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REVIEW ARTICLE

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PRESENT STATUS OF MONKEYPOX IN INDIA

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ABSTRACT: The monkeypox poxvirus is linked to smallpox and spreads *via* human-animal interaction. Previous smallpox protection provides minimal monkeypox protection. Slowly increasing monkeypox cases in Africa were generally ignored by the scientific community until last year, when more than 16,000 cases were recorded from nonendemic nations. WHO recently declared monkeypox a global health emergency. Although most instances are in males who have sex with other men, the disease threatens the whole population. A short feverish sickness with lymphadenopathy preceded the rash, which spreads radially outward. Recovery usually takes two to four weeks. Children, new parents, and those with weakened immune systems are prone to complications. PCR can diagnose viral DNA. Most treatment focuses on symptom relief. Tecorivimat is a good antiviral. High-risk populations, healthcare practitioners, and PCR labs should acquire smallpox immunizations. Symptom relief is usually enough. Tecorivimat fights viruses. Healthcare personnel and individuals in intimate social networks should be vaccinated against smallpox.

Key Words: Immunization, Monkeypox, Lesion, Revealed, Pathogenic.

INTRODUCTION:

The monkey pox virus is a zoonotic member of the family Poxviridae, which is composed entirely of Orthopox viruses. It's a DNA virus with two strands, like the one that caused smallpox before it was destroyed. The monkeypox virus it causes is mostly found in the western and central parts of the African continent [1, 2]. The illness has been termed "miniature smallpox" because its relatively tiny size. This virus has several reservoirs in endemic areas of Africa, including squirrels, Gambian pouched rats, and even certain kinds of monkeys, such the cynomolgus monkeys from whom it was initially identified. This zoonotic illness has the potential to spread to people and cause devastating outbreaks. West African and Congo Basin (Central African) clades of monkeypox virus are the only two clades of monkeypox virus known to have existed at any point in history [3].

The virus that causes monkeypox was first found in monkeys in a Danish lab in 1958, thus the name. Where smallpox had been declared eradicated in 1968, a 9-year-old kid in the Democratic Republic of the Congo became the first human case to be detected in 1970 [2, 4]. Up until 1986, the majority of cases (15 out of 16) had been reported in West African countries, and 85 percent of all cases had originated in Central Africa. Human monkeypox has been documented in West Africa, where it thrives in the hot, humid forest climate and at lower altitudes than in the Congo Basin [5]. Only 13% of those who contracted the illness had Smallpox vaccination scars, hence it mostly struck immunologically unprepared people [3]. Primary exposure to a common animal source or secondary transmission from human to human led to the reported instances, which occurred at the same time as peak human outdoor activity (mostly hunting and agriculture). Skinning and handling wild animals, close contact with a case, and not being vaccinated against smallpox were identified as risk factors for Monkeypox in a 1997 WHO epidemiological assessment in the Kasai area [6].

During the last 40 years, there have been regular outbreaks in 11 different African nations. Over 500 cases have been suspected and 200 have been verified in Nigeria since 2017, with a case fatality ratio of 3% [2]. However, it is no longer exclusive to Africa alone. This brief overview of the recent resurgence of Monkeypox epidemics across the globe, particularly in India, highlights the emergency mindset necessary for mounting a coordinated response to prevent, engage, and protect vulnerable populations in society; to strengthen surveillance and infection control; and to promote research into more vaccines and therapeutics for zoonotic diseases. Preventative measures in public health are perhaps more crucial than ever before. India must be prepared to respond vigorously to any public health crisis involving the re-emerging zoonoses (monkeypox, cow-pox, camel-pox) that threaten to fill the ecological void left by the eradication of smallpox [7]. How lethal the illness is, and if its nature and

epidemiological qualities may have major repercussions for the health system of India, which has seen a terrible breakdown of the healthcare system owing to COVID-19, are unknowns to the public health and community medicine specialists. This study seeks to rectify the inequitable distribution of the IDSP's new medications, vaccinations, and other interventions among medical practitioners.

Characteristics of the Disease:

Suspects often present with vesicular rash, which may or may not be accompanied by additional symptoms and signs include fever, respiratory problems, and lymphadenopathy (swollen lymph nodes). Rash outbreaks often start between the third and fifth day of a fever. It often takes two to four weeks for them to disappear after spreading from the face to the arms and legs and then the trunk. The oral mucous membranes, conjunctivae, cornea and genitalia are impacted in certain instances. Monkeypox may cause consequences including secondary infections, broncho pneumonia, sepsis, encephalopathy, and loss of eyesight. Lymphadenopathy and a low mortality rate distinguished Monkeypox from Smallpox in clinical presentation (3-6 percent). Lesions, bodily fluids, respiratory droplets, sexual contact, and contaminated items, even in moderate sickness, may all facilitate the transmission of monkeypox [8].

Suspected cases are being isolated at global transit hubs for 21 days to avoid transmission; the incubation period typically lasts between 6 and 13 days, but may last anywhere from 5 to 21 days. The illness is thought to be self-limiting, although it may be rather severe in those with immune suppression, such as young children, pregnant women, and people with compromised health. Men who have sex with men (MSM) seeking treatment at primary and sexual health clinics have been shown to be at risk. Research conducted in the United Kingdom between April and June 2022 found that 98% of those infected were males and that 41% of them were HIV-positive [9]. Co-infection with hepatitis A, B, or C and monkeypox is prevalent in this population [10]. Health professionals and family members are at a higher risk of infection during human monkeypox epidemics due to their frequent close contact with affected patients. Isolating diseased patients, avoiding contact with potentially infectious animals and fomites, and practising diligent hand cleanliness are also critical preventative measures [11].

PRESENT GLOBAL SCENARIO:

Public health officials throughout the world are paying more attention to the outbreak after hearing reports of numerous cases occurring in regions other than Africa. In 2003, the United States of America recorded the first incidence, which was traced back to exposure to sick prairie dogs kept as pets. Patients complained of high body temperatures and a rash that progressed from macule to papule to vesicle to pustule to crusty, dead skin that flaked off. The virus was verified by electron microscopy in both a human skin lesion and a lymph node from a "prairie dog." As a consequence, 79 instances were reported across 6 states, with 29 of those cases verified by laboratory tests. Cases of monkeypox have been documented in tourists visiting Singapore in 2019, the United States of America in 2021, and Israel and the United Kingdom between 2018 and 2022. Cases of this condition have skyrocketed since 1990 [12]. The animals that host the virus in Africa and elsewhere are themselves distinct [13].

Epidemiological research on monkeypox virus epidemics has shown that human expansion into formerly uninhabited forest regions, increased international travel, and the end of smallpox immunization programmes are major contributing factors [13]. As a result of the massive scale of smallpox vaccination programmes that followed the disease's eradication [14], the World Health Organization (WHO) named monkeypox a GlobalHealth Emergency of International Concern on July 23, 2022 [12]. Cases outside of an endemic area have been reported in 78 of the 194 WHO Member States so far, including 5 in India. As of July 26th, 2022, there have been around 18,880 confirmed cases of monkeypox worldwide, with 5 fatalities reported from Africa [15, 16]. Since new zoonotic viruses are on the rise across the globe, we need to pay special attention to the possibility of their spread inside India [2, 17]. The number of reported cases is quite high. The spread of the disease in these outbreak areas is being contained through a combination of contact tracing, clinical management, isolation, laboratory investigation, genomic sequencing of DNA (where available), and infection prevention and control measures, as well as continuous detection of the virus by established surveillance mechanisms. The nations in question are moving swiftly to get vaccines, and IEC materials and infographics are being deployed to promote awareness. For the first time ever, a two-dose vaccination (MVA-BN) using the Ankara stain of attenuated vaccinia virus has been authorised for the prevention of monkeypox. Monkeypox virus genes found were mostly of the West African lineage.

Currently, two vaccinations (ACAM-2000 and MVA-BN) are in use as preventative measures for close contacts. However, only a few number are now available for purchase [2, 3, 17]. Only Bavarian Nordic has a supply of Monkeypox vaccinations, which industrialised countries like the United States and the United Kingdom have been purchasing. -NHS [18]. In order to expedite the development of a vaccine against the monkeypox virus, the Indian government has extended an invitation for vaccine and in-vitro diagnostic kit producers to submit expressions of interest (EOI) by August 10th, 2022. (MPXV) [19].

POSITION OF INDIA:

The World Health Organization (WHO) has established worldwide standards and case criteria for MPXV detection. It has suggested a concerted effort to halt the spread of the disease, include and protect the most vulnerable members of society, step up monitoring, improve infection control and management practises, and speed up the development of vaccines and medicines [20]. Suspected cases include people of any age who report in a non-endemic nation with symptoms including

headache, sudden fever onset, lymphadenopathy, myalgia, asthenia, and back pain and an unexplained acute rash that has no recognised clinical aetiology.

A probable case of monkeypox is one in which there is evidence of an epidemiological connection or direct contact, recent travel to an endemic nation, several sexual partners in the 21 days before to symptom start, hospitalisation, or a positive serological test. Confirmed instances of monkeypox have been found, thanks to the use of real-time polymerase chain reaction (PCR) to sequence the specific viral DNA that had first led to their detection[4].The National Institute of Virology in Pune, India, has revised the case reporting form for fever with rashes, which may be found on the Integrated Disease Surveillance Programme website. In terms of the regional IDSP, one sample will be approved for MPXV testing at VRDL, another will be sent to NIV Pune, and a third will be preserved for future testing [21].

When possible instances have been reported from India, the NCDC, MoHFW has stressed certain public health measures.

They are:

1. People who are thought to have monkeypox or who are considered likely cases must be treated with extreme caution in medical institutions.
2. Isolation should be maintained for all suspected cases until all lesions have resolved OR until the treating physician chooses to lift isolation.
3. The IDSP District Surveillance Officer should be notified of any incidents of this kind.
4. The best possible measures should be taken to prevent the spread of infection at all times throughout patient care.
5. Vesicle fluid, blood, and sputum samples are to be submitted to NIV Pune for testing; if a positive case is identified, the patient's contacts during the preceding 21 days must be identified and placed under quarantine [12].

There are a lot of reasons which may make Monkeypox as a severe public health concern in India, beginning with the subtropical environment, and overpopulation with high transmission rates. The first laboratory-confirmed case was recorded on July 14th2022 in a 35 year-old guy from Thiruvananthapuram, Kerala, upon returning from UAE [22]. The next two cases were also confirmed from Kerala on July 18thand 22nd [23]. New Delhi reported its first MPXV case in a 34 year-old man on July 24thwith no history of travel, unlike the previous cases [24]. The area continues to be on high alert as a 47-year-old woman has approached the health department on July 26th and is currently the 5thin the growing list as a suspected case of MPXV [25].

There is now a continuing monitoring in the community, primary care, fever clinics, sexual health clinics, infectious illness units, obstetrics and gynaecology, and dermatology clinics. Contact tracing should be undertaken as soon as there is probable case identification. The patients are to be interrogated to collect the names and contact information of any contacts, who should be informed within 24 hours after identification. The contacts would then be held in isolation for 21 days [26]. However, we cannot avoid talking about the obvious: the rapidity with which this sickness has been crossing across borders. Forty percent of India's population is comprised of people aged 13 to 35 who are not protected by the disease's vaccine [27]. There has to be a supply of the smallpox vaccine in case an epidemic occurs in the nation. This is not a very unique or changeable illness; thus, the likelihood of it becoming a major public health problem in the United States decreases if we are appropriately prepared. When caring for a patient diagnosed with Monkeypox, medical staff should always wear appropriate PPE.

A medical mask should be worn whenever the patient is within a 1-meter radius of a healthcare provider or another patient. In 2022, Tecovirimat, an antiviral drug, will be available for the treatment of monkeypox, as reported by the World Health Organization. While this medication and the new vaccination MVA-BN are not yet widely accessible, India may be ready for an outbreak by keeping an eye on airports and other transportation hubs, as well as educating its population about the epidemiology and warning symptoms of the illness [4].

The International Committee for Medical Research (ICMR) has issued recommendations for the management of symptomatic treatment, including measures to prevent further damage to already damaged skin and mucous membranes, as well as rehydration and nutritional therapy [26]. The dynamic epidemiology of this resurging illness may only be understood via heightened monitoring and case detection efforts. One Health is more important today than it has ever been. The Institut Pasteur de Bangui in the Central African Republic is conducting a clinical trial known as "A One Health Study of Monkeypox Human Infection" (AFRIPOX) [28]. In order to combat smallpox in India, we need to better understand its zoonotic and human-to-human risk factors, animal reservoirs, post-vaccination immunity status of vaccinated individuals, and the differences between circulating strains in human and animal populations, as well as develop diagnostics and next-generation sequencing [29].

The healthcare staff might utilise a technique called 'ring vaccination,' in which they vaccine the close contacts of persons who have been infected with monkeypox, to prevent the spread of the disease. MoHFW collaborates with the Ministries of Agriculture, Fisheries, Animal Husbandry, and Dairy to provide a comprehensive response to any emergency. With regards to monkeypox research, WHO has suggested consulting with the Emergencies Social Science Technical Working Group, the Scientific Advisory Group for the Origins of Novel Pathogens (SAGO), the Strategic and Technical Advisory Group on Infectious Hazards (STAG-IH), the SAGE working group on smallpox and monkeypox vaccines, and the WHO Research & Development Blueprint [30].

CONCLUSION:

The poxvirus that causes monkeypox is closely linked to the virus that causes smallpox, and it spreads from monkeys to humans via intimate contact between the two species. The protection that was previously received against smallpox gives only a moderate degree of protection against monkeypox. The gradual increase in the number of cases of monkeypox that has been observed in Africa over the past few decades has been largely disregarded by the scientific community around the world up until this year, when more than 16,000 cases were documented from states that are not endemic for the disease. The World Health Organization (WHO) has only recently recognised monkeypox as a public health issue on a global scale. Although the majority of recent cases have been found in males who have had sexual contact with other males, the condition poses a greater threat to the entire population as a whole. The rash is preceded by a brief episode of feverish illness that is accompanied by lymphadenopathy. The rash develops from a lesion to a papule to a vesicle to a pustule, and then it spreads radially outward. The majority of people go back to normal in two to four weeks, depending on the severity of their condition. Complications are most prevalent in youngsters, mothers who have just given birth, and those whose immune systems are compromised.

For diagnostic purposes, the polymerase chain reaction (PCR) is utilised to precisely identify viral DNA. In the majority of instances, all that is required is the treatment of symptoms. Tecorivimat is effective in warding against viral infections. Those at a higher risk of contracting smallpox, including high-risk groups, healthcare practitioners, and labs that do polymerase chain reaction (PCR), are all strongly recommended to be vaccinated against the disease. In the majority of instances, all that is required is the treatment of symptoms. Tecorivimat is effective in warding against viral infections. Those who fall into one of the high-risk groups, such as those who work in the medical field or have close personal relationships, are strongly encouraged to be vaccinated against smallpox using one of the vaccines now on the market.

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CONFLICT OF INTEREST: Nil

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