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Correspondence



Overlapping outbreak of COVID-19 and monkeypox in 2022: Warning for immediate preparedness in Iran

Dear Editor,

Human monkeypox has been a neglected tropical zoonotic viral disease. Multi-country outbreaks of monkeypox virus in 2022 have made it to become a global public health concern that requires immediate preparedness and appropriate attention for rapid control. The prevalence of human monkeypox in 2022 has increased in 92 countries beyond African regions. Since the first case in the UK in May 2022, the disease has been confirmed in more than 35,000 cases worldwide.

According to the medical literature, human monkeypox is transmitted through direct contact with infected animals or by nosocomial transmission from patients through close contact with bodily fluids, respiratory droplets, and cutaneous lesions, especially in the urogenital region [1]. Although the World Health Organization (WHO) mentions primary transmission through men who have sex with men (MSM); however, the possibility of sexual transmission is still being investigated [2]. Clinical features of the infection begin after an incubation period of 7–21 days; human monkeypox is a mild self-limiting disease, and its most common clinical symptoms are fever, headache, cough, and lymphadenopathy, followed by skin rashes on face and extremities in the next 3 days after fever [3]. Nevertheless, severe cases of human monkeypox have been reported in the recent outbreak of 2022 [4].

Despite the mild clinical course and low transmission rate, we are facing an increasing trend of human monkeypox worldwide. Hence, the WHO declared a public health emergency for the disease on July 23, 2022 [5]. In a recent report on August 16, 2022, Iran's Ministry of Health confirmed the first case of human monkeypox in a 34-year-old woman living in Ahvaz, Khuzestan Province (<https://www.farsnews.ir/en/news/14010526000114/Iran-Identifies-Firs-Mnkeypx-Case>). After observing the skin lesions, this new case was confirmed by whole genome sequencing of the virus (Fig. 1).

In previous reports, human monkeypox cases have been reported from Iran's neighboring countries including Qatar, UAE, Saudi Arabia, Turkey, Pakistan and Lebanon. Therefore, we expected that this disease would spread to Iran from its neighbors. Nextstrain databases showed that all the human monkeypox viruses around Iran belonged to the B.1 lineage; it has been estimated that B.1 originated in Europe and after a short time it spread around the world [6]. Although it is assumed that the human monkeypox was introduced to Iran from the southwest neighboring countries, asymptomatic carriers as natural reservoirs may play an important role in the human-human transmission chain [7]. This woman's husband has a history of travel to Canada, which strengthens the hypothesis of transmission from asymptomatic carriers.

More than 70% of the world's population has been estimated to be no longer protected against smallpox after cessation of its vaccination; the mortality rate in unvaccinated children is about 10% [8,9]. Therefore, to quickly control the disease, preventive health measures, especially

countermeasures must be taken. Recently, human monkeypox has been overlapping with SARS-CoV-2 epidemics. In this era of epidemics, monkeypox should be given much attention as a serious health threat. Several recent undiagnosed outbreaks have raised concerns about the changing epidemiology of the disease. Genomic surveillance of the recent human monkeypox outbreak reveals that there is a mean of 50 single nucleotide polymorphisms (SNPs) differ from those of 2018–2019 [10]. It seems that the recent genotypic variations have influenced on the characteristics such as viral transmissibility, immune-evasion, and clinical outcomes. It is important to consider the recent spread of monkeypox in light of the ongoing COVID-19 pandemic. Furthermore, the outcomes of co-infection between SARS-CoV-2 and human monkeypox are unclear.

It is too early to tell whether or not the outbreak of monkeypox has a real impact on the exacerbation of the COVID-19 pandemic. However, for developing countries, as there is no definitive vaccine against human monkeypox, and there is no access formulations of tecovirimat and brincidofovir in low-income countries such as Iran, precautions should be taken by the national healthcare authorities to establish a nationwide surveillance before entering into a critical situation regarding the adverse effects of a human monkeypox outbreak in 2022. Currently, residents and travelers to endemic areas where there are cases of this disease should observe contact precautions, particularly for MSM which may represent a potential risk of sexual transmission of human monkeypox. Public health facilities should also provide countermeasures such as tracking of contacts and screening to identify and quarantine asymptomatic carriers.

Ethical approval

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Author contributions

Mohsen Karbaaei: Writing and Editing the draft.

Masoud Keikha: Study design, data collection, Writing and Editing the draft.

All authors read and approved the final version of the manuscript.

Guarantor

All the authors of this paper accept full responsibility for the work

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Fig. 1. Skin lesions of a 34-year-old Iranian woman suspected of monkeypox. Finally, the virus was confirmed by whole genome sequencing of the virus.

and/or the conduct of the study, had access to the data, and controlled the decision to publish.

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