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Monkey Pox arrives in India

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ABSTRACT

India has confirmed 9 monkey pox (MPXV) cases by the time this editorial is being written. The size of the outbreak clusters is growing each day, as is the geographical spread across international borders. More interestingly it is being recognized as a potent sexually transmitted infection (STI) as it is attributed to close contact with lesions, with no intention of stigmatizing it. This zoonotic virus has a low level of endemicity since decades in west and central Africa, its place of origin. Now since it has spread to 75 countries and more joining, with over 25,539 plus cases, WHO declared it a public health emergency of international concern (PHEIC) on July 23, 2022.

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It was first identified in non-human primates who were kept for research in a laboratory in Denmark in 1958 [1]. Subsequently the first human case was reported in 1970 in a 9 month old child in Zaire, now the Democratic Republic of Congo. Subsequently over the past 50 years there were small sporadic outbreaks reported from African countries [1]. The 2003 mid-west outbreak was a scourge casted by mankind on themselves when native prairie dogs housed with rodents were being shipped to the US from Ghana as pets, and were implicated for the outbreak. The dogs contracted the infection from rodents and gave it to the humans who came in close contact with them [2]. Exposure to faeces of infected animals is an important risk factor in endemic places. Since then it emerged as a zoonotic disease with significant epidemic potential.

Theories about re-emergence and Transmission

The waning immunity in humans due to the discontinuation of small pox vaccine has established the scope for the resurgence of monkey pox, demonstrated by the re-emergence of outbreak after an absence of 30-40 years. Currently many of the cases that are confirmed are prevalent amongst individuals below 40 years of age with a median age of 31 years.

Human to human transmission is attributed to direct contact with muco-cutaneous lesions of infected individuals, or via respiratory droplets or sharing of food, beddings, utensils and having sexual activity with infected people.

There has been a spurt in cases involving males having sex with males (MSM) and some experts expressed their concerns if it would lead to stigma against gay men [3]. Sexual behaviour of the four cases from Italy

[4] and the initial appearance of lesions mostly in the anal and genital areas all suggest that close contact during sexual intercourse was important for virus transmission. The seminal fluid obtained at 5–7 days before the onset of symptoms, was positive for MPXV DNA in all four patients. Though, these findings cannot be considered as a definitive evidence of infectivity, it only denotes viral shedding where transmission cannot be ruled out. It has also been observed that it is possible that MPXV can be transmitted through substances of human origin [5,6] and the Ct values (35-37) in semen of these patients were in the similar range as that of their nasopharyngeal swabs. However, with such low number of copies cultures are unlikely to get positive.

It is well known that other viruses causing viraemia also have been found in semen [7,8] with no direct evidence of sexual transmission. Viral seeding in the male reproductive tract can frequently occur during viraemia, especially in the presence of systemic or local inflammation [9]. Testes are known to be immunologically a unique sanctuary where the virus can persist even though unable to replicate. In a study conducted over 16 countries viral DNA was detected in the seminal fluid of gay & bisexual men with monkey pox. It was not proven whether the DNA was replication competent, but reports of clusters associated with sex parties underscored the potential role of sexual contact as a promoter of transmission [10]. However, children also get infected in the family by close physical contact. Without stigmatizing the gay community it is necessary to understand that even though we do not have a strong direct evidence of MPXV being an STI but it can spread by the physical activity happening during performing sex. Further studies are needed to assess presence, persistence and contagiousness of MPXV in different body fluids.

MPXV has two clades, central African Clade (Congo basin) which has higher mortality (10%) than the West African clade (1%). Incubation period following contact with a monkey pox infected patient is 7-14 days to a maximum of 21 days. The patient is non-infective during this period and does not have any symptoms. However the patient becomes infectious once pro-dromal symptoms arise like fever, myalgia, sore throat & cough.

The specific symptoms are vesicular pustular rash which become crusted in 2-3 weeks. This has a centrifugal distribution i.e predominately

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on face and extremities. The 2022 outbreak symptoms are atypical. Prodromal symptoms are mild or may begin after onset of local rash. The rash is also not frequently generalized but limited to genital or peri-anal lesions [11]. The patients remain infectious till the scabs dry and fall off. Therefore, it is imperative to have a high degree of suspicion due to the diversity of the illness manifestations!

Molecular assays like PCR is the gold standard for laboratory diagnosis. A generic PCR test for orthopox virus with a confirmatory PCR test for MPXV can clinch the diagnosis especially from the blister fluid of the vesicular lesions in 97% cases [5,11].

The mainstay of therapy remains adequate hydration as is done in most febrile viral exanthemas. Washing hands regularly and unnecessary touching of face, eyes and nose should be avoided.

Drugs like tecovirimat (TPOXX,ST-246), Cidofovir and Brincidofovir have been used. Tecovirimat was FDA approved for treatment of small pox but can be administered under “Expanded Access Investigational New Drug” (EA-IND) protocol and is available from the strategic national stockpile. Cidofovir and Brincidofovir though not FDA approved for monkey pox, but has been considered for treatment. Vaccinia Immune Globulin IV (VIGIV) for the treatment of monkey pox is recommended under EA-IND but it is unknown whether it will benefit.

WHO recommends targeted vaccination for those exposed to MPXV & for those at high risk of exposure, including health workers, lab workers, & those with multiple sexual partners :

- JYNNEOS™ (also known as Imvamune or Imvanex) is a live vaccine FDA approved, produced from the strain Modified non-replicating Vaccinia Ankara-Bavarian Nordic (MVA-BN), for adults 18 years & above. It is given subcutaneously 0.5ml each dose, 2 doses 4 weeks apart and immune response appears two weeks after the 2nd dose.
- ACAM2000 also is a live vaccinia virus available under EA-IND for monkey pox. However it cannot be used in people with exfoliative skin conditions or having immune-compromised state or in pregnancy. LC16m8, an attenuated, replicating smallpox vaccine derived from the Lister strain of vaccinia, licensed in Japan is also being considered.

Can Monkey Pox be confused for Covid or small pox

Small pox has no known animal reservoir and has only human to human transmission with a high mortality rate of 30%. Monkey pox is zoonotic to begin with, followed by human to human spread with average mortality of 3-6% as stated by WHO. Lymphadenopathy is distinct in monkey pox which is not there in small pox. Most experts agree that though infection can occur through respiratory droplets from a close contact, it does not seem to be transmitted over the distances like the Sars-CoV-2 virus.

No need to panic

Though the number of cases is few at present, cases with no history of international travel to affected areas can be a warning sign. The health authorities need to be vigilant. The Kerala mode of containment &

contact tracing is praise worthy & the prompt diagnosis made by NIV Pune by achieving the gold standard of having cultured & sequenced the virus in a shortest possible time, is encouraging by way of capacity building & rapid response eco system having come of age in India. Moreover, since small pox vaccine provides 85% cross protection the program for vaccination of the unvaccinated need to be considered & road map be framed now especially for people below 45 years. High risk person's burden need to be considered & the possible drug Tecovirimat could be stock piled.

Though PHEIC has been declared, monkey pox cannot be equated to COVID in any way but our learning from the pandemic can help. Preparedness is the key. It wasn't raining when Noah built the ark!

Declaration of competing interest

The authors declare no conflicts of interest.

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