

Why did the Monkeypox virus raise its head again in 2024?

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ABSTRACT

Monkeypox infection is an emerging viral zoonotic infection caused by a DNA virus named Monkeypox virus. Humans acquired the infection in several ways, such as through contact with infected animals and infected humans and sexual transmission. The disease is characterized by fever, headache, fatigue, the distribution of pain through the body, skin rash, and enlargement of lymph nodes. In 2024, the resurgence of the Monkeypox virus will become a significant public health concern, marked by increased incidence and geographical spread. This article provides an overview of the current state of the outbreak, examining contributing factors such as changes in human behavior, global travel patterns, and gaps in vaccination coverage. We analyze recent epidemiological data, including transmission dynamics and affected populations, to assess the impact on healthcare systems. The response strategies implemented so far, including enhanced surveillance, vaccination campaigns, and public health interventions, are evaluated for their effectiveness. The findings underscore the need for continued global cooperation, investment in research, and robust health infrastructure to manage and mitigate the ongoing risk of Monkeypox and similar infectious diseases. In the current article review, the World Health Organization (WHO) declared the waves and outbreak of MPXV to be a public health emergency globally. Collaborative efforts between governments, healthcare providers, and international organizations will be essential in managing this evolving threat and safeguarding public health.

Keywords: Monkeypox virus, Zoonosis, Outbreak, Emergency, Globally

1. Introduction

1.1. Background

Monkeypox (MPXV) is a viral zoonotic disease caused by the Monkeypox virus. The Monkeypox virus, which is a DNA virus and a member of the Orthopoxvirus genus that was primarily found in Central and West Africa initially, is the etiological agent of Monkeypox, a zoonotic disease that can be transferred to humans (2, 3), and the primary method of MPXV transmission involves intercourse with an infected person (4). Additionally, it is believed that the MPXV virus enters the human body through a variety of openings, including the respiratory system, broken skin, and mucosal surfaces such as oral, pharyngeal, ocular, or vaginal, as seen in Fig. 1 (5). There are several reservoir hosts for the Monkeypox virus, including mice, rats, dogs, and squirrels (6).

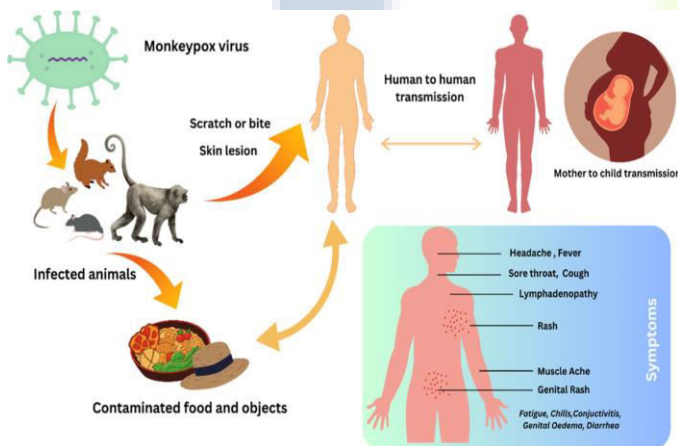


Fig. 1: Various routes of transmission of the Monkeypox virus to humans (7)

The clinical manifestations of MPXV and the incubation period ranged between 1 and 14 days, although it can take up to 21 days. The disease starts with fever, headaches, muscle pain, and a rash. Rash appears one to three days after the fever and appears on the following regions: face, mouth, eyes, legs, hands, chest, anus, and genitalia. This rash starts off as a flat macula, develops into a papule, and then forms into a transparent liquid-filled vesicle. After that, this clear liquid becomes yellowish and develops into pustules. The patient is no longer regarded as contagious once the lesions, pustules, and crusts have fallen off (8, 9).

It is difficult to diagnose the MPXV infection; it only depends on the main clinical signs, mainly the appearance of rash on the skin, because several pathogens cause rash on the skin (9). Therefore, the conventional diagnosis is done by real-time or conventional polymerase chain reaction tests for the

amplification of the nucleic acids in laboratories to confirm specimens from suspected cases and sequencing (10).

1.2 Why has the outbreak of MPXV increased?

The MPXV infection, which was once primarily confined to parts of Africa, has seen a concerning rise in cases globally in recent years (3). The emergence of the COVID-19 pandemic has raised public awareness of zoonosis, and the global hazards posed by new emerging pathogens, which is one cause of raising MPXV (6, 11). There are several key factors contributing to the increase in MPXV: increased human-animal contact. As human populations expand and encroach on animal habitats, there are more opportunities for the MPXV to jump from wild animals like rodents to humans (12). Climate change and conflict have all been linked to increased human-animal interactions in endemic regions because poxviruses are more adaptable to alterations in the environment because their envelopes have a lower lipid content (13). The elimination of smallpox and the demise of routine vaccinations have been linked to the outbreak of MPXV. A smallpox vaccination provided cross-protection against Monkeypox (14). Since smallpox was taken off the list of recommended vaccines in countries such as the USA in 1972, the majority of people no longer have protection against both smallpox and Monkeypox (15). The World Health Organization (WHO) and the Centers for Disease Control and Prevention (CDC) have classified the MPXV as an emerging zoonotic disease in 2022 because of its high dissemination and quick spread (16). On the other hand, the epidemiology, severity, and clinical manifestations of the outbreak of 2022 MPXV were changed (17, 18). Tecovirimat and Cidofovir are antiviral medications that have been authorized by the European Medicines Agency and the US Food and Drug Administration for the treatment of MPXV infection (19). The outbreak of MPXV in 2023 was declared by the World Health Organization (WHO) and considered a public health threat; the first case was observed in Israel in June 2023 (20, 21). A few days ago, on August 14, 2024, the World Health Organization (WHO) declared the waves and outbreak of MPXV a public health emergency globally (22).

2. Conclusion:

The rise of MPXV cases in 2024 underscores the ongoing need for vigilance and preparedness in global health. The outbreak highlights the importance of robust surveillance systems, rapid response mechanisms, and public health education to prevent further spread. Continued investment in research and vaccine development is crucial to mitigating the impact of Monkeypox and similar emerging infectious diseases. Collaborative efforts between governments, healthcare providers, and international organizations will be essential in managing this evolving threat and safeguarding public health.

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