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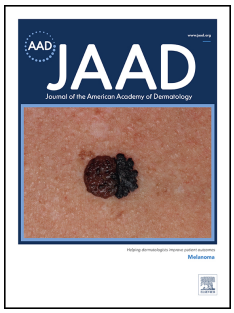

HIV and mpox: evaluation of clinical course and outcomes from an international dermatologic registry

Alexis G. Strahan, MSN, Cristina Galvan Casas, MD, Sonya Prasad, MD MSc, L. Claire Fuller, MD, Klint Peebles, MD, Andrea Carugno, MD, Kieron S. Leslie, FRCP, DTM&H, Joanna L. Harp, MD, Teodora Pumnea, MD, Devon E. McMahon, MD, Misha Rosenbach, MD, Janet E. Lubov, BSN, Geoffrey Chen, BA, Ann M. Pacheco, MS, Lindy P. Fox, MD, Allen McMillen, MS, Henry W. Lim, MD, Alexander J. Stratigos, MD, Terrence A. Cronin, MD, Mark D. Kaufmann, MD, George J. Hruza, MD, MBA, Lars E. French, MD, Esther E. Freeman, MD, PhD

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Alexis G. Strahan MSN[1,2], Cristina Galvan Casas MD,[3,4], Sonya Prasad MD MSc[1,5],L. Claire Fuller MD[6,7], Klint Peebles MD[8], Andrea Carugno MD[9,10], Kieron S. Leslie FRCP, DTM&H[11], Joanna L. Harp MD[12], Teodora Pumnea MD[13], Devon E. McMahon MD[14], Misha Rosenbach MD[14,15], Janet E. Lubov BSN[1,16], Geoffrey Chen BA[17], Ann M. Pacheco MS[1,18] Lindy P. Fox MD[11], Allen McMillen MS[19], Henry W. Lim MD[20], Alexander J. Stratigos MD[21], Terrence A Cronin, MD[22], Mark D. Kaufmann MD[23], George J. Hruza MD, MBA [24], Lars E. French MD[13,25], Esther E. Freeman MD, PhD[1,7,17]

[1]Department of Dermatology, Massachusetts General Hospital, Boston, MA; [2] Mercer University School of Medicine, Savannah, GA; [3]University Hospital Mostoles, Madrid, Spain; [4] Fundación Lluita contra les infeccions, Hospital Germans Trias i Puyol, Badalona, Barcelona, Spain; [5] Icahn School of Medicine, The Mount Sinai Hospital, New York, NY; [6]Chelsea and Westminster NHS Foundation Trust, London, UK; [7]International Foundation for Dermatology, London, UK; [8]Department of Dermatology, Kaiser Permanente Mid-Atlantic Permanente Medical Group, Rockville, MD; [9]Dermatology Unit, ASST Papa Giovanni XXIII Hospital, Bergamo, Italy; [10]Ph.D. Program in Molecular and Translational Medicine (DIMET), University of Milan-Bicocca, Milan, Italy; [11]Department of Dermatology, University of California San Francisco, San Francisco, CA; [12] Department of Dermatology, Weill Cornell Medicine, New York, NY;[13] Department of Dermatology, University Hospital, Munich University of Ludwig Maximilian, Munich, Germany; [14]Department of Dermatology, University of Pennsylvania, Philadelphia, PA; [15]Department of Internal Medicine, University of Pennsylvania, Philadelphia, PA; [16] Wright State University Boonshoft School of Medicine, Dayton, OH; [17]Medical Practice Evaluation Foundation, Massachusetts General Hospital, Boston, MA; [18] University of Toledo College of Medicine and Life Sciences, Toledo, OH; [19]American Academy of Dermatology, Rosemont, IL; [20]Department of Dermatology, Henry Ford Health, Detroit, MI; [21] First Department of Dermatology-Venereology, National and Kapodistrian University of Athens, Andreas Sygros Hospital, Athens, Greece;[22] University of Miami Department of Dermatology and Cutaneous Surgery, Melbourne, FL; [23]Department of Dermatology, Icahn School of Medicine at Mount Sinai, New York, NY; [24]Department of Dermatology, Saint Louis University, Saint Louis, MO; [25]Dr. Philip Frost, Department of Dermatology and Cutaneous Surgery, University of Miami Miller School of Medicine, Miami, FL.

*Twitter handle: @DrEstherFreeman

Corresponding author:

Esther Freeman, MD PhD
55 Fruit St, Bartlett Hall 6R
Boston, Massachusetts 02114
Email: efreeman@mgh.harvard.edu

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Conflicts of Interest*:* Esther Freeman, Klint Peebles, Misha Rosenbach, Terrence Cronin and George Hruza are members of the AAD Ad Hoc Task Force to Create Monkeypox Content. Esther Freeman is the Principal Investigator of the AAD/ILDS Dermatology Registry for COVID-19, Monkeypox, and Emerging Infections, and serves on the WHO Living Monkeypox Atlas and the WHO Monkeypox Guidelines Committee. Cristina Galvan Casas also serves on the WHO Living Monkeypox Atlas committee. Kieron Leslie is a dermatology consultant for the ACTG Study: Tecovirimat For Human Monkeypox Virus (STOMP) and is the Lead Dermatologist on the WHO Living Monkeypox Atlas. Alexander Stratigos is the immediate past President of the EADV. Mark Kaufmann is the President of the AAD. Terrence Cronin is President-elect of the AAD. Lars French is the Past President of the ILDS. Henry W. Lim is the President

of ILDS, and George Hruza and Claire Fuller are Board members of the ILDS. Lindy Fox is a Board member of the AAD. Cristina Galvan Casas serves on the WHO Living Monkeypox Atlas.

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In July 2022, the World Health Organization declared mpox a public health emergency. Since outbreak onset, >91,000 cases have been reported.[1] During the 2022 mpox outbreak, most disease courses were mild.[2] In some cases, however, severe outcomes were reported and included hospitalization and death. People living with HIV/AIDS (PLWH) have been disproportionally affected and all immunocompromised individuals are at higher risk of severe outcomes.[3,4] Hospitalization in those diagnosed with mpox ranges from 14-59%.[4] In cases requiring hospitalization, death was reported in 4% of cases but is as high as 25% in PLWH.[3,4] Reports of dermatologic findings and associated clinical outcomes in PLWH are limited.

In August 2022, the AAD (American Academy of Dermatology)/ILDS (International League of Dermatological Societies) Dermatology COVID-19, Mpox, and Emerging Infections Registry began collecting mpox dermatologic manifestations. Cases entered from August 2022 to March 2023 were analyzed in Stata version 16 (StataCorp, LLC). The Chi-square test was used to examine association. This study was deemed not Human Subjects Research by the Massachusetts General Brigham (MGB) Institutional Review Board. Building on our prior work with this registry data, we examine the frequency of severe outcomes, notably hospitalization and death, and evaluate differences in clinical course (clinical signs/symptoms, lesion counts, co-infections, treatment) and outcomes in PLWH compared to those without HIV.[5]

Of all 120 registry-reported cases, 23 (19%) required hospitalization. The most common reason for hospitalization was for a “skin-related condition” (8/23, 35%). Other reasons included: isolation in accordance with national guidelines (5/23, 22%), sore throat/ oral lesions (4/23, 17%), and rectal pain (3/23, 13%). Of hospitalized patients, 30% were PLWH (7/23). Nine hospitalized patients received tecovirimat. Co-infection with other sexually transmissible infections (STI) was more common in PLWH than in those without, 57% vs. 38% respectively ($p<0.01$, Table 1, primarily driven chlamydia and syphilis). No differences were noted in total lesion count, use of medical counter measures, time to

resolution, or scarring between hospitalized PLWH and those without HIV. One death was reported in a person living with HIV not on anti-retroviral therapy.

In 120 cases reported to an international registry, clinical course and outcomes were similar in PLWH and those without HIV, with the exception of frequency of co-infection with other STIs. We did not assess CD4+ count, an important variable noted to influence mpox clinical course and outcomes.[3] Concurrent testing for both HIV and other STIs remains important in suspected mpox cases. Notably, skin-related conditions were the most frequently reported reason for hospitalization, a finding not previously reported. One notable limitation is the self-identified race of reported cases; 58% were in those who identified as White, yet it is worth noting that mpox disproportionally affects ethnic and racial minorities, groups which also encounter the highest barriers to mpox and HIV care. Registry-reported data and potential for preferential reporting of mpox cases with cutaneous manifestations are additional limitations. These findings underscore the need for prompt recognition and treatment to reduce hospitalization and improve patient outcomes, as well as the importance of dermatologist involvement in the inpatient setting.

Table 1. Demographic and Clinical Features of Mpox PLWH vs. non-PLWH (n,%)

	PLWH (n=44)	**Non-PLWH** (n=76)
Age		
18-30 years	5 (11)	26 (34)
31-49 years	33 (75)	41 (54)
Above 50 years	6 (14)	9 (12)
Sex		
Female	1 (2)	4 (5)
Male	43 (98)	72 (95)
Race/Ethnicity*		
White	21 (48)	49 (64)
Hispanic/Latino	18 (41)	13 (17)
Black/African American	2 (5)	3 (4)
Asian	0	3 (4)
Other/Unknown	1 (2)	4 (5)
Sexual Behavior†		
Same-sex behavior	40 (91)	63 (83)
Group sex behavior	14 (32)	21 (28)
Initial Clinical Sign/Symptom		
Skin Lesion	20 (45)	44 (58)
Fever	7 (16)	13 (17)
Lymphadenopathy	2 (5)	1 (1)
Intra-oral/throat lesions	0	1 (1)
General Malaise	7 (16)	6 (8)
Sore Throat	5 (11)	5 (7)
Rectal Pain	3 (7)	4 (5)
Ocular/Ophthalmic Involvement	0	1 (1)
Edema	0	1 (1)
Total Number of Lesions		
1	2 (5)	8 (11)
2-5	11 (25)	18 (24)
6-20	22 (50)	32 (42)
21-50	8 (18)	10 (13)
51-100	1 (2)	3 (4)
200+	0	1 (1)
Unknown	0	4 (5)
Co-Infections		
Gonorrhea	11 (25)	7 (9)
Chlamydia	4 (9)	3 (4)
Syphilis	10 (23)	6 (8)
Varicella Zoster	0	1 (1)
Herpes Simplex	5 (11)	3 (4)
S. aureus	1 (2)	1 (1)
Hospitalized		
Yes	7 (16)	16 (21)
No	37 (84)	60 (79)
Death	1 (2)	0
Treatment‡		
Tecovirimat	16 (36)	10 (23)
Cidofovir/Brincidofovir	2 (5)	2 (5)
Oral/IV antibiotics	3 (7)	7 (16)
Oral/IV pain medication	4 (9)	3 (7)
Topical antiseptics, antibiotics, or analgesics	5 (11)	8 (18)
Vaccinia immune globulin	0	0
Other	1 (2)	2 (5)

*****Optional response

† Group sex behavior is defined as engagement in a sexual encounter that involves more than one partner

‡Other treatments included: PLWH- bictegravir, emtricitabine & tenofovir alafenamide (Biktarvy), valacyclovir; non-PLWH- acyclovir

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