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Monkeypox is Now a Public Health Emergency of International Concern

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ABSTRACT

Monkeypox is a viral zoonosis caused by an orthopoxvirus. Although monkeypox and smallpox share many clinical features, monkeypox is generally less severe than smallpox. Recently, we have been encountering monkeypox outbreaks outside the non-endemic countries. WHO has now declared the global monkeypox outbreak as a public health emergency of international concern. Surveillance and rapid identification of new cases is the key step for outbreak containment.

Keywords: Monkeypox; Nepal; Orthopoxvirus

Monkeypox is a viral zoonotic disease caused by the monkeypox virus. It causes symptoms similar to that of Smallpox.[1] Although monkeypox and smallpox share many clinical features, monkeypox is generally less severe than smallpox.[2] The infection was first seen in laboratory monkeys in 1958, hence has gained the name monkeypox. However, rodents are believed to be the major reservoir in Africa. Uncertainty remains in the natural history of the monkeypox virus and also in the identification of its exact reservoir. The monkeypox virus belongs to the genus orthodox (family Poxviridae). The other orthopox viruses include cowpox, vaccinia, and variola (smallpox) viruses.[3] There are two distinct genetic clades of the monkeypox virus: the central African (Congo Basin) clade and the west African clade. The Congo Basin clade has been linked with causing more severe diseases and being more transmissible. Since the eradication of smallpox in 1980, monkeypox has emerged as the most important orthopox virus of public health concern.[1] The first case of monkeypox was identified in

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1970 in the Democratic Republic of Congo in a 9-year-old boy.[4] Since 1970, human cases of monkeypox have been reported from Benin, Cameroon, the Central African Republic, the Democratic Republic of the Congo, Gabon, Cote d'Ivoire, Liberia, Nigeria, the Republic of the Congo, Sierra Leone and South Sudan. In 1996–97, an outbreak was reported in the Democratic Republic of the Congo.[1]

Now, monkeypox is no more limited to the countries in west and central Africa. In 2003, the first monkeypox outbreak outside of Africa was in the United States of America. This outbreak led to over 70 cases of monkeypox in the U.S. Monkeypox has also been reported in travellers 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.[1]

In the current outbreak of the last six months from January through July 2022, there have been more than 16,000 laboratory confirmed cases of monkeypox and five deaths have been reported from 75 countries in all six WHO Regions, which include the African Region, Region of the America, Eastern Mediterranean Region, European Region, South-East Asia Region and Western Pacific Region.[5] The maximum caseload was seen in the European region followed by the regions of America and the least was observed in South East Asia.[5]

The first case of monkeypox in the WHO South-East Asia Region was reported on 15 July 2022 from India, by a 35-year-old man who returned from the Middle East.[6] As of July 25, 2022, four cases are reported from India, out of which three cases had returned from the Middle East, but one had no history of foreign travel. Monkeypox has also been reported in Thailand.[7] Monkeypox has not been reported from Nepal to date. On 23rd July 2022, WHO declared the global monkeypox outbreak as a public health emergency of international concern.[2]

Transmission of the monkeypox virus occurs via direct cutaneous (skin-to-skin) or respiratory contact with an animal or person who is infected. Many of the current cases have been reported among men who have sex with men.[8] The incubation period ranges from 4-20 days. The prodromal stage lasts for 1-4 days before the onset of rash.[8] Fever with chills, sweating, myalgia, malaise, anorexia, prostration, severe headache, backache, pharyngitis, shortness of breath, and cough are the features. Lymphadenopathy appears within 2-3 days after the fever. In the eruptive stage, most persons develop a rash within 1-10 days after the onset of fever. The rash often starts on the face and then spreads to the rest of the body. The rash evolves sequentially from macules to papules, vesicles, pustules, and crusts which dry up and fall off. Hence, the most reliable clinical sign differentiating monkeypox from smallpox and chickenpox is enlarged lymph nodes, especially the submental, submandibular, cervical, and inguinal nodes.[9] The disease is self-limited and symptoms last for 2 to 4 weeks. Complications of monkeypox can include secondary infections, bronchopneumonia, sepsis, encephalitis, and infection of the cornea. The extent to which asymptomatic infection occurs remains unknown.

According to the recently observed clinical pattern in the current outbreak, most of the cases have presented with mild disease symptoms. But young children, pregnant women and immunosuppressed persons may have severe diseases. The case fatality rate is 3 to 6%. Even atypical presentations have been noted. The clinical presentation of some monkeypox cases associated with this outbreak has been atypical, especially in the newly-affected areas.[5]

Polymerase chain reaction (PCR) is the investigation of choice. For this, the sample is to be taken from skin lesions – the roof or fluid from vesicles and pustules, and dry

crusts. Where feasible, a biopsy is an option. PCR blood tests are usually inconclusive.[1]

Treatment is symptomatic. Based on the data in animal and human studies, an antiviral agent, tecovirimat which was initially developed for smallpox, is being used for the treatment of monkeypox in 2022. It may shorten the duration of illness and viral shedding and reduce mortality if given early in the disease course.[10]

Vaccination against smallpox is effective in preventing monkeypox in around 85%. A newer vaccine based on a modified attenuated vaccinia virus (Ankara strain) is now approved for the prevention of monkeypox in 2019. It is a two-dose vaccine but its availability remains limited.[1]

Many facts about monkeypox regarding its epidemiology, transmission pattern and source of infection remain unknown and studies are underway. Surveillance and rapid identification of new cases is the key step for outbreak containment. At this point, we should remain alert and well prepared and the testing capacities need to be enhanced and the short supply of the required provisions globally should be addressed.

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