

## MONKEY POX - AN EMERGING PUBLIC HEALTH GLOBAL EMERGENCY

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On 23 July 2022, the World Health Organization (WHO) declared the monkeypox outbreak as a Public Health Emergency of International Concern (PHEIC). From May to July 2022, a multi-country outbreak of monkeypox was reported in both endemic and non-endemic regions (almost 35,000 cases in 92 countries with 12 deaths).<sup>1</sup> There has been no case reported in Pakistan yet, but there were some rumors of cases identified in a public sector hospital of Lahore, which were later found to be unrelated to monkeypox infection.

Monkeypox is a rare zoonotic disease caused by a DNA virus from Orthopoxviridae family of viruses, which also includes viruses such as cowpox, vaccinia and variola.<sup>2</sup> It is endemic in rainforest countries of the central and West Africa, exists in two main strains with variable case fatality: Congo Basin strain having 10% case fatality, and West African strain with 1% mortality among those contracted the disease.<sup>1,2</sup> The manifestations of monkeypox are similar to that of smallpox infection, though less severe than the later. The first case of monkeypox was diagnosed in 1970 in Democratic Republic of Congo, but an evidence of the disease was observed in laboratory held monkeys as early as in 1958.<sup>1</sup> Human beings are the incidental hosts, where rodents are identified to be the natural reservoir of this virus.<sup>3</sup>

The transmission of monkeypox infection is by an infected animal bite or by direct contact with the animal lesions or body fluids. Other modes are both respiratory and direct mucocutaneous exposure

including sexual contact are pivotal in transmission in humans during recent outbreak.<sup>4</sup> There could be vertical transmission from mother to fetus or at birth from mother to newborn.<sup>3</sup> The cardinal features of monkeypox are high-grade fever, headache, malaise, muscle aches, backache, swollen lymph nodes and a general sense of unwellness.<sup>4,5</sup> It is pertinent to note that lymphadenopathy or enlarged lymph nodes are not seen in smallpox patients. After 1-3 days of these symptoms, the infection heralds itself by a vesicular and pustular rash similar to small pox, primarily beginning on the face and then spreading to other parts of the body involving palms and soles as well.<sup>5,6</sup> Eventually rash progresses from vesicular stage to crusting of lesions. However all stages of the rash are visible in same patient. The face is affected in 95% of cases, while palm and soles in 75% cases; oral mucous membranes in 70%, genitalia 30% and conjunctiva and cornea in about 20% or less number of cases.<sup>7</sup> Interestingly the lesions in conjunctivae and tongue show enormous load of viral antigens. The incubation period of rash is on average 12 days with a range between 7-17 days.<sup>5</sup> Other sources of infection are fomites like clothes of patient or bed linens, etc. Sometimes, consumption of undercooked meat of infected animal may be the sole reason for contracting this illness.<sup>6</sup>

The diagnosis of this condition is by a good history, typical rash; PCR done from vesicular or pustular top or fluid taken from it.<sup>1,3</sup> The management of this condition is mainly symptomatic treatment of fever, bodily pains, good nutrition, hydration, bed rest and treatment of secondary bacterial infections.<sup>6</sup>

The complications of Monkeypox are secondary bacterial infections, bronchopneumonia, sepsis, encephalitis, and corneal scarring leading to blindness.<sup>3</sup> Case fatality ratio ranges between 1-11%, however recently it has emerged around 3-6%.<sup>4,5</sup> There are several vaccines available for prevention of smallpox that also provide some protection against monkeypox. Smallpox vaccines

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represent an effective tool that can be used to control monkeypox outbreaks. A newer vaccine developed for smallpox (MVA-BN, also known as Imvamune, Imvanex or Jynneos) was approved in 2019 to prevent monkeypox but not yet widely available. It has efficacy about 85%.<sup>8</sup> Smallpox and monkeypox vaccines can be used in two situations: pre-exposure to prevent infection and disease or post-exposure to ameliorate infection and disease. Pre-exposure vaccination is warranted to protect those at the highest risk. This protection is best accomplished with a second-generation or third-generation vaccine. Post-exposure vaccination is ideally administered within 4 days of exposure to prevent infection, but it can be used up to 14 days after exposure to decrease the severity of disease. Post-exposure vaccination is also best accomplished with a second-generation or third-generation vaccine.<sup>8,9</sup> *Tecovirimat* is an antiviral medication with activity against orthopoxviruses such as smallpox and monkeypox, is FDA approved and also licensed by European Medical Association. However, this drug is not widely available.<sup>10</sup>

In summary, major goals of managing monkeypox are to identify the suspected cases, detect generic orthopoxvirus DNA at a state or commercial laboratory, and establish the Centers for Disease Control and Prevention real-time polymerase chain reaction testing. Currently, there are no approved treatments for monkeypox virus infection. However, a variety of antiviral medications originally designed for the treatment of smallpox and other viral infections could be considered. Pre-exposure prophylaxis for laboratory and health care employees and post-exposure prophylaxis for individuals with high-risk or intermediate-risk exposures are to be considered.

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