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Short report

# Clinical manifestations and outcome of Mpox infection in Qatar: An observational study during the 2022 outbreak

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ABSTRACT

Mpox emerged in May 2022 as a global outbreak, mostly in hitherto non-endemic countries. To describe the epidemiological and clinical characteristics of mpox in Qatar, data were retrospectively retrieved for all laboratory-confirmed mpox cases diagnosed in Qatar between May and November 2022. Twelve cases were identified; of which 10 were males, and the median age was 33.5 years (IQR 24.5–37.5). Recent sexual exposure was reported in 9 patients, 6 of which were outside Qatar. Seven individuals reported exclusive heterosexual contact. Pleomorphic skin lesions were present in all cases, with anogenital involvement in 11. Fever (7/12) and lymphadenopathy (4/12) were relatively common. All cases were HIV-negative. The majority of cases had an uncomplicated and self-limiting clinical illness. In conclusion, the majority of early mpox infections in Qatar were purportedly acquired through heterosexual contact, primarily among middle-aged men. The clinical course was mostly uneventful. In the absence of active case finding and the mild and self-limiting nature of the clinical illness, undetected community transmission cannot be ruled out.



## Background

In July 2022, the rapid global emergence and spread of mpox, previously known as monkeypox, beyond historically endemic regions led the World Health Organization (WHO) to declare it a public health emergency of international concern [1]. Qatar reported its first mpox case in July 2022. This report describes Qatar's initial experience with mpox, including the epidemiological and clinical characteristics, management, and outcomes. Findings will enhance disease understanding and guide prevention, case tracing, and treatment.

## Methods

The study was undertaken at the Communicable Diseases Center in Doha, Qatar, the designated national referral point for all suspected or confirmed cases of mpox infection. Data for all individuals who had PCR-confirmed diagnosis of mpox infection between May 13 and November 30, 2022, were retrospectively retrieved.

All cases which met the WHO's criteria for suspected mpox [2], were tested using an orthopox PCR assay. If positive, a specific mpox PCR assay was conducted. For each individual with suspected mpox virus infection, a skin swab from the vesicle/skin lesion was tested. In addition, an oropharyngeal swab and a blood sample were tested in patients presenting with prodromal symptoms and a history of contact with a confirmed mpox case [3]. Additionally, all confirmed mpox were screened for HIV, hepatitis B, hepatitis C, and syphilis. When clinically indicated, PCR screening for herpes simplex virus, *Chlamydia trachomatis*, and *Neisseria gonorrhoeae* was performed on vesicular lesions, pharyngeal swabs, rectal swabs, and/or first-void urine samples.

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**Table 1**
A summary of the clinical presentations and outcome of mpox cases reported in Qatar.

| Variable | Total (N = 12) |
|---|---|
| Age in years; Median (IQR) | 33.5 (24.5–37.5) |
| Sex | 10 (83 %) Male, 2 (17 %) Female |
| Nationality by WHO region of origin | EMR 7 (58.3 %), AFR 4 (33.3 %), SEAR 1 (8.3 %) |
| Medical setting at presentation | ED 5 (42 %), Private clinic 5 (42 %), Sexual health clinic 2 (16 %) |
| Co-existing medical condition | 5 (42 %) |
| Sexual behavior within past month | Heterosexual 7 (58.3 %),<br>Bisexual 2 (17 %),<br>Homosexual 1 (8 %),<br>Not disclosed 2 (17 %) |
| History of travel one month before illness | 6 (50 %) Yes |
| Suspected transmission route | Sexual 9 (75 %), Unknown 3 (25 %) |
| Days from last sexual encounter to symptoms onset; Median (IQR) | 5 (3–7) |
| Clinical features—No. (%) | Skin rash (Vesicular, pustular, ulcerating lesion, scabs) 12 (100 %), Fever 7 (58 %), Lymphadenopathy 4 (33 %), Urethral discharge 4 (33 %), Myalgia 3 (25 %), Fatigue 3 (17 %), Proctitis/Anorectal pain 2 (17 %), Sore throat/ pharyngitis 1 (8.33 %), Conjunctivitis 1 (8.33 %) |
| Duration of prodromes; Median (IQR) | 4.5 (4–7) |
| Location of skin lesions | Genitals and/or anal 11 (92 %),<br>Trunk and/or limbs 10 (83 %),<br>Face and/or neck 9 (75 %),<br>Palms and/or soles 5 (42 %) |
| Number of skin lesions | 5–10 lesions (50 %),<br>11–20 lesions (33 %),<br>< 5 lesions (17 %) |
| Mucosal lesions and sites | Total 3 (25 %),<br>Genitals and/or anal 2 (17 %),<br>Oropharyngeal 1 (8.33 %) |
| Orthopox and Mpox DNA confirmed by PCR | 12 (100 %) |
| Mpox viral DNA detection by anatomic site | Skin/Rash: 11 (92 %) Positive, 1 (8.33 %) not done,<br>Throat/nasopharyngeal: 7 (58 %) Positive, 4 (33 %) not done, 1 (8.33 %) Negative,<br>Blood: 2 (17 %) Positive, 9 (75 %) Not done,1 (8.33 %) Negative |
| HIV | 12 (100 %) Negative |
| Hepatitis B, and hepatitis C status | 8(67 %) Negative, 4(33 %) Not done |
| Smallpox vaccine | 100 % No |
| Urethral swab taken | 5 (42 %) |
| Concurrent STI | 1 (8.33 %) |
| Syphilis serology (Treponema Palladium) | 1 (8.33 %) Positive |
| Herpes Simplex PCR | 12 (100 %) Negative |
| Hospitalization | 11 (92 %) |
| Length of hospital stay | 9 (7–12) |
| Complications | Persistent fever and elevated liver enzymes, conjunctivitis, thumb paronychia, severe proctitis and lower gastrointestinal bleeding, penile and scrotal cellulitis, miscarriage, and paraphimosis. |
| Mpox specific treatment | 11 (92 %) No<br>1 (8 %) Cidofovir |
| Outcome | 12 (100 %) full recovery |

Data are presented as number (percentage) or median (interquartile range). ICU, intensive care unit; EMRO, Eastern Mediterranean Region; AFRO, African Region; EMRO, South-East Asia Region; ED, Emergency department. STI; sexually transmitted infection, PCR; polymerase chain reaction.

Quantitative variables are expressed as the median with the interquartile range (IQR), while categorical variables are presented as absolute values and proportions. The study was approved by the Institutional Review Board (MRC-01–22–776). Written informed consent was obtained from all individuals from whom clinical images were included in this report.

## Results

Twelve cases were included. The median age was 33.5 years (IQR 24.5–37.5), and 10 individuals were males. None of the patients self-identified as transgender or non-binary. Five cases presented through an emergency department, five through dermatology services, and two presented directly to the sexual health clinic. Recent sexual exposure was reported by 9 subjects, of which 6 were with casual anonymous partners while traveling outside abroad. Seven individuals reported exclusive heterosexual encounter, two were men who have sex with men and women (MSMW), and one identified himself as man who has sex with men (MSM). The median time between symptom onset and the last sexual encounter was 5 days (IQR 3–7). Further demographic and epidemiological characteristics are provided in Table 1, and in Table S1 in the data supplement file.

All subjects have a pleomorphic skin rash (Fig. 1). Other relatively common symptoms included fever (7, 58 %), and lymphadenopathy (4, 33 %). The ano-genital area was most frequently involved, followed by the trunk and/or limbs (10, 83 %) and the face and/or neck (9, 75 %). Lymphadenopathy primarily affected the inguinal area. Further clinical details are presented in Table S2 in the data supplement file.

Eleven patients (92 %) had positive mpox viral DNA from skin lesions. Eight patients were tested for mpox presence in the oropharynx, of which 7 yielded positive results, while mpox viremia was detected in two out of the three individuals who had their blood samples tested. All patients had negative HIV tests. Two patients presented with concomitant sexually transmitted infections (STIs). (Table S3 in the data supplement file).

Eleven subjects were hospitalized for isolation purposes. The clinical illness was mostly mild to moderate. One patient received investigational antiviral treatment, cidofovir, while all the others were managed with supportive care. Complications observed in this cohort included persistent fever and elevated liver enzymes, conjunctivitis, thumb paronychia, severe proctitis and lower

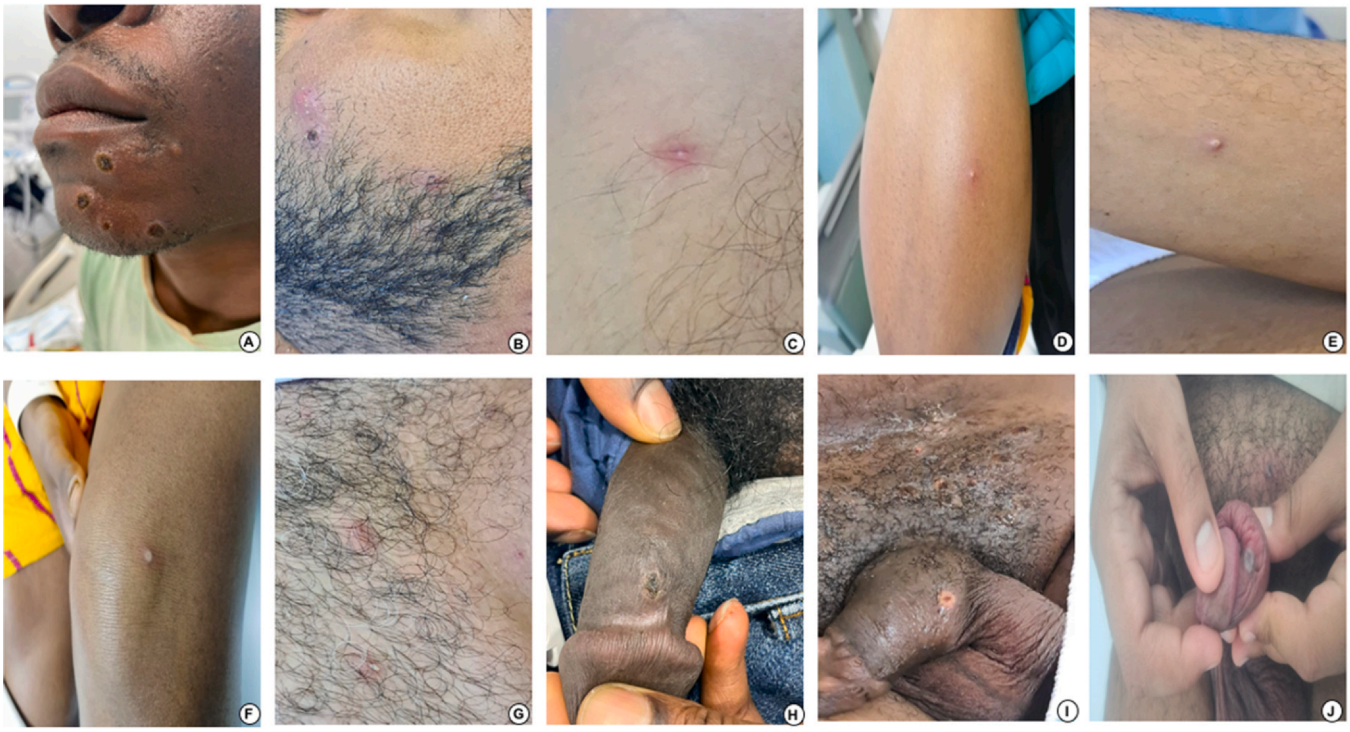

**Fig. 1.** Skin manifestations of mpox in the case series. A, B, C: crusted umbilicated and pustular lesions on the face and chest, D, E, F, G: vesicular lesions on the upper and lower limbs. H, I, J: pustular lesions with a crusted center on the penis.

gastrointestinal bleeding, penile and scrotal cellulitis, miscarriage, and paraphimosis in one patient each. One individual with pre-existing sickle cell anemia experienced a hemolytic crisis during active mpox infection. Further clinical details are provided in Table S4 in the data supplement file.

## Discussion

The age distribution of the subjects in our report is consistent with what had been described elsewhere [4–7]. However, whereas MSM encounters predominate in Europe and Northern America [4–7], the relative smaller representation of MSM in this report is similar to reports from places such as Saudi Arabia, UAE and Nigeria [8–10]. However, it is important to note that same-sex relationships continue to be associated with considerable stigma in some parts of the world and hence may be underreported [9], [11]. Furthermore, stigma associated with sexually acquired infections in general may discourage some individuals with relatively mild symptoms from presenting to healthcare services and thus further distort perceptions of incidence and distribution of mpox in regions where such stigmas are prevalent.

The mucocutaneous manifestations observed in this cohort are consistent with those described in recent mpox outbreaks [4–6,9]. Notably, they differ from the typical clinical features seen in endemic mpox in Africa, where lesions tend to first appear on the face and then spread to the extremities [7,12].

As expected, mpox was confirmed on material obtained from skin lesions in the majority of subjects reported here [6]. Unfortunately, subjects who had other areas of possible mucosal involvement, for example, severe proctitis and pharyngitis, did not have mpox tests on samples obtained from these sites. Such mucosal manifestation of mpox involvement had been documented in previous reports [4–6,13].

Two cases in our study reported symptoms of anxiety or depression, which could potentially be attributed to mpox infection or the experience of isolation. This finding is consistent with a case series from the United Kingdom [7]. Furthermore, one female patient presented with vaginal bleeding and was subsequently diagnosed with a miscarriage. It is noteworthy that she was unaware of her pregnancy, and conservative management was provided. A previous study conducted in the Democratic Republic of Congo reported two cases of pregnant women with mpox infection experiencing fetal demise and spontaneous abortion during the first trimester of pregnancy [14]. It is not yet clear if such association of mpox with pregnancy loss is causal or incidental.

The majority of patients in our study had a mild course of illness. Investigational antiviral therapy with cidofovir was contemplated for only one patient in this report. This was based on the treating physician's clinical judgement and appears to have been driven by a concern over persistent fever and hemolytic crisis related to his underlying sickle cell disease. Tecovirimat, which is the commonly used antiviral for mpox [15,16], was not available in Qatar during the study period.

The study has limitations, including its observational nature and small sample size. However, the findings align with lower incidence of mpox in countries with stigmatizing attitudes towards homosexuality [17]. With the relaxation of travel restrictions and the hosting of the FIFA World Cup 2022 in Qatar, which involves mass gatherings, there was an anticipated increase in sexually transmitted infections, including mpox, as had previously been observed in similar events [18,19].

In conclusion, this study provides important insights into the epidemiology, clinical characteristics, and management of mpox infection in Qatar during the global outbreak. The findings highlight the disproportionate impact on males and the significant role of sexual transmission.

## Ethical approval

The study was approved by Hamad Medical Corporation's Institutional Review Board with a waiver of informed consent (MRC-

01-22-776). Only the written informed consent for publication of the clinical images included in this analysis, was obtained.

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## CRediT authorship contribution statement

Conceptualization, A.Z and M.A.; Methodology, A.Z and J.D.; Formal analysis, A.Z and J.D. Writing—original draft preparation, A.Z., M.A. writing—review and editing, A.Z., J.D., S.A., M.A.;.

Clinical images Consent, M.K and W.M. Supervision, M.A. All authors have read and agreed to the published version of the manuscript.

## Declaration of Competing Interest

The authors declare no conflict of interests in relation to this manuscript.

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## Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.jiph.2023.09.001.

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