



Research Paper

# Monkey pox virus 2022; Emergence, Spread, Possible Treatments

IsrarMaqbool

Muhammad Ashraf, Saima Talib, Hafiza Aqsa Munir, Ariana Ali, Anees Haider, Aiman Salam, Mudasar Iqbal

## Abstract

Human monkeypox is a zoonotic disease that mostly affects Central and Western Africa's rain forests. However, the illness was recently discovered in imported wild rats from Africa in the United States. Monkeypox exhibits symptoms that are remarkably similar to common kinds of smallpox, such as flu-like symptoms, fever, malaise, back pain, headache, and a distinctive rash. Virus isolation and electron microscopy, PCR, IgM and IgG ELISA, immunofluorescent antibody test, and histopathologic examination are among the several laboratory diagnostic techniques for monkey pox. A variety of precautions can be taken to avoid infection with the monkeypox virus. Avoid coming into touch with animals that may have the virus. There are no approved treatments for human monkey pox, however the smallpox vaccination can provide protection.

**Key word;** Monkeypox virus, Smallpox, Zoonotic virus, Disease, Symptoms, Human.

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## I. Introduction

The monkey pox virus (MPXV) is a zoonotic virus with double-stranded DNA that causes monkey pox in humans and other animals (Bremant, 2000). Since the elimination of smallpox in the 1970s, monkey pox has become the most common orthopoxvirus infection in humans. It belongs to the family Poxviridae and the genus Orthopoxvirus (Reynolds, 2007). Variola virus (the cause of smallpox) and vaccinia virus are two more famous members of this category (the virus used in the smallpox vaccine). Ectromelia, camel pox, and cowpox viruses are less well-known members (Hutin, 2001). The illness is only seen in the Democratic Republic of Congo (DRC). The virus's Central and West African clades have produced epidemics mostly in rural rainforest areas of the Congo basin and West Africa, respectively (Durki et al., 2018).

Milder sickness, fewer mortality, and less human-to-human transmission are all connected with the African lineage. Only ten cases had been documented in West Africa since 1970. (Sejvar, 2004). When the virus first appeared in the Western Hemisphere in the spring of 2003, it created a cluster of cases in the US Midwest, it drew even more attention to it (Weinstein et al., 2005). In the United States, 81 cases (41 percent laboratory confirmed) were recorded in 2003 (Sejvar, 2004). In Nigeria, a case of human monkeypox was recorded in a 4-year-old kid in the southern portion of the nation in 1971 (Eke, 1972). There no additional cases have been documented in Nigeria since 1978.

The Nigeria Centre for Disease Control (NCDC) was alerted of a possible case of monkey pox on September 22, 2017, after the patient was hospitalized to the Niger Delta University Teaching Hospital in Bayelsa State, Nigeria's South South region. The investigation into the outbreak began right once, with isolation of the probable case-patient, laboratory testing, and contact tracing. The patient was an 11-year-old kid who had a fever, widespread rash, headache, malaise, and sore throat for 11 days. Physical examination revealed papulopustular rashes over the trunk, face, palms, and soles of the feet, as well as umbilication, ulceration, crusting, and scab development. The patient exhibited mucosal sores and ulcers in his mouth and nose, as well as widespread lymphadenopathy. (Yinka-Ogunleye et al., 2018).

## Outbreak in 2022

Monkey pox cases have been documented or are suspected in Australia, Belgium, Spain, Canada, France, Portugal, Italy, Sweden, the Netherlands, the United Kingdom, and the United States. On May 7, 2022, the first case was reported in England. As of May 1<sup>st</sup>, 2022, there were roughly 80 confirmed instances and 50

awaiting investigations, indicating that patients had already contracted the uncommon disease. Children are more affected than young children. According to the WHO, the number of patients is rapidly growing.

The World Health Organization confirmed 92 cases of monkeypox in 12 countries on May 13, 2022. Given that monkeypox will continue to be transmitted to humans through international travel or the importation of animals from places where the illness is more prevalent. The new monkeypox outbreaks, according to the WHO, are exceptional in that they are happening in areas where the virus is not prevalent. According to the German military, hundreds of cases have been verified in the continent's greatest monkeypox outbreak ever. At least one case has been verified in the United States, and two have been confirmed in Canada. According to the WHO, monkeypox is most commonly seen in Central and West African rainforests where virus-carrying animals reside (WHO, 2022). According to the CDC, monkeypox can cause mortality in as many as 1 in 10 persons who develop the disease, based on findings in Africa.



**Pictures of monkey pox virus patients**

**Table No1. Comparison between Small Pox, Chicken Pox and Monkey Pox.**

	<b>Small Pox</b>	<b>Chicken Pox</b>	<b>Monkey Pox</b>
<b>Virus Name</b>	Variola Virus	Varicellazoster Virus (VZV)	Orthopoxvirus genus
<b>Symptoms</b>	Pus-filled blisters on the skin, fever, severe fatigue, vomiting, overall discomfort.	Fever, feeling tired, skin rash that is very itchy, fluid-filled blisters that eventually turn into scabs.	Swollen lymph nodes, fever, rash, sore muscles, headache.
<b>Worldwide Spread</b>	South America, Africa and Asia.	Central and South America and Europe, and some countries in the Middle East.	Central and Western African Countries
<b>Outbreak</b>	1949	1691	May 2022
<b>Transmission</b>	Transmitted by contact with infected persons.	Transmitted by touching the blisters, saliva or mucus of an infected person, coughing and sneezing.	Transmitted through body fluids, coughing or sneezing.
<b>Vaccine</b>	Yes	Yes	No

**Transmission**

Monkey pox is transferred when a person comes into intimate touch with an infected person, animal, or object (De Clercq, 2002). Broken skin, the respiratory tract, and the eyes, nose, and mouth are all ways for the virus to enter the body. Meanwhile, animal-to-human transmission can happen through a bite or scrape (Di Giulio et al., 2004). Monkeypox isn't usually thought of as a sexually transmitted illness, however it may be transferred during intercourse.

**Symptoms**

Human monkey pox has clinical characteristics that are quite similar to smallpox (Janseghers et al 1884). The incubation period is 10 to 14 days long. Monkey pox causes fever, headaches, muscular pains, and back discomfort, as well as a sore throat, cough, and shortness of breath (Reynolds, 2007). Lymphadenopathy is a crucial differentiating characteristic of monkey pox, as it has been detected in 90% of uninfected individuals and is not a typical symptom of smallpox. Enlargement of lymph nodes can occur in the submandibular, cervical, and inguinal areas (Fenner et al., 1988). A rash appears one to three days after the onset of fever, usually starting on the face and spreading to other regions of the body, such as the palms of the hands and the soles of the feet

(Breman et al., 2000). The rash passes through various phases until the lesions scab and fall off, causing extreme irritation.

**Table 2. Evaluation criteria for the differential diagnosis of patients with monkeypox, and smallpox.**

Characteristic	Monkey pox	Small pox
Incubation period, days	7 to 17	7 to 17
Prodromal period, days	1-4	2-4
Fever	Yes, often 38 °C and 40.5 °C	Yes, often above 40 °C
Malaise, severity	Moderate	Moderate
Headache, severity	Moderate	Severe
Lymphadenopathy, severity	Moderate	None
Lesions Depth (diameter in mm)	Superficial to deep (4-6)	Deep (4-6)
Time to desquamation, days	14 to 21	14 to 21
Frequency of lesions on palms or soles of feet	Common	Common

### Diagnosis

Because the clinical presentation of monkeypox is so similar to chickenpox and smallpox, a clear diagnosis is essential for controlling natural illness or detecting a possible bioterrorism event early (Arita, 1985). Burnett (2005) defined the assessment criteria for patients with monkeypox, chickenpox, or smallpox in the differential diagnosis. Although parapoxviruses cause illnesses like or and bovine stomatitis (which cause localized skin lesions similar to those found in the US monkeypox epidemic), electron microscopy can clearly identify them from orthopoxviruses. Although clinical features can help separate poxvirus infections from other causes of vesiculopustular rashes, a definite diagnosis requires laboratory confirmation (Foster et al 1972). Virus isolation and electron microscopy, PCR, IgM and IgG ELISA, immunofluorescent antibody test, and histopathologic examination are among the several laboratory diagnostic techniques for monkey pox. Unfortunately, many of these techniques are ineffective in distinguishing MPXV infection from infection with other poxviruses (Bayer-Garner et al., 2005).

### Prevention

A variety of protections can be taken to avoid infection with the monkeypox virus. Avoid contact with animals that may carry the virus (including ill or dead animals found in regions where monkeypox is present) (Fine et al., 1988). Avoid touching any objects that have come into contact with a sick animal, such as bedding. Separate infectious patients from others who may become infected (Gross et al., 2003). After coming into touch with infectious animals or humans, wash your hands thoroughly. Washing your hands with soap and water or using an alcohol-based hand sanitizer are two examples. When caring for patients, wear personal protective equipment (PPE) (De Clercq, 2002).

### Treatment

Although most instances of monkeypox are minor, there are presently no proven, safe therapies (Arita, 1985). People suspected of being infected with the virus may be placed in negative pressure rooms and monitored by health-care workers wearing personal protection equipment (Jezek, 1986). Vaccines, antivirals, and vaccinia immune globulin (VIG) have all been shown to be useful in keeping the virus from spreading (De Clercq, 2002). The vaccination is currently available in countries like as the United Kingdom and Spain for persons who have been exposed to illnesses to help lessen symptoms and transmission (Smee et al., 2000).

## II. Conclusion

Monkey pox is mostly found in Central and Western Africa's rainforests. Unlike smallpox, the disease is a classic zoonosis, with the majority of cases occurring as a consequence of direct contact with an infected animal. Because the symptoms of the disease in humans can be remarkably similar to those of smallpox, chickenpox, or other causes of vesiculopustular rash, precise and prompt laboratory diagnosis are critical for epidemic control. The closeness of African monkey pox cases to smallpox cases, as well as the population's rising lack of antibody after routine smallpox vaccination was discontinued, has raised fears that MPXV may be used as a bioweapon.

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