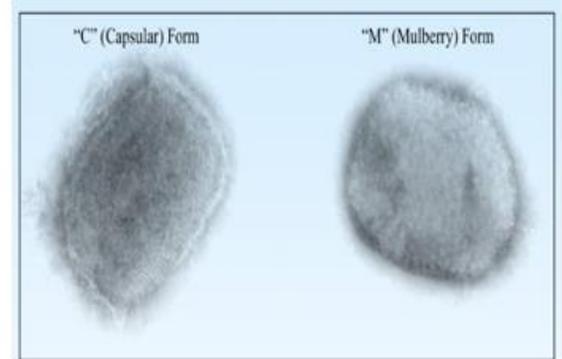


Review Article

Monkey Pox Virus: Next Pandemic?

Dr. Vachaspati Narayan¹, Dr. Abhishek Gaurav², Prof. (Dr.) Rajeev Kumar Joshi³, Dr Mahender miland⁴, Dr. Jyotsana Rathore⁵ and ⁶Dr. Kritika Gahlot

¹Teaching Associate, Department of Veterinary Biochemistry, ²Asstt. Prof., Department of Veterinary Public Health, ³Professor, Department of Animal Breeding and Genetics ⁴Asstt. Prof., Department of Veterinary Microbiology ⁵M.V.Sc. Scholar, Department of Livestock Products and Technology ⁶Teaching Associate, College of Veterinary and Animal Science, Navania, Vallabhnagar, Udaipur (Rajasthan University of Veterinary and Animal Sciences, Bikaner, Rajasthan)



Monkey Pox Virus

Monkey pox is a viral zoonosis (a virus transmitted to humans from animals) with symptoms similar to those seen in the past in smallpox patients, although it is clinically less severe. Monkey pox has emerged as the most important Orthopoxvirus for public health. Monkey pox primarily occurs in central and west Africa, often in proximity to tropical rainforests, and has been increasingly appearing in urban areas. Severe cases can occur. In recent times, the case fatality ratio has been around 3–6%.

Etiology

Monkey pox is caused by monkey pox virus, a member of the Orthopoxvirus genus in the family Poxviridae. There are two distinct genetic clades of the monkey pox virus: the central African (Congo Basin) clade and the West African clade. The Congo Basin clade has historically caused more severe disease that is more transmissible. Monkeypox virus is an enveloped double-stranded DNA virus that belongs to the *Orthopoxvirus* genus.

Natural host

Various animal species have been identified as susceptible to monkey pox virus. This includes rope squirrels, tree squirrels, Gambian pouched rats, dormice, non-human primates and other species.

Transmission

Transmission (zoonotic) can occur from direct contact with the blood, bodily fluids, or cutaneous or mucosal lesions of infected animals. The natural reservoir of monkey pox has not yet been identified, though rodents are the most likely. Eating inadequately cooked meat and other animal products of infected animals is a possible risk factor. People living in or near forested areas may have indirect or low-level exposure to infected animals.

Human-to-human transmission can result from close contact with respiratory secretions, skin lesions of an infected person; Transmission via droplet respiratory particles usually requires prolonged face-to-face contact, which puts health workers, household members and other close contacts of active cases at greater risk. Transmission can also occur via the placenta from mother to fetus (which can lead to congenital monkey pox) or during close contact during and after birth. While close physical contact is a well-known risk factor for transmission, it is unclear at this time if monkey pox can be transmitted specifically through sexual transmission routes. Monkeypox is a self-limited disease with the symptoms lasting for 2 to 4 weeks. In recent, the case fatality ratio has been around 3–6%. Monkeypox is also transmitted to humans through close contact with an infected person or animal.

Signs and symptoms

- The incubation period of monkey pox is usually from 6 to 13 days but can range from 5 to 21 days.
- The invasion period lasts between 0–5 days characterized by fever, intense headache, lymphadenopathy (swelling of the lymph nodes), back pain, myalgia (muscle aches) and intense asthenia (lack of energy). Lymphadenopathy is a distinctive feature of monkey pox.
- The skin eruption usually begins within 1–3 days of appearance of fever. The rash tends to be more concentrated on the face and extremities rather than on the trunk. It affects the face (in 95% of cases), and palms of the hands and soles of the feet (in 75% of cases). Also affected are oral mucous membranes (in 70% of cases), genitalia (30%), and conjunctivae (20%), as well as the cornea. The rash evolves sequentially from macules (lesions with a

flat base) to papules (slightly raised firm lesions), vesicles (lesions filled with clear fluid), pustules (lesions filled with yellowish fluid), and crusts which dry up and fall off.

- The case fatality ratio of monkey pox has historically ranged from 0 to 11 % in the general population and has been higher among young children. In recent times, the case fatality ratio has been around 3–6%.
- Monkeypox presents clinically with fever, rash and swollen lymph nodes and that may lead to a range of medical emergency.
- The clinical presentation of monkeypox resembles that of smallpox, a related orthopoxvirus infection.

Diagnosis

- Optimal diagnostic samples for monkey pox are from skin lesions – the roof or fluid from vesicles and pustules, and dry crusts.
- Polymerase chain reaction (PCR) is the preferred laboratory test given its accuracy and sensitivity.

Treatment

- ✚ Clinical care for monkey pox should be fully optimized to alleviate symptoms, manage complications and prevent long-term sequelae.
- ✚ Patients should be offered fluids and food to maintain adequate nutritional status.
- ✚ Secondary bacterial infections should be treated.
- ✚ There are no treatments for monkeypox virus infections, for this antiviral, such as tecovirimat (TPOXX), may be recommended for monkey pox virus disease.
- ✚ Nowadays National Institute of Allergy and Infectious Diseases is working to conduct clinical trials of tecovirimat to treat patients with monkeypox virus infection.

Prevention

- Raising awareness of risk factors and educating people about the measures they can take to reduce exposure to the virus is the main prevention strategy for monkey pox.
- A still newer vaccine based on a modified attenuated vaccinia virus (Ankara strain) was approved for the prevention of monkey pox in 2019. This is a two-dose vaccine for which availability remains limited.
- Vaccines which were used for the smallpox eradication programme also provided protection to the monkeypox.

- Genomic sequencing, where it is easily accessible have been undertaken to determine the monkeypox virus clade.
- A self-protection includes avoid skin to skin or face to face contact with anyone who has symptoms, keeping hands clean with water and soap or Sanitizer, and maintaining respiratory etiquette.

Monitoring by public health authorities

- In passive monitoring, identified contacts are provided with information on the symptoms to monitor.
- Active monitoring is when public health officials are responsible for checking at least once a day.
- Direct monitoring is a variation of active monitoring which involves at least daily either physically visiting or visually examining of illness.

References

<https://www.who.int/news-room/fact-sheets/detail/monkeypox>
<https://www.cdc.gov/poxvirus/monkeypox/treatment.html>
<https://www.niaid.nih.gov/diseases-conditions/monkeypox-treatment>