Long-term Sequelae of Mpox: A Cohort Study in Two Tertiary Centers

1094

Rene Bulnes, MD, Stephanie Reyes, MA, Shivani Sundar, MS, MBA, Tianna Petersen, MS, Song Zhang, PhD, Mamta K. Jain, MD, MPH, Netanya S. Utay, MD,
University of Texas Southwestern Medical Center, Dallas, Texas, USA. Rene.Bulnes@utsouthwestern.edu

BACKGROUND AND METHODS

The global outbreak of clade IIb Mpox virus (MPXV) led to significant morbidity, particularly among men who have sex with men (MSM) and persons living with HIV (PLWH)[1]. However, the medical, psychological, and socioeconomic impacts of mpox, as well as the associated risk factors, remain poorly understood.

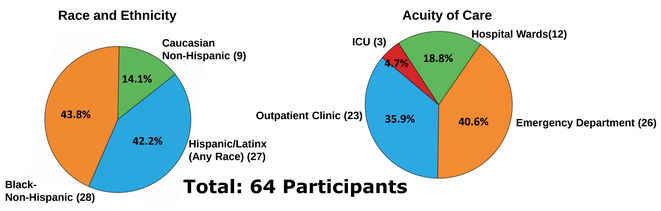
- Study Design:
  - Retrospective, longitudinal study, in two tertiary centers: a large academic hospital and a county safety net health system.
  - Chart reviews and telephone questionnaires were used to evaluate the long-term consequences of mpox.
- Study Population:
  - Individuals diagnosed with mpox by PCR in the emergency centers, clinics, or inpatient settings at our institutions.
- Data Collection:
  - Administered questionnaires to assess:
    - Scarring, persistent symptoms (e.g., fatigue), socioeconomic impacts, and mental health effects (e.g., anxiety, depression, substance use).
  - Evaluated scarring using the Dermatology Life Quality Index (DLQI)[2].
- Primary Outcome:
  - Composite of death, scarring, or persistent symptoms.
  - Persistent symptoms = manifestations beyond scarring, such as pain, sexual dysfunction, or fatigue.
- Statistical Analysis:
  - Logistic regression to analyze associations between long-term sequelae and baseline characteristics during acute mpox.

RESULTS

Among **224** persons **diagnosed with mpox**, **64 participants** were accessible by telephone **20 (±4.6) months** after the initial diagnosis.

Baseline Demographics:

- Median **age** was **37 (IQR: 33-43) years.**
- **98.4%** were assigned **male sex at birth.**
- **96.9%** identified as **cisgender males.**
- **25.4%** reported **lacking stable housing.**



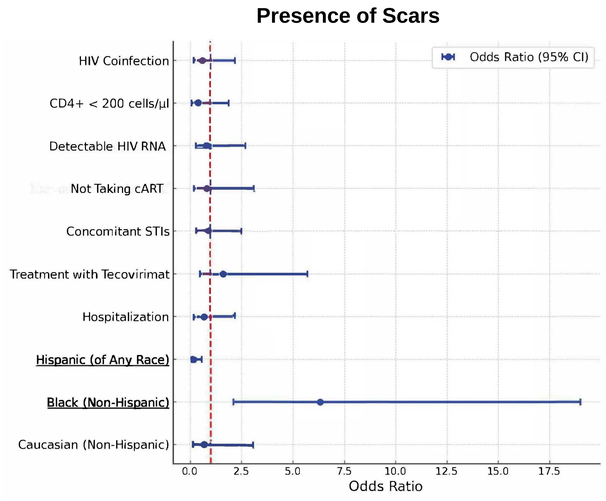
Co-infections and Sexual Health:

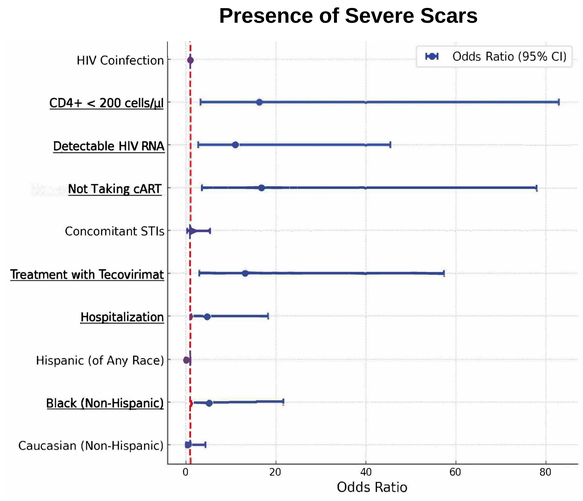
- **92.2%** identified as **MSM.**
- **81.2%** were **PLWH.**
  - **12.3%** were not on **cART** at mpox diagnosis, and **25%** had **detectable HIV RNA.**
  - **19.6%** had **CD4** count **< 200 cells/µl (median 455, IQR: 285-609).**
- **62.3%** had a diagnosis of an **STI six months** before or after the mpox diagnosis.
- Only **52.5%** of **HIV-negative** participants were on **PrEP.**

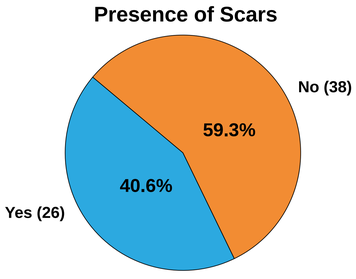
Mpox Acute Manifestations:

- The **acute** mpox symptoms **persisted** for a **median of 20.5 (IQR: 14-21.8) days**.
- **26.1%** received **tecovirimat.**

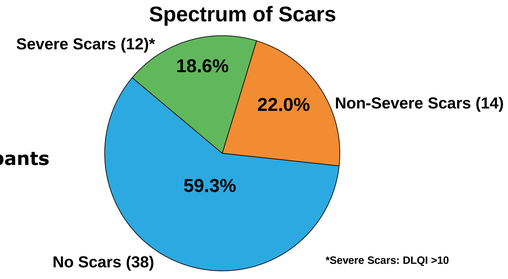
The presence of severe scarring (DLQI > 10) was associated with detectable HIV RNA, CD4<200 cells/µl, not taking cART, hospitalization during active disease, and Black race.

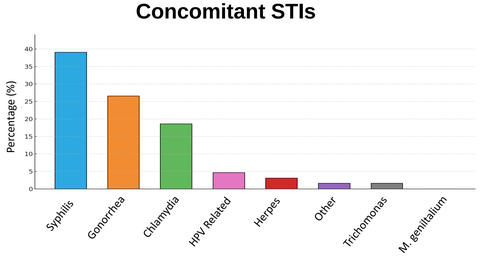


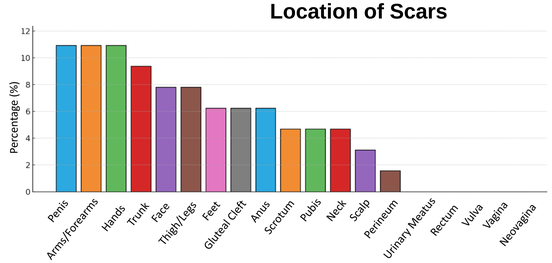




Total: 64 Participants







LONG-TERM OUTCOMES

- There were **four deaths** related to mpox.
- **15.6%** reported chronic symptoms other than skin manifestations.
  - The most common was **fatigue, 12.5%**
- **Socioeconomic Outcomes**
  - **45.3%** reported **absenteeism** from **work** or **school,** and **10.9%** lost their jobs.
- **Mental Health Outcomes**

	Mild	Moderate	Severe	Total N (%)
Anxiety	4	7	1	12 (18.8)
Depression	4	2	3	9 (14.1)
Current Substance Use				
Alcohol	-	-	-	28 (43.8)
Tobacco	-	-	-	19 (29.7)
Cannabis	-	-	-	16 (25.0)
Cocaine	-	-	-	5 (7.8)

DISCUSSION

- **Scarring prevalence** was **similar** to prior prospective studies of mpox (43–47%)[3,4], but **higher** than early outbreak estimates (13–19%)[5,6], including **severe scarring**[5].
- Like previous studies, uncontrolled HIV RNA and low CD4 counts, hospitalization, and use of tecovirimat were linked to **severe scarring** and reduced **QoL**[3,6,8]. However, **Black race** had a higher prevalence of **severe scarring** and likely contributes worse clinical outcomes noted in this population[7]. Tecovirimat tended to be started in people at risk for worse disease.
- **Most common outcomes** were **scarring** followed by **fatigue.**
- **Anxiety & depression** were lower in our study than in studies of facial lesions from other causes[9], but mental health outcomes were not categorized by site of lesion.

LIMITATIONS

- The **prospective telephone surveys** lacked direct provider assessments of the lesions.
- **Retrospective chart review** challenged the verification of acute mpox complications like bacterial superinfection and other contributing factors.

REFERENCES

1. US Centers for Disease Control and Prevention. Mpox 2022 Outbreak Cases and Data. 2022. Accessed [Feb 2, 2023]; Available from: [https://www.cdc.gov/poxvirus/monkeypox/response/2022/index.html.]
2. Xiao Y., et al., Assessment of the Dermatology Life Quality Index (DLQI) in a homogeneous population under lifetime arsenic exposure. Qual Life Res. 2018 Dec;27(12):3209-3215. doi: 10.1007/s11136-018-1969-2. Epub 2018 Sep 10. PMID: 30203303.
3. Grau-Echevarria, A., et al., Prospective observational study on scar sequelae after MPOX infection: an analysis of 40 patients. Int J Dermatol, 2024. 63(12): p. 1767-1773.
4. Zeyen, C., et al., Clinical spectrum and long-term outcomes of mpox: a cohort study spanning from acute infection to six-month follow-up. BMC Infect Dis, 2024. 24(1): p. 317.
5. Prasad, S., et al., A dermatologic assessment of 101 mpox (monkeypox) cases from 13 countries during the 2022 outbreak: Skin lesion morphology, clinical course, and scarring. J Am Acad Dermatol, 2023. 88(5): p. 1066-1073.
6. Ciccarese, G., et al., Monkeypox outbreak in Genoa, Italy: Clinical, laboratory, histopathologic features, management, and outcome of the infected patients. J Med Virol, 2023. 95(2): p. e28560.
7. Kalapila A., et al., Associations Between HIV and Severe Mpox in an Atlanta Cohort. J Infect Dis. 2024 Mar 26;229(Supplement_2):S234-S242. doi: 10.1093/infdis/jiad505. PMID: 38001044.
8. Ouyang, M.L., et al., Epidemiology of Mpox Cases, and Tecovirimat and JYNNEOS Utilization, Alameda County, California, June-October 2022. J Public Health Manag Pract, 2024. 30(5): p. 744-752.
9. Gibson, J.A.G., et al., The association of affective disorders and facial scarring: Systematic review and meta-analysis. J Affect Disord, 2018. 239: p. 1-10.