Original article

Clinical and Sociodemographic Characteristics of Patients with Mpox Virus Treated at a Family Medicine Unit

Características clínicas y sociodemográficas de pacientes con virus Mpox atendidos en una unidad de medicina familiar

Michelle León-Díaz,[1] Yarenis Santiago-Escobar,[1] Oscar Baltazar-Gutierrez[1]*

Summary

Objective: To describe the clinical and sociodemographic characteristics of patients with Mpox virus treated at a family medicine service. **Methods:** A descriptive cross-sectional study was conducted. A search was performed in the electronic medical record database for patients with a PCR-confirmed diagnosis of Mpox virus infection who were treated at the Family Medical Unit No. 28 "Gabriel Mancera" of the Mexican Social Security Institute (IMSS) in Mexico City during 2022. Clinical and sociodemographic data, as well as comorbidities, were extracted. Descriptive statistics were performed. **Results:** A total of 51 patients were included, 98% (n= 50) were male, 95% (n= 49) were men who have sex with men (MSM), mean age 36 years (± 9.3); 80% (n= 41) reported not using a condom during sexual relations, 70% (n= 36) were people living with human immunodeficiency virus (HIV), and 82% (n= 42) reported a previous history of a sexually transmitted infection. The most frequent route of transmission was sexual, in 74% (n= 38). The distribution of vesiculopustular lesions was as follows: 72% (n= 37) on upper limbs, 70% (n=36) on the trunk, and 66% (n= 34) in the anogenital region. Proctitis was present in 13.7% (n=7). The estimated recovery time was 25 days. **Conclusions:** Mpox virus infection primarily affected young MSM men, with HIV comorbidity. Sexual transmission was predominant, and lesions were located were mostly located on the upper limbs, trunk, and anogenital area. The course of the disease was self-limited, with recovery in approximately 25 days.

Keywords: Mpox Virus, Sexually Transmitted Diseases, Primary Care.

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[1]Family Medicine Unit No. 28, Mexican Institute of social Security. Mexico City, Mexico.

[*]Correspondence:
Oscar Baltazar-Gutiérrez
osbagu_puebla@hotmail.com

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Resumen

Objetivo: describir las características clínicas y sociodemográficas de pacientes con virus Mpox atendidos en un servicio de medicina familiar. **Métodos:** estudio transversal descriptivo. Se realizó una búsqueda en la base de datos de los expedientes clínicos electrónicos de pacientes con diagnóstico confirmado por PCR de infección por virus Mpox, atendidos en la Unidad Médica Familiar No. 28 "Gabriel Mancera" del IMSS en la Ciudad de México durante el año 2022; se extrajeron datos clínicos, sociodemográficos y comorbilidades. Se realizó estadística descriptiva. **Resultados:** Se incluyó un total de 51 pacientes, 98% (n= 50) fue hombre, 95% (n= 49) correspondió a hombres que tienen sexo con hombres (HSM), edad promedio de 36 años (± 9.3); 80% (n= 41) refirió no usar preservativo en las relaciones sexuales, 70% (n= 36) de las personas que vive con virus de inmunodeficiencia humana (VIH), 82% (n= 42) reportó antecedente previo de una enfermedad de transmisión sexual. La vía de contagio más frecuente fue la sexual con 74% (n= 38). La distribución de las lesiones vesiculopustulosas fue de 72% (n= 37) en miembros torácicos, 70% (n=36) en tronco, 66% (n= 34) en región anogenital; 13.7% (n=7) presentó proctitis. El tiempo de recuperación estimado fue de 25 días. **Conclusiones:** La infección por virus Mpox se presentó principalmente en hombres jóvenes de HSH, con comorbilidad por VIH. Predominó la transmisión sexual y las lesiones se localizaron en miembros torácicos, tronco y región anogenital. El curso fue autolimitado, con recuperación en aproximadamente 25 días.

Palabras clave: Virus Mpox, enfermedades de transmisión sexual, Atención Primaria.

Introduction

Mpox infection is caused by a double-stranded deoxyribonucleic acid (DNA) virus belonging to the *Orthopoxvirus* genus, with a size ranging from 200 to 250 nm. It was first isolated in 1958 at the *Statens Serum Institut* in Copenhagen, Denmark, during the development of the poliomyelitis vaccine. The first human case was reported in the Democratic Republic of the Congo in 1970, in a 9-month-old infant. On July 23, 2022, the World Health Organization (WHO) declared the Mpox outbreak a public health emergency of international concern.[1-4]

Mpox infection has been considered a zoonotic disease, endemic to regions of Central and West Africa. In 2022 a global outbreak occurred, driven by factors such as increased globalization and mobility, and waning smallpox immunity, among others.[5]

Mpox is a disease transmitted through contact with secretions from active lesions, respiratory droplets, sexual contact, fomites, and vertical transmission (congenital Mpox). The severity of the disease depends on the patient's comorbidities and immune status. The virus enters the body through mucous membranes or through breaches in the skin's integrity, subsequently replicating in lymph nodes and spreading via the lymphohematogenous route, resulting in primary viremia. The host's initial immune response is mediated by monocytes, followed by activation of NK macrophages, and a Th2-mediated immune response with increased production of IL-2, IL-4, and IL-8.[6-9]

The 2022 outbreak primarily affected men who have sex with men (MSM), some of whom were living with HIV, had a history of sexually transmitted infections, and engaged in high-risk sexual practices, such as inconsistent condom use. The clinical presentation included characteristic manifestations such as tonsillitis and proctitis.[10-12] Although pediatric Mpox accounts for approximately 0.3% of cases and is usually mild, it is important to consider it in the differential diagnosis with other childhood exanthematous diseases. [13]

The characteristic lesions are vesiculopustular and some are umbilicated, and their distribution varies topographically, primarily affecting the anogenital region and face. The incubation period ranges from four to twenty-one days, followed by a prodromal phase lasting three to five days, characterized by general malaise, myalgias, headache, fever, and lymphadenopathy. This is followed by the appearance of skin lesions, which typically last approximately two to four weeks.[14-15]

In suspected clinical cases, a detailed medical history should be obtained, including recent contacts, travel history, sexual practices, and comorbidities along with a thorough physical examination to support differential diagnosis. [16] Molecular diagnosis should then be confirmed via polymerase chain reaction (PCR) testing of secretions obtained from the lesions.[17]

In Mexico, several cases of Mpox have been reported in referral hospitals since 2022; however, information from the primary care level is limited and needs to be strengthened.[18] Therefore, the present study aimed to describe the clinical and sociodemographic characteristics of patients with Mpox seen in a family medicine service.

Methods

A descriptive cross-sectional was conducted using an initial database provided by the Medical Information and Clinical

Records Area (ARIMAC) of patients who were treated at Family Medicine Unit 28 of the Mexican Social Security Institute (IMSS) in Mexico City during 2022. Patients with a recorded diagnosis of "monkeypox" according to the current ICD-10 classification were identified. Subsequently, the electronic clinical records of patients were reviewed in the Family Medicine Information System (SIMF), including only those with a confirmed diagnosis of Mpox infection by PCR. Patients with incomplete data regarding clinical manifestations, associated risk factors, or loss to follow-up were excluded. Clinical data, such as signs, and symptoms, and transmission routes; sociodemographic (age, sex, sexual orientation, education level, occupation, and temporary incapacity for work); and relevant medical history (comorbidities, age at first sexual experience, number of sexual partners, history of sexually transmitted diseases, and condom use during sexual intercourse) were extracted. The incubation period was defined as the time between probable exposure and the onset of clinical manifestations. The clinical period was defined as duration of active lesions (vesiculopustular), and the recovery period as the time from the first medical consultation to the patient's discharge. For sample size calculation, the formula for a proportion in an infinite sample was used, considering a 3.5% prevalence as reported by Global Mpox Trends,[19] and a 95% confidence level, resulting in a total of 51 patients. Descriptive statistics were performed using SPSS v. 25. For qualitative variables, frequencies and percentages were calculated; for quantitative variables, the mean or median and standard deviation (±) or interquartile range (IQR) were calculated, depending on the type of distribution as determined by the Kolmogorov-Smirnov test. The research protocol was approved by the Local Research Committee under registration number R-2023-3703-130.

Results

Fifty-one patients were included, of which 98% (n= 50) were male, average age of 36 years (SD 9.3), 96% (n= 49) corresponded to men who have sex with men (MSM) and one cis heterosexual woman aged 22 years. The population characteristics are shown in Table 1.

Table 1. General Characteristics of Patients with Mpox Virus

Variable	N= 51	
Sex-Male	**n**	%
	50	98
Age (years)	**mean**	±
	36	9.3
Age at sexual debut (years) (IVSA)	**media**	SD
	16	2.5
Number of sexual partners	**median**	IQR
	20	40
Sexual Orientation	n	%
Men who have sex with men (MSM)	49	96
Heterosexual	1	2
Bisexual	1	2
Unprotected sexual activity	**n**	%
	41	80
History of STIs	**n**	%
	42	82
Comorbidities	**n**	%
HIV	36	70
HPV	11	21
HCV	8	15
HBV	1	2

IVSA= Age at sexual debut, IQR= Interquartile Range, STI= Sexually transmitted infection, HIV= Human immunodeficiency virus, HPV= Human papillomavirus HBV= Hepatitis B virus; HCV= Hepatitis C virus.

Table 2: Sociodemographic Characteristics of Patients with Mpox Virus

Variable	N= 50	
Education level	**n**	**%**
Secondary	3	6
High school	16	31
Undergraduate	29	57
Postgraduate	3	6
Employment status	**n**	**%**
Employed	47	92
Student	2	4
Retired	2	4
Required an TWD	**n**	**%**
	35	69
Days given by the TWD	**Median**	IQR
	15	30

TWD= Temporary work disability, IQR= Interquartile range

Table 3. Clinical and Epidemiological Characteristics of Patients with the Mpox virus

Variable	N= 50	
Route of transmission	**n**	**%**
Sexual	38	74
Fomites	7	13
Contact with lesions	6	11
Clinical manifestations	**n**	**%**
General malaise	47	92
Fever	36	70
Myalgia	33	64
Arthralgias	28	54
Proctitis	7	13
Epidemiological timelines (days)	**Median**	IQR
Incubation period	7	5
Clinical period	24	6
Recovery period	25	7

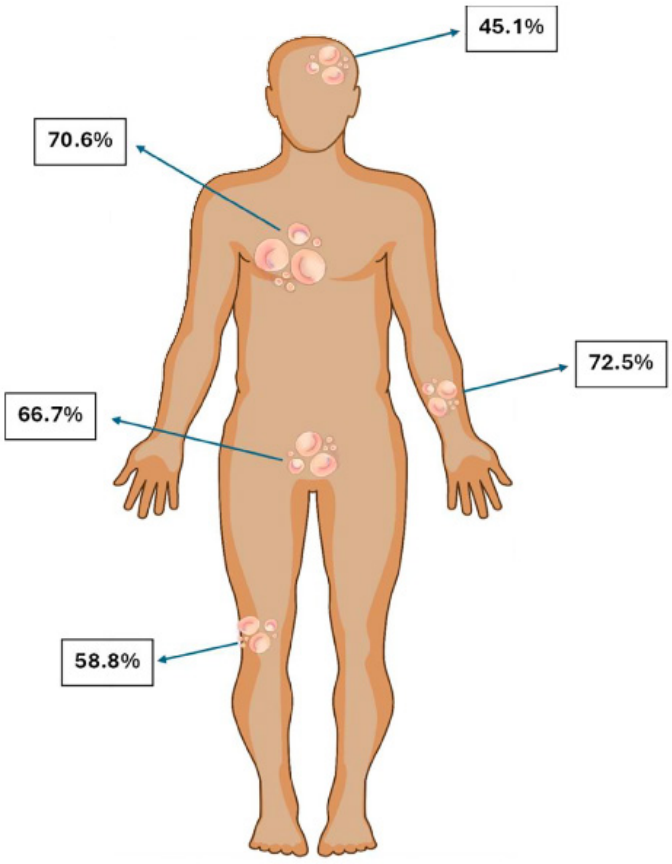
Mpox= monkeypox, IQR= Interquartile range.

Approximately 60% of the patients had a higher education (undergraduate or postgraduate studies). Over 90% were employed and actively working, requiring the issuance of a temporary work disability certificate (TWD) as part of the care provided in the family medicine service. Further details on these variables are presented in Table 2.

Sexual transmission was the most common route of transmission, accounting for 74% of cases (n = 38). Over 90% of patients experienced general malaise, myalgias (64%), and arthralgias (54%). The median recovery time was three to four weeks (Table 3).

Regarding the topographic distribution of the lesions, they were presented as shown in Figure 1; 8% (n= 4) had generalized disease.

Figure 1. Frequency of topographic distribution of vesiculopustular lesions in patients with Mpox virus



Discussion

Since the 2022 pandemic, Mpox virus infection has gained relevance due to its global impact. The disease, which was primarily zoonotic and endemic to Central and West Africa, has become a major global health problem. This impact reflects at the primary care level, as many patients are seen in family medicine units.[5]

Our results are consistent with those published by Núñez et al.,[20] who reported 565 cases, 97% of which were men, with an average age of 34 years; 57% were MSM, of whom 54% were living with HIV (n = 299). These similarities reinforce the epidemiological profile described in the literature, characterized by a predominance of young men, high-risk sexual behaviors, and a high prevalence of comorbidities, such as HIV infection. However, the observed differences—particularly in the proportions of MSM and people living with HIV—may be explained by the characteristics of our study design. The information was obtained from clinical records, which implies possible limitations in the accuracy and completeness of the data, in addition to a smaller sample size. These conditions may have influenced the representativeness of the findings and should therefore be interpreted with caution.

As observed, the topographic distribution of lesions reported in our study was heterogeneous, coinciding with findings by Girometti et al. (2022) in the United Kingdom.[10] These authors noted wide variability in lesion location, reinforcing the need to consider a broad clinical spectrum when evaluating Mpox patients.

Regarding the timing of epidemiological variables, our data are consistent with what has been reported in other publications, showing an average incubation period of seven days, and a recovery period of around 25 days, depending on the extent and severity of the patients' condition.[4,7,14]

It is important to note that 70% of our patients were living with HIV, a finding that has been previously reported by various authors. This condition may not only predispose individuals to greater susceptibility to Mpox infection, but also negatively affect clinical progression and prolong recovery. These aspects warrant greater attention in the comprehensive medical care of these patients. [10,11,15]

Regarding clinical and epidemiological characteristics, comorbidities, and associated factors, our findings are consistent with those reported by Zamudio et al.[18] who identified MSM with a history of HIV, and other sexually transmitted diseases (STDs) as the most affected population, with sexual transmission being the main route of infection. This epidemiological profile, along with the low condom use observed in the study population (80%), reinforces the need to implement strategies aimed at sexual health education and promotion, in line with what has been described in other studies.

Despite the availability of two FDA-approved vaccines — Modified Vaccinia Ankara-Bavarian Nordic (MVA-BN) and ACAM2000 — access and coverage are still limited, especially among key populations. Therefore, primary prevention based on self-care measures and reduction of risk behaviors remains essential.

Among the limitations of this study are its cross-sectional design, which prevents the establishment of causal relationships; the use of secondary data from medical records, which may affect the accuracy of some variables; and the small sample size, which limits the generalizability of the findings. Nevertheless, the results provide relevant information on the presentation of Mpox at the primary care level, an area in which evidence is still limited.

Regarding our findings on clinical and epidemiological characteristics, comorbidities and associated factors are consistent with those reported by Zamudio et al,[18] in which the most affected population was MSM with a history of HIV and other STIs. The main route of transmission was sexual. This represents an opportunity for health promotion, since 80% of our patients reported low adherence to condom use, a trend similar to that found in other reports.

To date, only two vaccines have been approved by the FDA for the prevention of Mpox: the Modified Vaccinia Ankara-Bavarian Nordic (MVA-BN) and ACAM200. [21]

Conclusion

Currently, Mpox infection has gained relevance due to the outbreaks that have emerged since 2022, predominantly affecting men who have sex with men and engage in high-risk sexual practices. In this study conducted in a family medicine service transmission was primarily sexual, and clinical manifestations included vesiculopustular lesions in the anogenital region, as well as on the trunk and extremities. The course of the disease was self-limiting, with recovery occurring in approximately 25 days. Although approved vaccines exist, access to them is limited. Therefore, it is essential to strengthen prevention strategies at the primary care level through sexual health education and counseling aimed at reducing risky behaviors. These findings contribute in expanding knowledge about the clinical presentation of Mpox in this context and reinforce the key role of family physicians in comprehensive care and health promotion.

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No external financing was required.

Conflict of interest

The authors declare no conflicts of interest.

Authors' contribution

M L-D: Conceptualization and development, original idea, collection and elaboration of the database. O B-G: Conceptualization and development, data analysis, and preparation of the manuscript. Y S-E: Conceptualization and development, methodological advice, editorial review and supervision of the project. All authors approve the publication of this paper.

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