for the duration of the disease (until the disappearance of the last scabs, most often 3 weeks).

In Central or West Africa, humans can also become infected through contact with animals, wild or in captivity, dead or alive, such as rodents or monkeys. MPXV infection is not known as an sexually transmitted disease (STI), but direct contact with broken skin during sex facilitates transmission.

In the currently ongoing outbreak, MPXV is transmitted from human to human [1], even though this route of transmission has been shown as poorly efficient in previous outbreaks caused by the West African clade. Moreover, pharyngitis and rectal symptoms are more and more described following the traditional skin lesions [2]. We want to stress that these skin involvement can be absent and that the transmission of the monkeypox through mucosal way (via oral or anal sex) is probable. In Europe, main individuals are MSM, people with multiple sexual partners or people who practice condomless sex [1].

We need to consider that many other viruses causing viraemia can be found in semen with no direct evidence of sexual transmission. Indeed, viral seeding in the male reproductive tract can frequently occur in the context of viraemia, as blood–testis barriers are imperfect for viruses, especially in the presence of systemic or local inflammation. Since testes are an immunologically privileged sanctuary site, the virus may persist even though unable to replicate within the reproductive tract.

We are worrying the epidemiological investigations showed no substantial travel associations of the European cases and the monkeypox-endemic areas in Africa [3]. This could be the result of an undetected spread in Europe for a while, with human to human transmission which occurred to close physical contact with infected asymptomatic or symptomatic adults [4]. Smallpox vaccination was discontinued worldwide in the 1980s, the increase number of men in this age group could be the reflect of a loss of cross-protective immunity to MPXV [5].

Main part of the European cases were men who have sex with men [6]. Moreover, recent cases are the results of sex with men and bisexual

<https://doi.org/10.1016/j.tmaid.2022.102394>

Received 18 June 2022; Received in revised form 21 June 2022; Accepted 22 June 2022

Available online 28 June 2022

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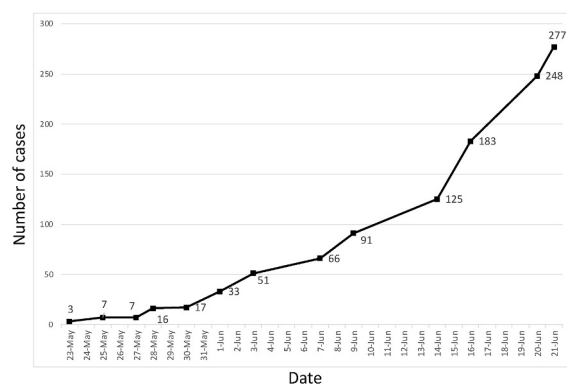
A**B**

Image. A: Number of cases of patients infected by Monkeypox virus in France; B: Typical vesicles of monkeypox skin lesion on genitals.

men during recent festivals [4]. Thus, we are strongly alerted for the month of June 2022 which is subject to different gay prides in world. Clusters of viral infections may occur in group with close contact at mass gathering events [7]. In parallel, we call to be very careful about the possible negative consequences that could generate homophobic and racist stereotypes exacerbating stigma. Universal and non-stigmatizing outbreak responses are needed with community-led epidemic prevention programs. Knowledge of monkeypox risk appears to be low at this time in the gay community. Urgent focused communication is needed.

Author contributions

Conceptualization, A.V.; methodology, A.V.; validation, A.V., E.F., D.Z.; writing—original draft preparation, A.V.; writing—review and editing, E.F., D.Z. All authors have read and agreed to the published version of the manuscript.

Funding

This research received no external funding.

Institutional review board statement

The study was conducted according to the guidelines of the Declaration of Helsinki.

Informed consent statement

A non-opposed consent was obtained from all subjects involved in the study.

Data availability statement

Not applicable.

Declaration of competing interest

The authors declare no conflict of interest.

Acknowledgments

Not applicable.

References

- [1] Antinori A, Mazzotta V, Vita S, Carletti F, Tacconi D, Lapini LE, et al. Epidemiological, clinical and virological characteristics of four cases of monkeypox support transmission through sexual contact, Italy. *Euro Surveill Bull Eur Sur Mal Transm Eur Commun Dis Bull* 2022;27. <https://doi.org/10.2807/1560-7917.ES.2022.27.22.2200421>. May 2022.
- [2] Basgoz N, Brown CM, Smole SC, Madoff LC, Biddinger PD, Baugh JJ, et al. Case 24-2022: a 31-year-old man with perianal and penile ulcers, rectal pain, and rash. *N Engl J Med* 2022. <https://doi.org/10.1056/NEJMcp2201244>.
- [3] Ntoumi F, Zumla A. Advancing accurate metrics for future pandemic preparedness. *Lancet Lond Engl* 2022;399:1443–5. [https://doi.org/10.1016/S0140-6736\(22\)00425-1](https://doi.org/10.1016/S0140-6736(22)00425-1).
- [4] Zumla A, Valdeiros SR, Haider N, Asogun D, Ntoumi F, Petersen E, et al. Monkeypox outbreaks outside endemic regions: scientific and social priorities. *Lancet Infect Dis* 2022;S1473–3099(22). [https://doi.org/10.1016/S1473-3099\(22\)00354-1](https://doi.org/10.1016/S1473-3099(22)00354-1). 00354-1.
- [5] Simpson K, Heymann D, Brown CS, Edmunds WJ, Elsgaard J, Fine P, et al. Human monkeypox - after 40 years, an unintended consequence of smallpox eradication. *Vaccine* 2020;38:5077–81. <https://doi.org/10.1016/j.vaccine.2020.04.062>.
- [6] Zambrano PG, Acosta-España JD, Mosquera Moyano F, Altamirano Jara MB. Sexually or intimately transmitted infections: a look at the current outbreak of monkeypox in 2022. *Trav Med Infect Dis* 2022;102383. <https://doi.org/10.1016/j.tmaid.2022.102383>.
- [7] Memish ZA, Steffen R, White P, Dar O, Azhar EI, Sharma A, et al. Mass gatherings medicine: public health issues arising from mass gathering religious and sporting events. *Lancet Lond Engl* 2019;393:2073–84. [https://doi.org/10.1016/S0140-6736\(19\)30501-X](https://doi.org/10.1016/S0140-6736(19)30501-X).

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