

2022 MONKEYPOX OUTBREAK IN ASIA – TRANSMISSION PATTERN, TIMELINE, AND RESPONSE

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ABSTRACT

The existent outbreak of monkeypox, a viral infectious disease, was ascertained in May 2022. The objective of this paper is to study the pattern of the disease in Asian countries and also examine the responses of these countries to the outbreak. The varied transmission pattern of the 2022 outbreak in comparison with the previous outbreaks is also being discussed here.

Keywords – Monkeypox, outbreak, transmission, response

INTRODUCTION

Monkeypox is a zoonotic infectious disease caused by a DNA virus belonging to the genus *Orthopoxvirus* and family *Poxviridae*, known as monkeypox virus[1]. It is self-limited and the symptoms generally last only for 2-4 weeks. It spreads to humans via close contact with an affected individual or animal or with substances contaminated by the virus[2]. African rodents and non-human primates are the animal hosts for the virus and have the potential of infecting humans[3]. Two types of this disease can be found in humans – clade II or the West African Clade and Central African or Congo Basin clade. Congo basin clade is more fatal than clade II[4]. The only country where both the genetic clades of monkeypox virus have been reported is Cameroon. The clinical presentation of the disease includes fever, rashes and swollen lymph nodes[5]. The symptoms are similar to that of smallpox infection but are less severe. The incubation period of the virus is between 5 and 21 days. Monkeypox was first discovered in 1958 in a colony of monkeys when a pox-like infection started spreading among the monkeys in an animal facility located in Copenhagen[6]. However, the source of this contagious disease is still unclear[7].

May 2022 witnessed the beginning of outbreak of monkeypox in several non-endemic nations. The first bunch of cases was noted in the United Kingdom, where the first patient was diagnosed in London on May 6, 2022, with a recent transit record from Nigeria. On May 16, the UK Health Security Agency (UKHSA) reported four novel cases that cannot be linked to transit to a region where the disease is endemic. All four cases appear to have contracted the infection in London. Since May 18, cases have been registered from a growing number of countries and areas, primarily in Europe, but also in North and South America, Asia,

Africa and Oceania[8]. This is the first time that monkeypox has run rampant outside of Central and West Africa.

On July 23, World Health Organization's Director General Tedros Adhanom Ghebreyesus proclaimed the outbreak of 2022 a public health emergency of international concern (PHEIC)[9]. As of 3rd October 2022, the total number of confirmed cases of monkeypox infection was 68,265 in over 108 countries[10].

HISTORY

The first identified case of monkeypox infection in humans was in 1970 when a 9-month-old boy in the Democratic Republic of the Congo was found to be infected by the disease[11]. Since then, many cases of the disease have been recorded in 11 African countries Benin, Cameroon, the Central African Republic, the Democratic Republic of the Congo, Gabon, Côte d'Ivoire, Liberia, Nigeria, the Republic of the Congo, Sierra Leone and South Sudan[12]. The first outbreak of monkeypox outside of Africa was documented in 2003 in the United States of America [13]. Scattered cases of the disease have been identified in Nigeria, Israel, United Kingdom, Singapore and the United States during the years 2018 – 2022[14].

As per the World Health Organization, imported cases of monkeypox from Nigeria were discovered in Israel in September 2018 and in Singapore in May 2019. As the outbreak spread across Europe in mid-May 2022, the Israeli Ministry of Health recorded an assumed case of monkeypox on May 20. On 21st May this case was confirmed through testing and became the first case of monkeypox infection in Israel during the outbreak[15], [16]. This was also the first case in Asia. In Australia, during May and June 2022, two Australians confirmed infection by the disease [17].

TRANSMISSION

Animal to human transmission-

This can occur when blood, body fluids, mucosal or cutaneous scabs of sick or dead infected animals come in physical contact with humans[18]. Rodents are the presumably natural repository of the virus. The probable risk factors are consuming undercooked meat and other such products from affected

animals[19]. People residing in or near forests may be indirectly or slightly exposed to infected animals.

Human to human transmission-

Person-to-person transmission may occur through direct contact with respiratory secretions, cutaneous lesions of a sick person, or contaminated objects used by the infected individual. Transmission by droplet infection generally takes prolonged close contact, placing health care professionals, household members, and other direct contacts of the infected person at greater risk. Apparently, the longest recorded trail of transmission in a population has increased from 6 to 9 consecutive human-to-human infections in recent years. This may be due to diminishing immunity in all communities as a result of abeyance of smallpox vaccination. This virus can also infect the fetus through vertical transmission leading to congenital monkeypox[20]. It can also spread from person to person through sexual intercourse.

TRANSMISSION PATTERN

The 2022 outbreak originally had a unique spread pattern than previous monkeypox outbreaks outside of Africa[21]. Genetic evidence suggests the outbreak probably originated in Nigeria. Given the abnormally high frequency of person-to-person transmission at this event, and the likely community transmission without travel background to endemic areas, the virus is more likely to be spread through close contact, with transmission most commonly occurring through sexual activity, possibly the most common route[22]. Most of the cases involved men[23].

On 2 August data collected by the ECDC-WHO Joint Regional Office for Monkeypox Surveillance in Europe revealed that 99% (15,439/15,572) of the reported cases in the European region were men, with 44% among men who have sex with men (MSM) community, 1% among heterosexuals and a further 55% among men whose sexual orientation is uncertain[24]. Of the cases with familiar HIV status, 36% (2690/7487) were seropositive.

The reproduction value during the preliminary phase of the 2022 worldwide outbreak of monkeypox was calculated to be 1.29[25]. As the outbreak developed, nosocomial and different types of human-to-human transmission have become apparent, with a striking instance being a health practitioner in an Israeli medical institution becoming infected whilst getting rid of shielding apparel after inspecting monkeypox patients. Contaminated surfaces inside hospitals and households can be infectious, with extensive contamination of air and surface samples collected from monkeypox quarantine rooms in UK hospitals being recorded[26].

In August, the primary acknowledged case of possible human-to-canine transmission was documented with the dog showing very comparable signs and symptoms of infection by monkeypox virus, to that of humans[27]. A preprint shows that asymptomatic infections cannot be ruled out[28].

OUTBREAK BY REGIONS AND COUNTRIES IN ASIA

The first Caucasian country and the third Asian country to declare confirmed active cases of monkeypox was Georgia. The Ministry of Health announced the first case on June 15, 2022.

Israel was the first country in Asia and West Asia to identify a case. On May 20, Israel reported a suspected case of monkeypox and the patient was isolated at Ichilov Hospital and tested positive on May 21[16]. Israel reported one case each on May 28 and June 7, 9, 15, and 16 whereas on June 20, authorities confirmed three cases. On July 15, the arrival of 2,000 monkeypox vaccines in Israel was announced by Nitzan Horowitz, the Health Minister of Israel, adding that he had spoken with the CEO of biotech company Bavarian Nordic, Paul Chaplin. He also stated that a total of 90 cases had been registered till then, none of which required hospitalization. By July 17, 2022, 96 patients were tested positive in Israel.

On June 20, the National News Agency (NNA), citing the Ministry of Health, reported the first case of monkeypox in Lebanon[29]. This makes Lebanon the third country in the Middle East and the fourth in both Asia and West Asia to report a case of monkeypox.

On July 14, the first case of monkeypox was detected in Saudi Arabia in its capital Riyadh where an infected individual came from abroad[30].

The United Arab Emirates recorded its first case of monkeypox virus on May 24 which involved a 29-year-old who visited the country from West Africa[31]. On May 29, the United Arab Emirates reported three new cases of monkeypox, almost a week after the first case of the infection was announced in the Gulf state. UAE had a total of 16 known cases as of May 30, 2022.

On May 30, one case was recorded in Herat province of Afghanistan[32]. On May 31, ministry spokesman Javid Hazhir dismissed reports of new confirmed cases and announced that the suspected individuals in the provinces of Nimruz and Kabul had tested negative. On June 5, it was declared that the Ministry of Health, which was short of test kits, would be provided with test kits by WHO[33]. A ministry spokesman asserted that surmised cases in the provinces of Herat, Maidan Wardak, and Nangarhar, as well as other provinces mentioned earlier, have tested negative and Afghanistan is devoid of monkeypox.

In mid-May, Bangladesh health authorities declared an alert for all ports in the country. On June 10, a 60-year-old woman was secluded in Chuadanga when local doctors diagnosed her with symptoms of monkeypox on June 9[34]. Bangladesh was the foremost country to issue land passports. In late May, the Chittagong Port Authority prohibited all crew members from being issued shore passes unless it was an emergency, while registered crew members were required to go through health checks.

On July 14, Kerala Health Minister Veena George declared a suspected case in Kerala, India[35]. The patient was a man who had returned from the United Arab Emirates. The patient was reported to have died on July 31, making him the first monkeypox victim in India[36].

On June 21, 2022, Singaporean authorities confirmed that a British airline attendant who was in the country had been tested positive for monkeypox on June 20[37][38]. Singapore was the first southeast and the fifth Asian country to announce a positive case of monkeypox during this outbreak[39]. On July 6, officials in Singapore confirmed the first locally transmitted case[40]. On July 7 and 8, 2022, another imported case was reported, both of which were referred to the National Center for Infectious Diseases (NCID)[41]. On July 13, the Ministry of Health announced another case of local transmission, bringing the total number of cases to 5. The infected person was a 48-year-old British citizen living in Singapore, who was also housed at the NCID. On July 14, reports on another local case were released.

On July 21, 2022, the Thai Ministry of Health declared the first monkeypox case in Thailand[42]. The infected individual was a 21-year-old Nigerian who was in Phuket before entering into Cambodia and was eventually arrested in Phnom Penh[43]. Another confirmed case was reported in Bangkok involving a local man aged 47 years, who disclosed to have indulged in physical relationship with foreign men. On August 3, a third case was confirmed by the Department of Disease Control. The first case of infection in a Thai woman was announced in the country on August 3. On August 15, the fifth confirmed monkeypox case in the country was reported to be a Thai woman who was 25 years old returning from Dubai[44].

On September 16, China declared its first monkeypox case in the city of Chongqing[45].

On July 25, Japan announced its foremost case of monkeypox in a male aged over 30 years[46]. A second patient was reported on July 28[47]. The individual was over 30 years of age. On August 5, another case was recorded. A fourth case in the country was confirmed on August 10.

South Korea confirmed its first case of monkeypox on June 22[48].

In May 2022, Taiwan's Centers for Disease Control began increased surveillance for monkeypox cases[49]. On June 24, Taiwan confirmed the first case of monkeypox in a 25-year-old Taiwanese male who had returned to Taiwan from a study visit to Germany on June 16[50]. On July 12, Taiwan confirmed its second patient who is a Taiwanese male from the United States.

The first case of monkeypox in Russia, and thus in Northern Asia, was registered on July 12, 2022, in a young man returning from a trip around Europe[51].

Table of cases of Monkeypox in different countries of Asia

Country	Confirmed cases	Deaths reported
Israel	254	0
UAE	16	0
Singapore	19	0
India	12	1
Lebanon	14	0
Saudi Arabia	8	0
Turkey	12	0
Thailand	10	0
Japan	7	0
Taiwan	3	0
Qatar	5	0
Georgia	1	0
South Korea	2	0
Russia	2	0
Philippines	4	0
China	1	0

TIMELINE OF CONFIRMED CASES IN ASIA

- May 21 – Israel reported the first case in Asia
- May 24 – UAE reported its first confirmed case
- May 28 – Second case was recorded in Israel
- May 29 – Three new cases were registered in UAE
- May 30 –The total patients in UAE became 16
- June 9 –First case in Bangladesh was reported
- June 15 – Georgia confirmed its first positive case
- June 20 –Singapore announced its first case
- June 20 – Lebanon registered its first case
- June 20 –Israel reported another case
- June 22 –South Korea declared its foremost case
- June 24 – Taiwan confirmed its first patient

July 6 –Singapore announced its first locally transmitted case
July 7 – Another imported case has been recorded in Singapore
July 8 – Singapore reports third imported case
July 12 –First case was registered in South Korea
July 12 –Russia reported its initial case
July 13 –Singapore confirmed a local transmission case
July 14 – Another local case was recorded in Singapore
July 14 –First case was reported in Saudi Arabia and India
July 17 –96 tested positive in Israel
July 21 – Thailand records its first case
July 25 –Japan confirmed its first case
July 28 – Second patient was registered in Japan
July 31 –First monkeypox victim was reported in India
August 3 –Third positive case was announced in Thailand
August 5 –Second case was reported in Japan
August 10 –Japan declared its fourth confirmed case
August 15 –Fifth positive case of Thailand was reported
September 16 – First case was confirmed in China

TYPES OF RESPONSES IN ASIA

1. Issue of warnings at all ports

The General Directorate of Health Services (DGHS) released warnings at all ports of Bangladesh to arrest the transmission of monkeypox. Directorate spokesman Nazmul Islam stated that the DGHS has directed every land, air and sea ports to be vigilant[52].

According to official sources, the Union Health Ministry of India has also instructed airport and port health officials to be observant.

CDC of Taiwan published a transit warning for 44 countries from which cases of monkeypox had been reported[53].

2. Testing of travelers

In India, the airport officials have been directed to isolate samples from all ill passengers who have traveled to infected countries in the past and send them to the National Institute of Virology[54].

The Department of Disease Control (DDC) of Thailand began testing all overseas travelers from Central African nations and other outbreak regions at international airports[55].

3. Issue of border control measures

In Philippines, Francisco Duque III, the Health Secretary declared that the country is strengthening its border control measures in light of the monkeypox virus threat[56].

The Vietnamese Ministry of Health ordered border regions to heighten surveillance to identify plausible cases of monkeypox.

4. App to educate the population

The Malaysian Ministry of Health relaunched the MySejahtera app to disseminate information about and monitor monkeypox.

5. Isolation of suspected and confirmed cases

The General Directorate of Health Services in Bangladesh ordered that the suspected patients be taken to an infectious disease hospital and isolated.

The Taiwan Centers for Disease Control formally classified monkeypox as a notifiable contagious disease, and subsequently monkeypox was upgraded to a second-tier acute notifiable communicable disease[57], meaning that confirmed patients must be registered within 24 hours and quarantine treatment can be provided at assigned isolation treatment facilities if necessary.

6. Prevention plan

The Saudi Ministry of Health said it was prepared to survey and inspect cases of monkeypox should they occur. Additionally, the Ministry confirmed that it has a consolidated prevention plan to tackle such cases if at all they occur, comprising identification of suspected and confirmed patients.

In Thailand, the DDC established an Emergency Operations Center to investigate the outbreak situation and also plan in advance for a probable outbreak in the Kingdom. Minister of Public Health, Anutin Charnvirakul stated that the government is requesting a smallpox vaccine from WHO to boost the immunity of the population in case of a virus outbreak.

7. Release of formal statement and alerts

China's CDC released a statement quoting the document from WHO with a translation of the original: "Stigmatizing people for having a disease is never okay. Anyone can get or pass on monkeypox, regardless of their sexuality".

Union Health Minister of India, Mansukh Mandaviya alerted the National Center for Disease Control and the ICMR to closely monitor and supervise the situation.

Indonesian health authorities were alerted when monkeypox cases were registered in Australia in May 2022. Mohammad Syahril, spokesman for the ministry, instructed medical staff and the country's population to be cautious and watch for symptoms of monkeypox[58].

CONCLUSION

WHO continues to keep track of the situation and promotes international coordination and dissemination of information with Member States and partners. Response to clinical and public health incidents has been initiated by Member States to systematize extensive case detecting, contact tracing, laboratory testing, quarantine, clinical supervision and the execution of infection, prevention and control measures.

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