

Monkeypox

The world is anticipating a new disease related challenge, if it is not nipped in the bud, it may create a worldwide health havoc i.e., the emergence of monkeypox. In India latest cases concern, Kerala has reported 5 monkeypoxes and one related to death. In the meantime New Delhi, 3 cases have been reported¹.

A vaccine was recently approved for preventing monkeypox. Some countries are recommending vaccination for persons at risk. Many years of research have led to development of newer and safer vaccines for an eradicated disease called smallpox, which may also be useful for monkeypox. One of these has been approved for prevention of monkeypox. Only people who are at risk (for example someone who has been a close contact of someone who has monkeypox) should be considered for vaccination. Mass vaccination is not recommended at this time.

While the smallpox vaccine was shown to be protective against monkeypox in the past, current data on the effectiveness of newer smallpox/monkeypox vaccines in the prevention of monkeypox in clinical practice and in field settings are limited. Studying the use of vaccines for monkeypox wherever they are used will allow for rapid generation of additional information on the effectiveness of these vaccines in different settings.

The monkeypox is another example of viral zoonotic disease by the monkeypox virus which can spread from animals to humans and between people. The natural reservoir of monkeypox has not yet been identified, though are most likely some species of rodents. Monkeypox is a viral disease that originated in animals in West and Central Africa.

Eating uncooked or inadequately meat and other animal products of infected animals is a possible risk factor. Since 1970, human cases of monkeypox have been reported in 11 African countries—Benin, Cameroon, the Central African Republic, the Democratic Republic of the Congo, Gabon, Côte d’Ivoire, Liberia, Nigeria, as well as The Republic of the Congo, Sierra Leone, and South Sudan².

Cases have been reported from the United Kingdom (n=108), Canada (n=11), the United States of America (n=7), United Arab Emirates (n=3), Argentina (n=2), Switzerland (n=2), Israel (n=1) and Thailand (n=1).

Monkeypox can occasionally be deadly, especially in poor places with inadequate healthcare, and is closely related to smallpox, which plagued humans for millennia. Smallpox was eradicated due to a worldwide vaccination campaign. In the United States, mass vaccinations ended in 1972, but the vaccines remain stockpiled. Monkeypox has been known since the late 1950s.

Monkeypox and smallpox are in the same class of viruses. They share cross-immunity, which means protection against one confers protection against the other. In particular, vaccinations developed to protect against smallpox can provide protection against monkeypox too. There is overlapping in clinical symptoms. Both are associated with fever, swollen lymph glands, fatigue, and a vesicular rash – a rash with little blisters, which may be distributed anywhere on the body, and which is easily confused with chickenpox. Fortunately, the biggest difference is that monkeypox is much less disfiguring and deadly than smallpox, and in particular, the Western African strain of monkeypox which is circulating now is less pathogenic than the strain found in Central Africa.

A multi-country outbreak of monkeypox is currently underway in places where the virus has not been typically found before, in Europe, the Americas, Africa, the Western Pacific, and countries of the Eastern Mediterranean. More cases than normal have been reported in 2022 in parts of Africa that have previously reported cases, such as Nigeria, the

Democratic Republic of the Congo, and the Central African Republic. WHO is working with all affected countries to enhance surveillance and provide guidance on how to stop the spread and how to care for patients.

Monkeypox has been reported in some African countries in the years before this outbreak began. These include Cameroon, the Central African Republic, the Republic of the Congo, Côte d'Ivoire, the Democratic Republic of the Congo, Gabon, Liberia, Nigeria, and Sierra Leone. Some of these countries only had a few cases and others have had persistent or recurrent outbreaks. Occasional cases in other countries have been linked to travel from Nigeria. The current outbreak affecting many countries at once is not typical of previous outbreaks.

Symptoms of monkeypox typically include 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 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 thousands. 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 and 4 weeks and go away on their own without treatment. However, younger people are unlikely to have been vaccinated against smallpox because smallpox vaccination stopped worldwide after smallpox became the first human disease to be eradicated in 1980. Even though people who have been vaccinated against smallpox will have some protection against monkeypox too, they also need to take precautions to protect themselves and others. It most often spreads between humans through contact with disease lesions, or through exhaled respiratory droplets during prolonged close contact. Newborns, children and people with underlying immune deficiencies may be at risk of more serious symptoms and death from monkeypox. Health workers are also at higher risk due to longer virus exposure.

In the early fifties, global population took serious interest about fighting polio. For strong endeavour to make vaccine against, research laboratories in America and Europe needed an army of Rhesus monkeys for procuring live cells and as well testing efficacy of the vaccines. In 1958 a vaccine research laboratory in Denmark, observed a strange smallpox like disease in monkeys procured from Malaysia. On investigation, it was found that it was caused by a brand new virus, accordingly, disease was named by scientists monkeypox. A severe outbreak of monkeypox occurred from 1958 to 1968 in monkeys collected from Asian countries such as monkeys of Indonesia, India and Malaysia which tested negative for monkeypox antibody. So initial idea that virus reservoir is in Asian countries who supply monkeys for experimental production of vaccines³.

The mystery of virus origin was confirmed in 1970 after the first case of monkeypox was diagnosed in subject in erstwhile Zaire, presently known as Democratic Republic of Congo in Central Africa and subsequently 7 species of monkey and 2 species of squirrels had monkeypox antibody in their blood. It was inferred that Asian monkeys were infected during the transit with African monkeys.

In 1967 global smallpox eradication programme was started. After three years of this endeavour, monkeypox came into surface which confused the investigator because the two diseases were similar that if the monkeypox spreads from its origin, eventually it can be a failure of the purpose ie, the programme of eradication⁴.

Later on it was observed that the virus is a slow spreader because monkeypox confined itself to its natural reservoir in rain forests of Central and Western Africa particularly Nigeria, Sierra lion, and Ivory cost. Outbreak of monkeypox mainly occurred in small villages inside tropical rain forests where the people lead a life of hunter gatherer and have frequent contact with wild animals particularly, the reservoir of the virus. Later on it was pointed out in 1989

that monkeypox was not very contagious in human referred in a book “The Orthopox Viruses” written by scientists, Frank Fenner, Riccardo, Wittek and Keith Dumbell⁵.

Next scenario is “spreading of monkeypox in the United States”. In 2003, during May and June, 82 cases of the disease were reported. A family in Wisconsin and in another case a boy were contracted with the disease. It was detected every case in the USA, started from contact with prairie dog (rodent).

References:

1. Abhilash Gour; Times of India. Times Global, 1st June 2022
2. Jeffrey Norris. How Dangerous is Monkey Pox? UCSF's Seth Blumberg Explain. Research May 26th 2022.
3. Timothee L. Kinkela, Seth Blumberg, Henri A. Thomasseng, Brian L. Pihl, Joseph N. Fairhead, Nathan D. Wolfe, Robert L. Shongoi, Barney S. Graham, Pierre Formenty, Emile Okitolondak, Lisa E. Hensley, Hermann Meyer, Linda L. Wright, and Jean-Jacques Muyembembe. Major increase in human monkeypox incidence 30 years after smallpox vaccination campaigns cease in the Democratic Republic of Congo. PNAS. 16262-16267 | PNAS | September 14, 2010 | vol. 107 | no. 37
4. Jhon Cohen: doi: 10.1126/science.add2880
5. Frank Fenner, Riccardo, Wittek and Keith Dumbell. Book; Orthopox Viruses. Academic Press, 1st Edition, 1989.

Basudev Bhattacharya
Executive Editor,
Medical Glory,
Kolkata 700106
