

MONKEYPOX

Dr.M.Jafarzadeh Infectious disease specialist



Introduction

- Monkeypox 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.
- With the eradication of smallpox in 1980 and subsequent cessation of smallpox vaccination, monkeypox has emerged as the most important orthopoxvirus for public health.
- Monkeypox primarily occurs in central and west Africa, often in proximity to tropical rainforests, and has been increasingly appearing in urban areas.
- Animal hosts include a range of rodents and non-human primates.

- Monkeypox is caused by monkeypox virus, a member of the Orthopoxvirus genus in the family Poxviridae.
- Monkeypox is usually a self-limited disease with the symptoms lasting from 2 to 4 weeks. Severe cases can occur. In recent times, the case fatality ratio has been around 3–6%.
- Monkeypox is transmitted to humans through close contact with an infected person or animal, or with material contaminated with the virus.
- Monkeypox virus is transmitted from one person to another by close contact with lesions, body fluids, respiratory droplets and contaminated materials such as bedding.

Outbreaks

- Human monkeypox was first identified in humans in 1970 in the Democratic Republic of the Congo in a 9-month-old boy in a region where smallpox had been eliminated in 1968.
- Since then, most cases have been reported from rural, rainforest regions of the Congo Basin, particularly in the Democratic Republic of the Congo and human cases have increasingly been reported from across central and west Africa.

- Since 1970, human cases of monkeypox have been reported in 11 African countries.
- The true burden of monkeypox is not known. For example, in 1996–97, an outbreak was reported in the Democratic Republic of the Congo with a lower case fatality ratio and a higher attack rate than usual.
- A concurrent outbreak of chickenpox (caused by the varicella virus, which is not an orthopoxvirus) and monkeypox was found, which could explain real or apparent changes in transmission dynamics in this case.
- Since 2017, Nigeria has experienced a large outbreak, with over 500 suspected cases and over 200 confirmed cases and a case fatality ratio of approximately 3%. Cases continue to be reported until today.

The importance of disease

- Monkeypox is a disease of global public health importance as it not only affects countries in west and central Africa, but the rest of the world. In 2003, the first monkeypox outbreak outside of Africa was in the United States of America and was linked to contact with infected pet prairie dogs.
- These pets had been housed with Gambian pouched rats and dormice that had been imported into the country from Ghana. This outbreak led to over 70 cases of monkeypox in the U.S.
- Monkeypox has also been reported in travelers from Nigeria to Israel in September 2018, to the United Kingdom in September 2018, December 2019, May 2021 and May 2022, to Singapore in May 2019, and to the United States of America in July and November 2021.
- In May 2022, multiple cases of monkeypox were identified in several non-endemic countries. Studies are currently underway to further understand the epidemiology, sources of infection, and transmission patterns.

Signs and symptoms

- The incubation period (interval from infection to onset of symptoms) of monkeypox is usually from 6 to 13 days but can range from 5 to 21 days.
- The infection can be divided into two periods: 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 monkeypox compared to other diseases that may initially appear similar (chickenpox, measles, smallpox)

Signs and symptoms

- 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 number of lesions varies from a few to several thousand.
- In severe cases, lesions can coalesce until large sections of skin slough off.

Signs and symptoms

- Monkeypox is usually a self-limited disease with the symptoms lasting from 2 to 4 weeks.
- Severe cases occur more commonly among children and are related to the extent of virus exposure, patient health status and nature of complications.
- Underlying immune deficiencies may lead to worse outcomes. Although vaccination against smallpox was protective in the past, today persons younger than 40 to 50 years of age (depending on the country) may be more susceptible to monkeypox due to cessation of smallpox vaccination campaigns globally after eradication of the disease.

Signs and symptoms

- Complications of monkeypox can include secondary infections, bronchopneumonia, sepsis, encephalitis, and infection of the cornea with ensuing loss of vision.
- The extent to which asymptomatic infection may occur is unknown.
The case fatality ratio of monkeypox 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%.

Risk factors

- Sexual and intimate contact with secretions, fluids, and respiratory droplets from an infected or infected person or device
- Biting or direct contact with the blood, flesh or body fluids of an infected animal
- Health workers, family members caring for the patient
- Living in forested areas
- Gender Male
- Age less than 15 years
- No previous vaccination against smallpox

Diagnosis

- The clinical differential diagnosis that must be considered includes other rash illnesses, such as chickenpox, measles, bacterial skin infections, scabies, syphilis, and medication-associated allergies.
- Lymphadenopathy during the prodromal stage of illness can be a clinical feature to distinguish monkeypox from chickenpox or smallpox.

- If monkeypox is suspected, health workers should collect an appropriate sample and have it transported safely to a laboratory with appropriate capability.
- Confirmation of monkeypox depends on the type and quality of the specimen and the type of laboratory test.
- Thus, specimens should be packaged and shipped in accordance with national and international requirements.
- Polymerase chain reaction (PCR) is the preferred laboratory test given its accuracy and sensitivity.

- For this, optimal diagnostic samples for monkeypox are from skin lesions – the roof or fluid from vesicles and pustules, and dry crusts.
- Where feasible, biopsy is an option.
- Lesion samples must be stored in a dry, sterile tube (no viral transport media) and kept cold.
- PCR blood tests are usually inconclusive because of the short duration of viremia relative to the timing of specimen collection after symptoms begin and should not be routinely collected from patients.

- As orthopoxviruses are serologically cross-reactive, antigen and antibody detection methods do not provide monkeypox-specific confirmation.
- Serology and antigen detection methods are therefore not recommended for diagnosis or case investigation where resources are limited.
- Additionally, recent or remote vaccination with a vaccinia-based vaccine (e.g. anyone vaccinated before smallpox eradication, or more recently vaccinated due to higher risk such as orthopoxvirus laboratory personnel) might lead to false positive results.
- In order to interpret test results, it is critical that patient information be provided with the specimens including: a) date of onset of fever, b) date of onset of rash, c) date of specimen collection, d) current status of the individual (stage of rash), and e) age.

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Thanks for your attention!

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