

Monkeypox Virus: Wide Presence After Decades of Absence

Moslemghasemina*

Department of Microbiology and Virology, University of Tabriz of Medical Science, Iran

ISSN: 2578-0190



***Corresponding author:** Moslemghasemina, MSc of Medical Virology, Department of Microbiology and Virology, University of Tabriz of Medical Science, Iran

Submission:  September 12, 2022

Published:  September 22, 2022

Volume 6 - Issue 2

How to cite this article: Moslemghasemina. Monkeypox Virus: Wide Presence After Decades of Absence. *Cohesive J Microbiol Infect Dis.* 6(2). CJMI. 000631. 2022.
DOI: [10.31031/CJMI.2022.06.000631](https://doi.org/10.31031/CJMI.2022.06.000631)

Copyright@ Moslemghasemina. This article is distributed under the terms of the Creative Commons Attribution 4.0 International License, which permits unrestricted use and redistribution provided that the original author and source are credited.

Opinion

Based on the available documentation, several epidemics of smallpox-like diseases have been reported among non-human primates. In some of these cases, it was confirmed by virus isolation. The first reports of Monkeypox virus (MPXV) date back to 1958 when von Magnus et al reported a non-fatal smallpox-like outbreak in *Macaca cynomolgus* monkeys sent from Singapore to Copenhagen, with a prevalence of 20-30% among these animals [1]. In the 1960s, other reports of MPXV have been published. With the increase in cases and the exacerbation of the disease in animals, the World Health Organization 1967 forced 26 research institutes in the field of bio-medical activities that were studying many monkeys to investigate the situation of MPXV in animals under investigation. In the same years, five outbreaks were confirmed by the isolation of the MPXV [2].

Also, the first reports of human infection with MPXV are available since 1970. Six patients with symptoms like smallpox were identified from the Democratic Republic of Congo, Liberia, and Sierra Leone. The samples of these people were examined by several laboratories and each of them confirmed the infection of MPV. Among these patients, there were one 9-month-old child and four 4-9-year-old children. Another patient was a 24-year-old young man who tried to slaughter a "red monkey". The death of these patients has not been reported. Many monkeys live in these areas, and they may be killed by people and their skins are kept in houses [2-4]. MPXV is in the Poxviridae family, along with other viruses such as Variola Virus (VARV), Vaccinia Virus (VACV), Cowpox Virus (CPXV), Camel Pox Virus (CMLV), and several new species. It is classified in the genus Ortho poxvirus [5]. Viruses of the pox family are among the largest viruses and contain membranes. These viruses have a double-stranded and linear DNA genome that has 200 K bp. The genome of these viruses has many genes that code many enzymes. However, half of the genome of these viruses are well conserved and has been observed to play an essential role in virus replication. The other half of the genome of smallpox viruses is the so-called "accessory" and plays a role in virus-host interaction and does not play a vital role in virus replication [5].

Although in the early years of detection of MPXV in non-human primates, the cases and the severity of the disease were few, gradually the concerns increased with the increase of cases and the increase in the geographical scope of the detected cases by entering the 21st century. So, after several years after the first confirmed human case, more than a thousand other cases of human MPXV were identified and confirmed by reference laboratories from Central African and West African countries [6]. For example, after the first reports of MPXV in the Democratic Republic of the Congo in the 70s and 80s of the twentieth century, according to the available data from 2000 to 2019, thousands of suspected cases have been reported in the Democratic Republic of the Congo [7,8]. After several decades of absence of MPXV in West African countries such as Nigeria, from 2017 until today, there have been numerous reports of

human MPXV outbreaks. In the 2017-2018 suspected case survey, 122 confirmed or probable human MPXV cases were reported in 17 states, including 7 deaths (6% case fatality rate).

Contrary to the old reports that the patients were exclusively rural and living in forest areas, the current outbreak has spread to people living in urban areas [9]. Recently, different reports of MPXV detection in non-African and non-endemic countries are available [10]. Due to the unavailability of antiviral treatments for most viral infections, there is a need to take measures to overcome the prevalence of viral infections and epidemiological control, such as identifying suspicious cases, expanding diagnostic tests with quick and correct answers, reducing the contact of suspicious cases with others, using high-performance personal protective equipment suitable for the type of viral infection, mass vaccination widely and globally [11]. Ignoring the increase of positive cases and spread in different countries can have consequences, as a result, it is better to take necessary measures with international cooperation to prevent the outbreak of this disease and to prevent the spread of the endemic geographical areas of the disease.

Although it has been reported in the above-mentioned previous studies that the highest incidence of MPXV was seen in people under the age of 30, the most recent data also had the most reports of infected people aged 50 years or younger, and none of these people had a history of vaccination in the last smallpox vaccination program was in 1980. Contrary to previous years, when the transfer of laboratory animals from endemic areas to other countries caused the spread of the virus to other countries, recent data show that the reduction of immunity in the community due to the cessation of vaccination in 1980 could be one of the drivers of the spread of the virus in between different countries. Increasing communication and facilitating travel between people of different countries, cultural and economic changes, and even climate changes can be among the reasons for the increase in the spread of viral infections such as MPX. Today, with the advancement of air vehicles and high-speed vehicles, a person can travel through several countries and cross many international borders before the symptoms of the disease appear if they are infected with a viral disease.

With the experiences we have from the Covid-19 pandemic, it seems that the expansion of research to achieve the fastest diagnoses and markers before the symptoms of the disease appear and the education of international travelers, especially travelers based in endemic areas, can help reduce the spread of infection

to an acceptable extent. According to what we experienced in the Covid-19 pandemic, the detection of the virus in several countries, and other countries will undoubtedly not be safe from the spread of the virus. For this reason, international cooperation should be done before the alarm of the spread of MPXV around the world is sounded. In the face of infectious diseases, the world is likened to one country and different countries are like the provinces of one country. Therefore, international cooperation, such as cooperation in preparing a suitable vaccine, making diagnostic kits for all countries, and prioritizing African countries and endemic areas, can play an important role in controlling the disease.

References

1. Bauer D, Vincent L (1963) Prophylactic treatment of smallpox contacts with N-Methylisatin (β -Thiosemicarbazone (Compound 33T57, Marboran). *Lancet* 2(7306): 494-496.
2. Cho CT, Wenner HA (1973) Monkeypox virus. *Bacteriological Reviews* 37(1): 1-18.
3. Ladnyj I, Ziegler P, Kima Eb (1972) A human infection caused by monkeypox virus in basankusu territory, Democratic Republic of the Congo. *Bulletin of the World Health Organization* 46(5): 593.
4. Marennikova S, Šeluhina EM, Mal'Čeva N, Čimiškjan K, Macevič G (1972) Isolation and properties of the causal agent of a new variola-like disease (monkeypox) in man. *Bulletins of the World Health Organization* 46(5): 599-611.
5. Senkevich TG, Yutin N, Wolf YI, Koonin EV, Moss B (2021) Ancient gene capture and recent gene loss shape the evolution of orthopoxvirus-host interaction genes. *Mbio* 12(4): e01495-21.
6. Rimoin AW, Mulembakani PM, Johnston SC, Lloyd JO, Kisalu NK, et al. (2010) Major increase in human monkeypox incidence 30 years after smallpox vaccination campaigns cease in the Democratic Republic of Congo. *Proceedings of the National Academy of Sciences* 107(37): 16262-16267.
7. WHO. Health topics: Disease outbreaks. World Health Organization, Geneva, Switzerland.
8. Xiang Y, White A (2022) Monkeypox virus emerges from the shadow of its more infamous cousin: Family biology matters. *Emerging Microbes & Infections* 11(1): 1768-1777.
9. Yinka OA, Aruna O, Dalhat M, Ogoina D, McCollum A, et al. (2019) Outbreak of human monkeypox in Nigeria in 2017-2018: A clinical and epidemiological report. *The Lancet Infectious Diseases* 19(8): 872-879.
10. Thornhill JP, Barkati S, Walmsley S, Rockstroh J, Antinori A, et al. (2022) Monkeypox virus infection in humans across 16 countries. *New England Journal of Medicine* 387: 679-691.
11. Cheng VC, Chan JW, Hung IN, Yuen KY (2017) Viral infections, an overview with a focus on prevention of transmission. *International Encyclopedia of Public Health* 368.

For possible submissions Click below:

