

Monkey Pox: Viral Zoonoses

Dr. Rizwan Khan*

Assistant Professor, Department of Veterinary Public Health & Epidemiology, Apollo College of Veterinary Medicine, Jaipur (Rajasthan)

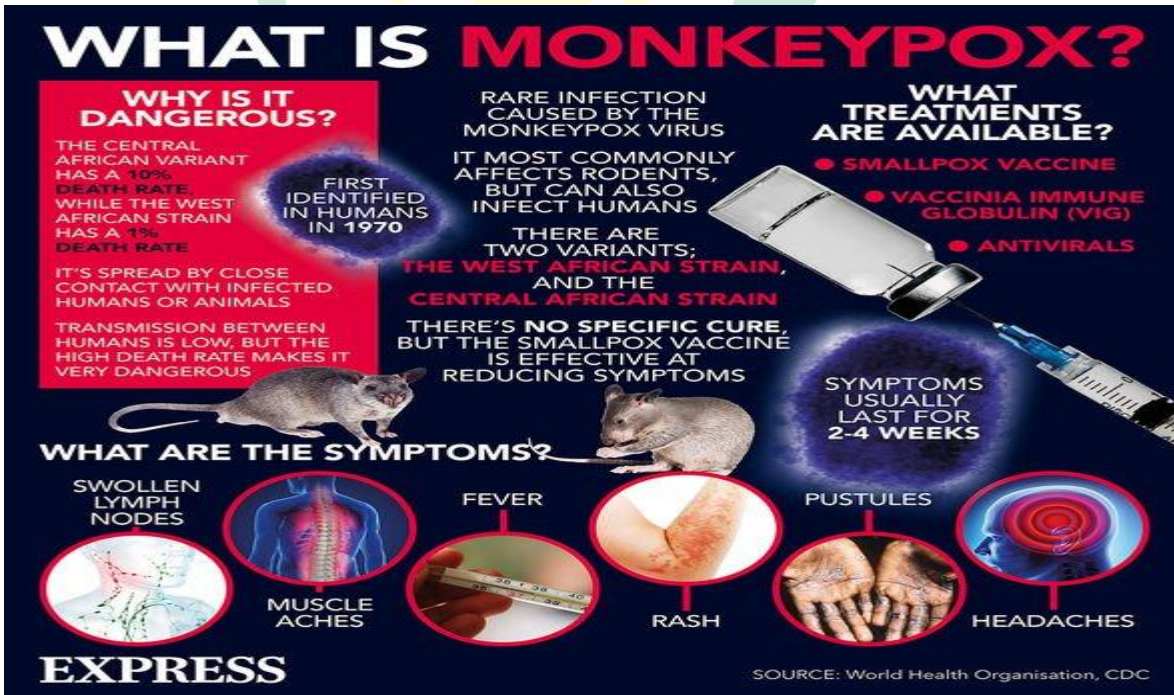
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Introduction

Monkeypox virus belongs to the genus Orthopox virus in the family Poxviridae is a double-stranded DNA virus that causes monkeypox in humans and other animals. It is one of the human orthopoxviruses that includes variola, cowpox, and vaccinia viruses.

Epidemiology

Monkeypox was first discovered in 1958 when two outbreaks of a pox-like disease occurred in colonies of monkeys kept for research, hence the name 'monkeypox.' The first human case of monkeypox was recorded in 1970 in the Democratic Republic of the Congo (DRC) during a period of intensified effort to eliminate smallpox. Since then, monkeypox has been reported in people in several other central and western African countries. There are no reported cases of monkeypox virus in India till date. However, India needs to be prepared in view of the increasing reports of cases in non-endemic countries.



WHAT IS MONKEYPOX?

WHY IS IT DANGEROUS?
 THE CENTRAL AFRICAN VARIANT HAS A 10% DEATH RATE WHILE THE WEST AFRICAN STRAIN HAS A 1% DEATH RATE
 IT'S SPREAD BY CLOSE CONTACT WITH INFECTED HUMANS OR ANIMALS
 TRANSMISSION BETWEEN HUMANS IS LOW, BUT THE HIGH DEATH RATE MAKES IT VERY DANGEROUS

FIRST IDENTIFIED IN HUMANS IN 1970

RARE INFECTION CAUSED BY THE MONKEYPOX VIRUS
 IT MOST COMMONLY AFFECTS RODENTS, BUT CAN ALSO INFECT HUMANS

WHAT TREATMENTS ARE AVAILABLE?

- SMALLPOX VACCINE
- VACCINIA IMMUNE GLOBULIN (VIG)
- ANTIVIRALS

THERE ARE TWO VARIANTS; THE WEST AFRICAN STRAIN, AND THE CENTRAL AFRICAN STRAIN

SYMPTOMS USUALLY LAST FOR 2-4 WEEKS

WHAT ARE THE SYMPTOMS?

- SWOLLEN LYMPH NODES
- MUSCLE ACHES
- FEVER
- RASH
- PUSTULES
- HEADACHES

THERE'S NO SPECIFIC CURE, BUT THE SMALLPOX VACCINE IS EFFECTIVE AT REDUCING SYMPTOMS

EXPRESS

SOURCE: World Health Organisation, CDC

Hosts & Reservoir

Natural reservoir is yet unknown. However, certain rodents (including rope squirrels, tree squirrels, Gambian pouched rats, dormice) and non-human primates are known to be naturally susceptible to monkeypox virus.

Transmission

Monkeypox virus can spread when a person comes into contact with the virus from an infected animal, infected person, or materials contaminated with the virus. The virus can also cross the placenta from the mother to her fetus. *Monkeypox virus* may spread from animals to people through the bite or scratch of an infected animal, by handling wild game, or through the use of products made from infected animals. The virus may also spread through direct contact with body fluids or sores on an infected person or with materials that have touched body fluids or sores, such as clothing or linens.

Monkeypox spreads between people primarily through direct contact with infectious sores, scabs, or body fluids. It also can be spread by respiratory secretions during prolonged, face-to-face contact.

Monkeypox: What To Know About Symptoms and Transmission



Source: CDC

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Signs & Symptoms

In humans, the symptoms of monkeypox are similar to but milder than the symptoms of smallpox. Monkeypox begins with fever, headache, muscle aches, and exhaustion. The main difference between symptoms of smallpox and monkeypox is that monkeypox causes lymph nodes to swell (lymphadenopathy) while smallpox does not. The incubation period (time from infection to symptoms) for monkeypox is usually 7–14 days but can range from 5–21 days.

The illness begins with:

- Fever
- Headache
- Muscle aches
- Backache
- Swollen lymph nodes
- Chills
- Exhaustion

Within 1 to 3 days (sometimes longer) after the appearance of fever, the patient develops a rash, often beginning on the face then spreading to other parts of the body.

Lesions progress through the following stages before falling off:

- Macules
- Papules
- Vesicles
- Pustules
- Scabs

The illness typically lasts for 2–4 weeks. In Africa, monkeypox has been shown to cause death in as many as 1 in 10 persons who contract the disease.

Diagnosis

Monkeypox can be tentatively diagnosed if the characteristic skin lesions are present, or if other symptoms consistent with the disease are seen during an outbreak. The diagnosis can be confirmed by histopathology and virus isolation. Polymerase chain reaction (PCR) tests can also detect monkeypox DNA in tissues.



Treatment

Currently there is no specific treatment approved for monkeypox virus infections. However, antivirals developed for use in patients with smallpox may prove beneficial. The following medical countermeasures are currently available from the Strategic National Stockpile (SNS) as options for the treatment of monkeypox:

- ✓ Tecovirimat (also known as TPOXX) is an antiviral medication that is approved by the United States Food and Drug Administration (FDA) for the treatment of smallpox in adults and children weighing at least 6.6 pounds.
- ✓ Cidofovir (also known as Vistide) is an antiviral medication that is approved by the FDA for the treatment of cytomegalovirus (CMV) retinitis in patients with Acquired Immunodeficiency Syndrome (AIDS). CDC holds an EA-IND that allows for the use of Cidofovir for the treatment of orthopoxviruses (including monkeypox) in an outbreak.
- ✓ Brincidofovir (also known as Tembexa) is an antiviral medication that was approved by the FDA for the treatment of human smallpox disease in adult and pediatric patients, including neonates.
- ✓ Vaccinia Immune Globulin Intravenous (VIGIV) is licensed by FDA for the treatment of complications due to vaccinia vaccination including eczema vaccinatum, progressive vaccinia, severe generalized vaccinia, vaccinia infections in individuals who have skin conditions, and aberrant infections induced by vaccinia virus (except in cases of isolated keratitis)

Prevention

Take the following steps to prevent getting monkeypox:



- Avoid close, skin to skin contact with the monkeypox rash.
 - Do not touch the rash or scabs of person with monkeypox.
 - Do not kiss, hug, cuddle or have sex with someone with monkeypox.
 - Do not share eating utensils or cups.
- Do not handle or touch the bedding, towels, or clothing of a sick person.
- Wash your hands often with soap and water or use an alcohol-based hand sanitizer, especially after contact with sick people.
- In Central and West Africa, avoid contact with animals that can spread monkeypox virus, usually rodents and primates. Also, avoid sick or dead animals, as well as bedding or other materials they have touched.

A person who is sick with monkeypox should isolate at home. If they have an active rash or other symptoms, they should be in a separate room or area from other family members and pets when possible.

Conclusion

As the source and spread of this outbreak are being investigated, it is crucial to assess all possible modes of transmission and identify risk groups, as well as institute appropriate public health preventive measures. CDC is providing guidance on case definitions, identification of contacts, clinical management, and infection control and prevention within health care facilities and the home, creating resources for disseminating information on monkeypox, and supporting laboratory testing infrastructure domestically and globally. Veterinarians should consider all mammals susceptible to monkeypox and be aware of how the disease transmits from animal to animal. Veterinarians who decide to treat animals with suspected monkeypox should use infection control precautions to protect themselves, staff, clients, as well as other animal patients in the clinic.