Statistical Analysis of Monkeypox in India

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Abstract—The monkeypox virus is a viral zoonotic infection that can spread from animals to humans and also spreads from one person to another person by double-stranded DNA contagion that belongs to the Orthopox genus of the poxviridae family. The first case of monkeypox was reported on May 13, 2022 officially announced by World Health Organization. In India, the first monkeypox cases were reported on July 14, 2022 in Kerala. The cases of monkeypox were decreased due to taking precautions from the patients arrived from various countries and the death rate was reduced. This article explained about the statistical analysis of the monkeypox virus from various states in India after the pandemic of COVID-19.

Keywords—Monkeypox Virus, MPX, MPV, MPXV, Orthopox virus WHO and CDC

1. INTRODUCTION

By WHO results, Monkeypox is an illness caused by the Monkeypox virus. It’s a viral zoonotic infection, meaning that it can spread from creatures to humans. It can also spread from one person to another person. Arising and re-emerging zoonoses of different etiology are significant causes of morbidity and mortality in humans as well as creatures.[1] It’s a double-stranded DNA contagion belonging to the Orthopox genus of the poxviridae family, and it was first reported as a zoonotic infection transmitted from creatures to humans in 1958. Very lately May 13, 2022, multiple cases of monkeypox were reported by the World Health Organization (WHO) in nearly 12 non-African countries that aren’t endemic to the Monkeypox virus. The Indian Council of Medical Research (ICMR), the apex body for the formulation, coordination, and creation of biomedical exploration, conducted the investigation and diagnosis of the Monkeypox Virus (MPV). It also isolated and cultured by MPV.[2,10] The ICMR also developed laboratory examinations for the Lumpy Skin Disease Virus outbreak to support the indigenous veterinary diagnostic laboratories. In the last decades, several viral zoonoses, similar to bird flu, contagious ecthyma, Ebola hemorrhagic fever, Hantavirus infection, Hendra contagion complaint, Nipah contagion complaint, Rift Valley fever, severe acute respiratory syndrome, swine flu, West Nile fever, etc., have surfaced from different parts of the world and attracted the attention of Public Health authorities. Poxviruses include several zoonotic pathogens, similar to cowpox contagion, buffalopox pox contagion, goat pox contagion, monkeypox, and camel pox that affect both creatures and humans in multiple regions of the world. The poxviruses cause four conditions in nonhuman primates; monkeypox being the most common. In India, Monkeypox was part of the outbreak caused by the western African clade of monkeypox virus.[3,4]

2. CASES INVOLVED IN MONKEYPOX AT INDIA

The Indian Council of Medical Research has found three sub-clusters of monkeypox cases detected in India — the first cluster of Kerala (n5) and Delhi (n2) is aligned with the USA- 2022 ON674051.1; another cluster of Delhi (n3) is aligned with the USA- 2022 ON675438.1; and third which consists of the UK, US and Thailand. The 10 monkeypox verified cases were three males and two women from New Delhi with no international journey history; five males were from Kerala with a journey history from UAE to India, with 70 of the country’s population in pastoral areas, limited healthcare access, community healthcare workers (CHW’s) can help in promoting access to healthcare systems and assisting psychosocial support.[5] Thus, suitable training for CHW’s is an essential element in bridling MPX transmission and must be one among the recommendations. Early CHW induction and training would stop the MPX infection rise in pastoral regions and decelerate the spread of the disease.[6] As the world prepares for the COVID-19 disease’s spread, neighbouring nations like China and India have banded about to strengthen their journey restrictions. Likewise, COVID-19 and monkeypox can co-occur despite being from distinct viral families. The pandemic COVID-19 virus can make the body more vulnerable, adding the liability of mortality in a cohabitation setting.[7] India witnessed an analogous situation during the COVID-19 outbreak when the whole health system was severely affected with a substantial negative impact on HCW’s internal health. The country was on lockdown and health installations were overfilled with COVID-19 cases, simultaneously, on COVID cases could not pierce regular healthcare services. As the COVID-19 epidemic unraveled the exhausted healthcare system, a critical need for improvement came apparent. also, we are presently witnessing multi-country outbreaks of Monkeypox (MPXV) and Marburg viruses.[8] Great propinquity to Nepal, Sri Lanka, Bhutan, Bangladesh, Myanmar and China, the spread of MPX in India might magnify the burden of the disease worldwide since they constitute 36 of the world’s population.[9]

2.1. KERALA CASES

On July 14, 2022, India reported the first case of MPX from the ocean region.[10] Four days latterly, another case was reported from the same state (Kerala).[11] Recently, on July 22nd, the third case was also reported from the Mallapuram district, Kerala.[12] All three cases were males who travelled from United Arab Emirates (UAE) and were incontinent isolated and rehabilitated. [8,13]
2.1.1. **CASE 1**

A 35- age, male, engineer and occupant of UAE had developed low-grade fever and myalgia on 5 July 2022. On the coming day, he developed multiple vesicular rashes in the oral cavity and lips followed by single lesion on the genital organ. The lesions were umbilicated with the size 0.5 to 0.8 cm. latterly, the upper lip came oedematous and also, he developed umbilicated vesicular lesions in the right infra-mammary, right- tragus, right temple, and right-deltoid region. He also had maculopapular rashes on both hands. With these complaints, he visited a medical facility on 9 and 11 July 2022. Upon discussion, he revealed history of analogous lesions amongst his pals and contact with suspected Monkeypox cases, a week previous to onset of symptoms. The clinician had advised the screening for MPXV and specified tablet Acyclovir. still, he travelled from UAE to his birthplace Kerala on 12 July 2022. On his return, he developed sore throat with worsening of oral lesions for which he visited a sanitarium in Kerala. Considering his history of contact with a suspected Monkeypox case and pustular lesions, he was appertained incontinently to Government Medical College Thiruvananthapuram (GMCT). The patient had no given comorbidities but gave history of self-limiting genital lesions eighteen months ago. During clinical evaluation, multiple cervical and inguinal lymph nodes were palpable, which raised a high dubitation of MPXV infection.[14,15]

2.1.2. **CASE 2**

A 31- age, male, from UAE had developed dysuria and genital swelling on 8 July 2022. On a coming day, he developed fever with chills, myalgia, backache and headache. latterly, he developed multiple vesicular rashes on the genital organ and on both hands-on 10 July 2022. He travelled from UAE to his birthplace in Kerala on 13 July 2022. The lesions progressed and latterly spread to the face, back, neck and forearm with cervical lymphadenopathy by 15 July 2022. He visited the government sanitarium locally; he was isolated on 16 July 2022. He didn't have any co-morbidity and denied any sexual or physical contact with the suspected or verified MPXV case. The oropharyngeal (OPS) & nasopharyngeal swab (NPS), EDTA blood, serum, urine, lesion samples from multiple sites (lesion fluid, lesion roof and lesion base) of both the cases were collected on ninth post onset day of infection i.e., 13 and 16 July 2022 independently. The laboratory conclusion on the clinical samples of both the cases (OPS, NPS, EDTA blood, serum, urine, lesion fluid, lesion roof and lesion base) was carried out using real time PCR for Orthopoxvirus, MPXV, West African clade specific MPXV.[14,15]

All the clinical samples of the two cases were positive for MPXV, except the EDTA blood and serum of case 2. The retrieved sequences (GenBank accession no.EPI_ISL_13953611 and EPI_ISL_13953610) from the clinical samples of verified Monkeypox cases in India belonged to the A2 lineage of the West African clade. It has a significant 34472 nucleotide mutation of allele T. [16] The MPXV genome retrieved from verified Monkeypox cases with a journey history from UAE to India also demonstrated the circulation of A2 lineage in UAE. Since the discovery of Monkeypox cases in India, constraint measures have been taken by the public health department. This includes the isolation of case and connections, quick screening of all the characteristic connections, strict adherence to the particular defensive outfit and hand hygiene, sanitarium infection control practices and deep health education in the community. India has demonstrated quick and nonstop alert and preparedness to determine the first two MPXV cases within a day of entry of the case in the country.[15]

2.2. **UTTAR PRADESH**

The first suspected case of monkeypox in India is a 5-year-old boy from Ghaziabad, Uttar Pradesh. Although the monkeypox virus has not yet been found in India, a sample from a suspected monkeypox case in Ghaziabad has been submitted for testing.[17]

2.3. **NEW DELHI**

Delhi reported its eighth monkeypox case on Friday. A 30- age-old Nigerian woman has tested positive for monkeypox in the public capital, this is the country’s 13th case of the viral disease. The woman has been admitted to LNJP Hospital. According to the sources, another person suspected to be suffering from monkeypox has also been admitted to the Delhi government-run sanitarium.[18]

2.4. **TAMIL NADU**

In Tamil Nadu, Health Minister Ma Subramanian said “Not indeed a single monkeypox case in Tamil Nadu. Fake news is circulating on social media that 4 monkeypox cases verified in Nagercoil. Don’t believe fake news. However, we’ll tell media to make people apprehensive of the disease,” Tamil Nadu Health Minister Subramanian was quoted as saying by the news agency ANI, if we find any similar case.[19]

3. **CONCLUSION**

Monkeypox was spreading in overall world and it causes minor effects that patients do not cause any death cases occurs till now. This was the first research to provide cumulative evidence for the prevalence of positive MPV DNA in the semifluid of monkeypox patients. In India the MPX virus can cause by the travellers from United Arab Emirates (UAE) which has got a testing a serum sample to identify positive cases of the monkeypox virus. It was identified at an earlier stage to get avoid the spread of infection, and the cases must be very rare in overall our country.
REFERENCES


[17] 2022 saw the rise of multiple viral infections that are here to stay - The Economic Times. English. Delhi; 2023Jan1;:01–2.
