



AN EXTENSIVE STUDY ON MONKEYPOX: AN EMERGING GLOBAL CRISIS

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ABSTRACT **Introduction:** Several viral diseases with epidemic potential are currently threatening global health security. One of them is Monkeypox. It is an emerging zoonotic infection which is caused by the monkeypox virus. In the past, this disease used to be primarily detected in West and Central Africa. However, the current upsurge of cases outside the African region has led the world to explore the causes that have led to the current situation. Aim and objectives of this study was to explore the reasons for the current upsurge and describe the epidemiology of the disease. **Material and Methods:** The keywords below were used to search from public databases and review the relevant publications on Monkeypox disease and its epidemiology. This search was further used to analyse and summarise the findings into tables and other graphical representation of the data. **Result and Conclusion:** Monkeypox cases are currently being reported from non-endemic countries e.g. USA, UK, Belgium, France, Germany, Italy, Netherlands, Portugal, Spain, Sweden, Australia, Canada, Austria, Canary Islands, Israel and Switzerland. There are no reported cases of monkeypox virus in India till date as on 6th June 2022. Cases have mainly but not exclusively been identified amongst men who have sex with men (MSM) seeking care in primary care and sexual health clinics in the range of 22 to 63 years of age. Follow public health measures to prevent another pandemic in the recent future.

KEYWORDS : Monkeypox, Zoonotic, Global, Viral disease

Introduction

Monkeypox is a viral zoonotic disease, with symptoms similar to those seen in the past in smallpox patients, although the symptoms are much lesser.

The countries endemic with Monkeypox are: Benin, Cameroon, the Central African Republic, the Democratic Republic of the Congo, Gabon, Ghana, Ivory Coast, Liberia, Nigeria, the Republic of the Congo, Sierra Leone, and South Sudan.¹ Fortunately the mortality rate is low, between 1 to 10 percent, and is particularly low with the current strain that has most recently appeared globally.

The first confirmed case was on May 7th 2022 seen in a person who had travelled from Nigeria to the United Kingdom. A few additional cases were also noted in London but were unrelated to the first case suggesting unlinked chains of infection. So far to date, there have been no reports of any mortality.²

Monkeypox cases continue to rise globally. The infection flare up could lead to a bigger outbreak throughout the world. The United States- Centre of Disease Control and Prevention (CDC) is aware of approximately 700+ cases of Monkeypox in 30 countries with at least 21 cases in the United States. Genetic analysis of recent monkeypox cases suggest that there are two distinct strains of Monkeypox in the United States till now. But there is a strong possibility that there have been strains of Monkeypox circulating for quite some time now. WHO has already issued a warning about Monkeypox and the possibility of community spread in the region, even though there is no evidence linked to it. However, there has been a community spread reported from the United Kingdom with at least 185+ cases of infection in the month of May. According to the World Health Organisation, the unknown, rare virus can spread very quickly in countries where the virus has not yet been detected.³

Objective

To evaluate the occurrence of monkeypox cases in non-endemic regions of the world

Material and Methods

This study is based on the secondary data. A thorough examination of literature was conducted. Studies which included monkeypox cases around the world, epidemiology, and clinical presentation were analysed to retrieve the relevant data. The search was conducted through public databases and those articles that fulfilled the eligibility criteria were included in the current study. The duration of the study

was from May 2022 to June 2022. Further analysis was conducted to summarise the findings in the form of tables and figures.

Results

Global Situation:

According to the World Health Organisation (WHO), in the present series of outbreaks being reported, this is the first time that chains of transmission are reported in Europe without known epidemiological links to West or Central Africa. Monkeypox has been reported as endemic in several other central and western African countries such as: Cameroon, Central African Republic, Côte d'Ivoire, Democratic Republic of the Congo, Gabon, Liberia, Nigeria, Republic of the Congo, and Sierra Leone. This has been also reported in certain non-endemic countries e.g. USA, UK, Belgium, France, Germany, Italy, Netherlands, Portugal, Spain, Sweden, Australia, Canada, Austria, Canary Islands, Israel and Switzerland. There are no reported cases of monkeypox virus in India till date as on 6th June 2022. However, India needs to be prepared in view of the increasing reports of cases in non-endemic countries.⁴

Monkeypox is predominant in Europe and North America, with 21 cases in the United States, 51 cases in France, 80 cases in Canada, 207 cases in the United Kingdom and so on respectively. There is a significant surge in the cases seen in the countries of Spain, Portugal and the Netherlands. This has left scientists puzzled as most of the cases were previously reported from certain parts of Africa. Experts have reported that the predominant cases being reported outside of Africa could lead to a spillback of the virus into Animals, which could potentially turn the viral disease into an endemic one in other parts of the world.⁵

WHO Director-General Tedros Adhanom Ghebreyesus said the sudden appearance of monkeypox in multiple countries across the world indicates the virus has been spreading undetected for some time. Monkeypox virus disease is suspected in people of any age who have been to affected countries within the last 21 days and have an unexplained acute rash, as well as additional symptoms such as swollen lymph nodes, fever, headache, body aches, and severe weakness.⁶

Indian Scenario:

Despite the fact that no instances of monkeypox virus have been discovered in India as of May 31, the Health Ministry advises that India be prepared in the event of an increase in cases in non-endemic nations. An alert has been issued to the National Centre for Disease Control

(NCDC) and Indian Council of Medical Research (ICMR), the Indian government has asked them to keep a close watch on the monkeypox situation and send samples of symptomatic travellers to the National Institute of Virology (NIV) in Pune for further investigation.

The ministry said even one case is to be considered an outbreak.

Epidemiology

It is caused by the monkeypox virus which belongs to the *orthopoxvirus* genus of the *Poxviridae* family. There are two clades of monkeypox virus: the West African clade and the Congo Basin (Central African) clade. The name monkeypox originates from the initial discovery of the virus in laboratory monkeys in 1958, since then various animal species like squirrels and rats have been identified as susceptible to it. The first human case was identified in a child in the Democratic Republic of the Congo in 1970 and has been sporadic in certain African Nations like Nigeria as an ongoing outbreak since the year 2017.⁶

Monkeypox is usually a self-limiting disease but may be severe in some individuals due to other health conditions. The public health risk of this disease might become high if this virus manages to establish itself as a human pathogen or if it spreads rapidly to the immunocompromised population or if it spreads to children. Human infections with the West African clade appear to cause less severe disease compared to the Congo Basin clade, with a case fatality rate of 3.6% compared to 10.6% for the Congo Basin clade.

Epidemiological investigations are ongoing, however, reported cases thus far have no established travel links to endemic areas. Based on currently available information, cases have mainly but not exclusively been identified amongst men who have sex with men (MSM) seeking care in primary care and sexual health clinics. And most of the cases reported have been of men between 22 to 63 years of age.

Transmission

Monkeypox virus is transmitted from one person to another by close contact with lesions, body fluids, respiratory droplets and contaminated materials such as bedding. The incubation period of monkeypox is usually from 6 to 13 days but can range from 5 to 21 days.⁷

Clinical Picture

Symptoms of monkeypox typically include a fever, intense headache, muscle aches, back pain, low energy, swollen lymph nodes and a skin rash or lesions. The rash usually begins within one to three days of the start of a fever. Lesions can be flat or slightly raised, filled with clear or yellowish fluid, and can then crust, dry up and fall off. The number of lesions on one person can range from a few to several thousand. The rash tends to be concentrated on the face, palms of the hands and soles of the feet. They can also be found on the mouth, genitals and eyes. Symptoms typically last between 2 to 4 weeks and go away on their own.⁸

Suspected Cases

A person of any age presenting in a monkeypox non-endemic country with an unexplained acute rash and One or more of the following key signs or symptoms, since 15 March 2022, that include:

- Headache
- Fever (>38.5°C),
- Lymphadenopathy (swollen lymph nodes)
- Myalgia (muscle and body aches)
- Exhaustion
- Back pain
- Asthenia (profound weakness)
- Chickenpox like rash

It usually takes 2-4 weeks to recover from this disease as reported by the Health Authorities.

Besides the commonly known symptoms, there are basically four stages of this infection Stage 1- Flu like symptoms which are confined to the upper respiratory tract which may appear like regular flu symptoms like fever, body ache, fatigue

Stage 2- Several and large lymph nodes begin to appear on the surface of the skin

Stage 3- Rashes begin to appear on different parts of the body like hands, feet, legs and shoulders

Stage 4- When the rashes convert into pus filled blisters and these lasts for 2-4 weeks⁹

Public Health Response

The WHO once again stressed that the large number of cases detected in more than two dozen countries within a short time interval suggests that there “may have been undetected transmission for some time”.

Public health investigations are ongoing in non-endemic countries that have identified cases, including extensive case finding and contact tracing, laboratory investigation, clinical management and isolation provided with supportive care. Genomic sequencing, where available, have been undertaken to determine the monkeypox virus clade(s) in this outbreak. Vaccination for monkeypox, where available, is being deployed to manage close contacts, such as health workers. WHO is convening experts to discuss recommendations on vaccination.¹⁰

At present, there are two available and authorised vaccines that had been originally developed against Smallpox. Since Monkeypox is closely related to Smallpox, the drugs that were created to fight Smallpox could be effective in treating and controlling Monkeypox as well.

The country of France has already recommended vaccination in individuals returning from at risk countries or who are in contact with the infected individuals.

Conclusion

Scientists have warned that the disease can be transmitted to animals through human medical waste. But Monkeypox is not COVID-19 and the cases have not escalated as yet, this is what the scientists are trying to avoid.

Recommendations

The key measures that can be taken to prevent infection with monkeypox virus: Isolate infected patients from others who could be at risk for infection. Avoid contact with any materials, such as bedding, that has been in contact with a patient of Monkeypox. Practice good hand hygiene after contact with infected persons. For example, washing your hands with soap and water or using an alcohol-based hand sanitizer. Use masks and gloves when caring for patients.

Figures and Tables

Table-1 Cases of monkeypox in non-endemic countries reported to WHO between 13 to 21 May 2022 as at 13:00

Country	Confirmed	Suspected
Australia	1-5	-
Belgium	1-5	1-5
Canada	1-5	11-20
France	1-5	1-5
Germany	1-5	-
Italy	1-5	-
Netherlands	1-5	-
Portugal	21-30	-
Spain	21-30	6-10
Sweden	1-5	-
United Kingdom	21-30	-
United States of America	1-5	-
Total	92	28

Figure 1 Clinical picture of presentation



Table 2 Differences between Monkeypox, Chickenpox and Smallpox

Monkeypox, chickenpox, and smallpox compared			
	MONKEYPOX	CHICKENPOX	SMALLPOX (ERADICATED)
Virus	Monkeypox virus, orthopoxvirus family	Varicella-zoster virus	Variola virus, orthopoxvirus family
Fever	1–5 days before rash	1–2 days before rash	2–4 days before rash
Rash appearance	Often starts on the face then spreads to other parts of the body, including palms and soles. The rash eventually forms a scab that falls off.	Itchy, blister-like rash — first on the chest, back, and face, and then spreads over the entire body. Absent on palms and soles.	Starts as small red spots on the tongue and mouth. Rash then appears on the skin, starting on the face and spreads to arms and legs, and then palms and soles. The rash eventually forms a scab that falls off.
Swollen lymph nodes	Yes	No	No
Time between catching it and symptoms	5–21 days	10–21 days	7–19 days
How long illness lasts	2–4 weeks	4–7 days	Up to 5 weeks
Death	1–10% of cases, depends on strain	Rare	Up to 30% of cases, depends on type

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