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The first imported case of monkeypox in Singapore during the 2022 outbreak – Reflections and lessons

Wilnard Yeong Tze Tan a,b,*, Chen Seong Wong a,b, Marc Zheng Jie Ho c,e, Zubaidah Said c, Lin Cui d, Raymond Tzer Pin Lin d, Monica Chan a,b, Shawn Vasoo a,b, Vernon Jian Ming Lee c,e, Yee Sin Leo a,b,e

a National Centre for Infectious Diseases Singapore, Singapore
b Department of Infectious Diseases, Tan Tock Seng Hospital, Singapore
c Ministry of Health Singapore, Singapore
d National Public Health Laboratory, National Centre for Infectious Diseases, Singapore
e Saw Swee Hock School of Public Health, National University of Singapore, Singapore

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ABSTRACT

On June 21, 2022, Singapore reported its second ever case of imported monkeypox and first linked to the ongoing multi-country outbreak that has since been declared a public health emergency of international concern. There was quick initiation of public health measures including identification and quarantine of contacts, with post-exposure smallpox vaccination.

1. Introduction

Monkeypox (MPX) is caused by infection of monkeypox virus (MPXV), a species of genus orthopoxvirus. It is endemic to West and Central Africa with two clades of MPXV that cause disease in humans: the West African clade (which causes less severe disease) and the Central African (Congo Basin) clade [1]. Since May 2022, there has been a surge in human MPX cases reported across five World Health Organisation (WHO) regions occurring mainly – but not exclusively – in men who have sex with men (MSM), with 16,836 cases reported as of July 22, 2022 [2]. WHO declared the outbreak a public health emergency of international concern (PHEIC) on July 23, 2022 [3].

As a globally-connected city with a high volume of travelers transiting annually, Singapore is vulnerable to emerging zoonotic diseases. We present the clinical details, management and public health measures for the second imported case of human MPX in Singapore and the first linked to the recent global outbreak. The case was identified via enhanced surveillance instituted in response to the 2022 MPX global outbreak.

2. Case

The patient is a 42-year-old male who had travelled to Singapore and had symptoms suggestive of MPX. He was conveyed to the National Centre for Infectious Diseases (NCID), the national treatment Center for emerging infectious diseases, where swabs of perianal lesions and nasopharynx tested positive by both MPXV-specific and West-African-clade-specific PCRs [4] at the National Public Health Laboratory on June 20, 2022. Upon confirmation of diagnosis, the Ministry of Health (MOH), Singapore was notified.

He presented with a headache on June 14, 2022 and fever two days later. These symptoms later resolved before skin rashes developed on June 19, 2022, prompting a tele-consult that led to the admission to the isolation ward in NCID where he was managed under full airborne and contact precautions.

On admission, the patient reported no significant symptoms apart from perianal discomfort. He was afebrile and hemodynamically stable. Physical examination revealed non-tender cervical, axillary, inguinal lymphadenopathy with 11 vesicular lesions involving the back and neck and numerous vesiculo-pustular lesions and erosions in the perianal region (Fig. 1). There were no lesions observed in oral cavity and external genitalia. Apart from mildly elevated C-reactive protein, the...
prior importation of MPX from Nigeria in 2019 [5] which although was protective equipment including N95 mask, eye protection, disposable headgear, gloves and sterile gowns, and no further action was required.

In accordance with a strict containment strategy, the contact tracing team from MOH mapped the case’s activities and interactions with others upon case notification. Through interviews, contacts were risk-stratified, including by the duration and type of contact, in particular any close physical contact and exposure to potentially contaminated surfaces or materials.

In all, 13 close contacts (of which 10 were airline crew members and three were local close contacts) and six other local low-risk contacts were identified. All close contacts were given quarantine orders for 21 days since their last contact with the patient. While placed in an isolation room, they were monitored closely for symptoms ≥3 times a day through video calls. The 10 airline crews were later repatriated on the request of the airline and facilitated by the origin country’s health authorities after three days in isolation. None developed symptoms suggestive of human MPX while in isolation.

The six local low-risk contacts were put on daily phone surveillance for development of symptoms for the remaining incubation period.

Close contacts were offered smallpox vaccination (ACAM2000; Sanofi Pasteur Biologics Co) as post-exposure prophylaxis, of which two consented. Both had a good ‘take’ of ACAM2000 and did not proceed to develop MPX.

Healthcare workers who interacted with the case used personal protective equipment including N95 mask, eye protection, disposable headgear, gloves and sterile gowns, and no further action was required. Close follow up for contacts did not reveal secondary transmission.

3. Discussion

We describe the first imported human MPX infection in Singapore arising from the 2022 globally-linked outbreak. Singapore has had a prior importation of MPX from Nigeria in 2019 [5] which although was also related to the West African clade, was on a divergent phylogenetic branch in relation to viral isolates from the current 2022 MPX outbreak, indicating continued evolution and adaptation of this virus [6]. The risk factors of disease acquisition differed for both cases. The 2019 case from Nigeria was thought to be linked with consumption of bushmeat or from the environment where Nigeria was experiencing human MPX outbreak, while this case was likely from close skin-contact. Both patients had lesions in differing stages of development on admission. The duration from symptom onset to de-isolation and discharge was 24 days for the case in 2019 and 23 days for the current case. Both cases did not develop complications and were not given antivirus treatment.

As of 25 July, eight more MPX cases were identified through the surveillance programme instituted in view of the 2022 MPX global outbreak. Robust surveillance mechanisms, continued partnership between public health and frontline practitioners, out-reach to at-risk communities through existing networks, availability of testing and diminishing barriers in seeking medical attention are crucial in the control of this outbreak.

Ethics and consent

Written informed consent was obtained from study participant for collection of biological samples, clinical data and pictures. Study protocol was approved by the institutional ethics committee (REF DSRB: 2012/00917).

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