HIV and Human Mpox Coinfection in Jos, Nigeria: A Case Series.

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ABSTRACT

Background: Mpox has been reported among people living with HIV (PLHIV) in Nigeria.

Objectives: This case series highlights the potential impacts of immune status, occupational exposure, and (Highly active anti-retroviral therapy (HAART) adherence disparities on Mpox progression.

Method: A case series study of HIV patients with Mpox features who presented to the Infectious Disease Unit of a tertiary Hospital, Jos, Nigeria in 2022.

Results: Two Patients were included. Case 1 involved a 27-year-old dental health worker with a week-long painful, pruritic, papular, vesiculopustular rash on her body appearing three days after a high-grade fever. Diagnosed with Human immunodeficiency virus (HIV) five months prior, she was adherent to HAART. Her CD4 count was 120 cells/µL. Case 2 was a 32-year-old sex worker with similar symptoms but with more florid pruritic lesions, which was ineffectively treated. Diagnosed with HIV four months prior, she declined HAART. Her CD4 count was 69 cells/µL. PCR testing confirmed Mpox in both patients. Both patients showed clinical improvement with conservative management and adherence counseling for Case 2, who subsequently commenced HAART. For Case 1, hospitalization lasted 13 days while Case 2 had a prolonged hospitalization of 65 days, likely due to delayed presentation, and advanced Mpox progression exacerbated by untreated HIV and reduced immunity. Her multiple casual sex partners and mobility may also have heightened her risk of Mpox transmission and progression.

Conclusion: These cases suggest that lower CD4 counts and poor immune status can extend Mpox recovery, underscoring the importance of timely HIV treatment and a One Health approach to address occupational risks and promote HAART adherence.

Keywords: HIV, Mpox, Coinfection, One health initiative, Immunity.

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INTRODUCTION

Mpox is a zoonotic disease which affects humans irrespective of their immune status. However, the severity of the symptoms tends to depend on the ability of the body to fight or withstand the infection. Although there are not enough scientific research evidences to specifically link the severity of infection to the immune status, several findings have suggested an association between the severity of infection and the immunity of the patient. [1,2] This case is written to compare the immune status of two patients with the Mpox disease and their outcomes. There is also the possibility that the route of transmission is manifested in the distribution and severity of the lesions, implying that the lesions are possibly more in number and larger in size in the primary site of inoculation. The case lends credence to the fact that human immunity is related to the severity and manifestation of the Mpox disease.

METHOD

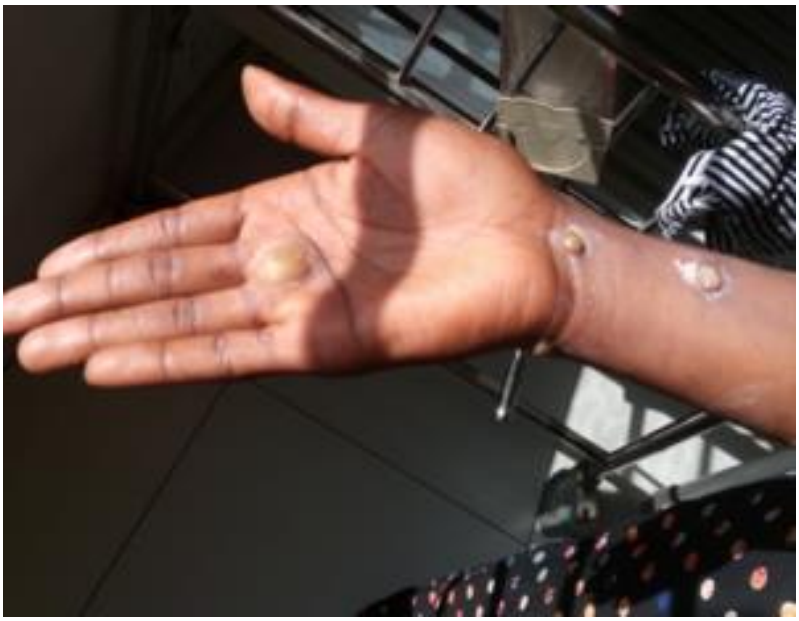
CASE 1

A 27-year-old dental health worker who was referred from another hospital with a complaint of generalized body rash of a week's duration. The eruption of the rashes was noticed three days after she had a high-grade fever for which she was treated for malaria. The rashes which were painful and itchy were first noticed on her face then on other parts of her body including her genitals. The rashes were first papular, then vesicular and later pustular. They were more on the limbs compared to the trunk. She also had pain on swallowing.

She was diagnosed with HIV five months earlier and commenced on HAART. She denied any history of recent travels or recent contact with anyone with similar skin rashes before the onset of her symptoms. Prior to her presentation to the referring health facility, she had commenced the topical application of Calamine lotion with the notion rashes were Chicken pox lesions.

The skin rashes were discrete and few in number and were seen on her face, scalp, trunk, limbs, genitals and palms with bilateral inguinal lymphadenopathy. She was afebrile all through the admission.

The state epidemiologist was notified through the Acting Disease Surveillance and Notification Officer (ADSNO). Specimen was taken for PCR test which confirmed she had Monkeypox. Her CD4 count was 120 cells /μL. She was managed conservatively with multivitamins, antihistamine, antibiotics and Non-steroidal Anti- inflammatory drugs. Psychotherapy was provided. Standard precaution was observed during patient management. The patient improved and was discharged home after 13 days.



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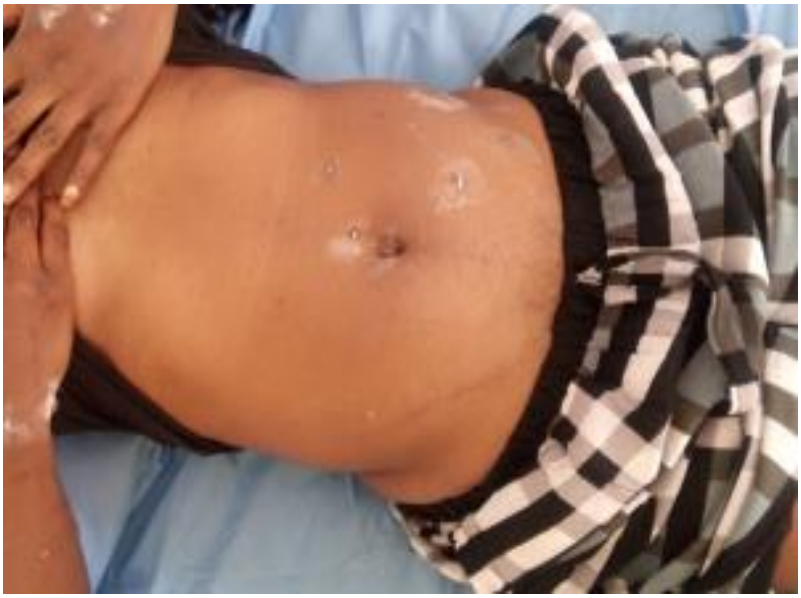

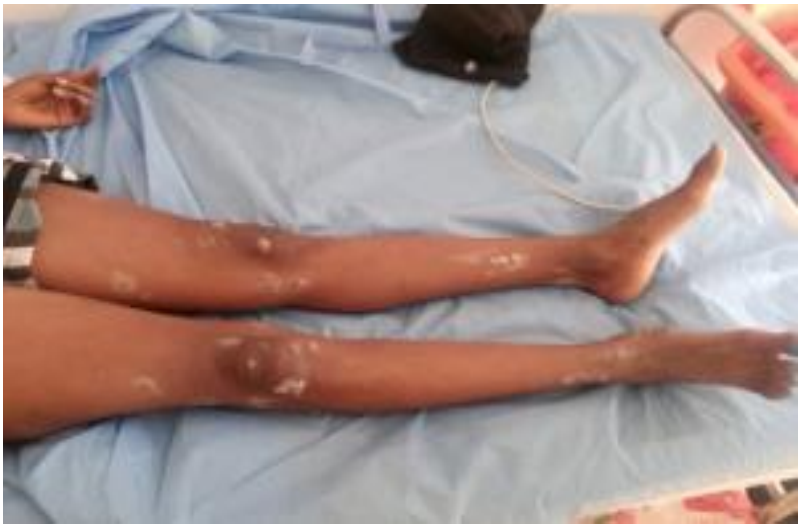

Pictures of case 1 patient

CASE 2

A 32-year sex worker who developed high grade, continuous fever and multiple skin lesions with sore throat of three weeks duration. The skin eruptions were first noticed on her hands, then her vulva and subsequently all over her body. They were initially observed as papules, and then progressed into vesicles while some became pustular before rupturing. The rashes were itchy and painful. She had developed the above symptoms while in Ghana and thought it was a sexually transmitted infection (STI) which she treated with no improvement. Four months earlier, she was diagnosed to have HIV but declined the Highly Active Antiretroviral Therapy (HAART) and took traditional remedies. She had several casual sexual encounters but denied any encounter with anyone with similar skin eruptions. Her physical examination findings revealed generalized skin eruptions; vesicles, pustules on her scalp, face, trunk, extremities, the palms and soles. The buccal mucosa and tongue also had eruptions. Some of the eruptions on the body were crusted while some were umbilicated. The facial eruptions were merged together. The eruptions were more on the extremities than the trunk. She also had profuse genital lesions and generalized lymphadenopathy. Investigations done showed a CD4 count of 69 cells /µL and a positive PCR result for Mpox. The patient was managed conservatively with multivitamins, antihistamine, antibiotics and Non-steroidal Anti-inflammatory drugs. Psychotherapy was also provided. Standard precaution was observed during patient management. She was also commenced on HAART after adherence counseling. Patient improved and was discharged after 65 days.

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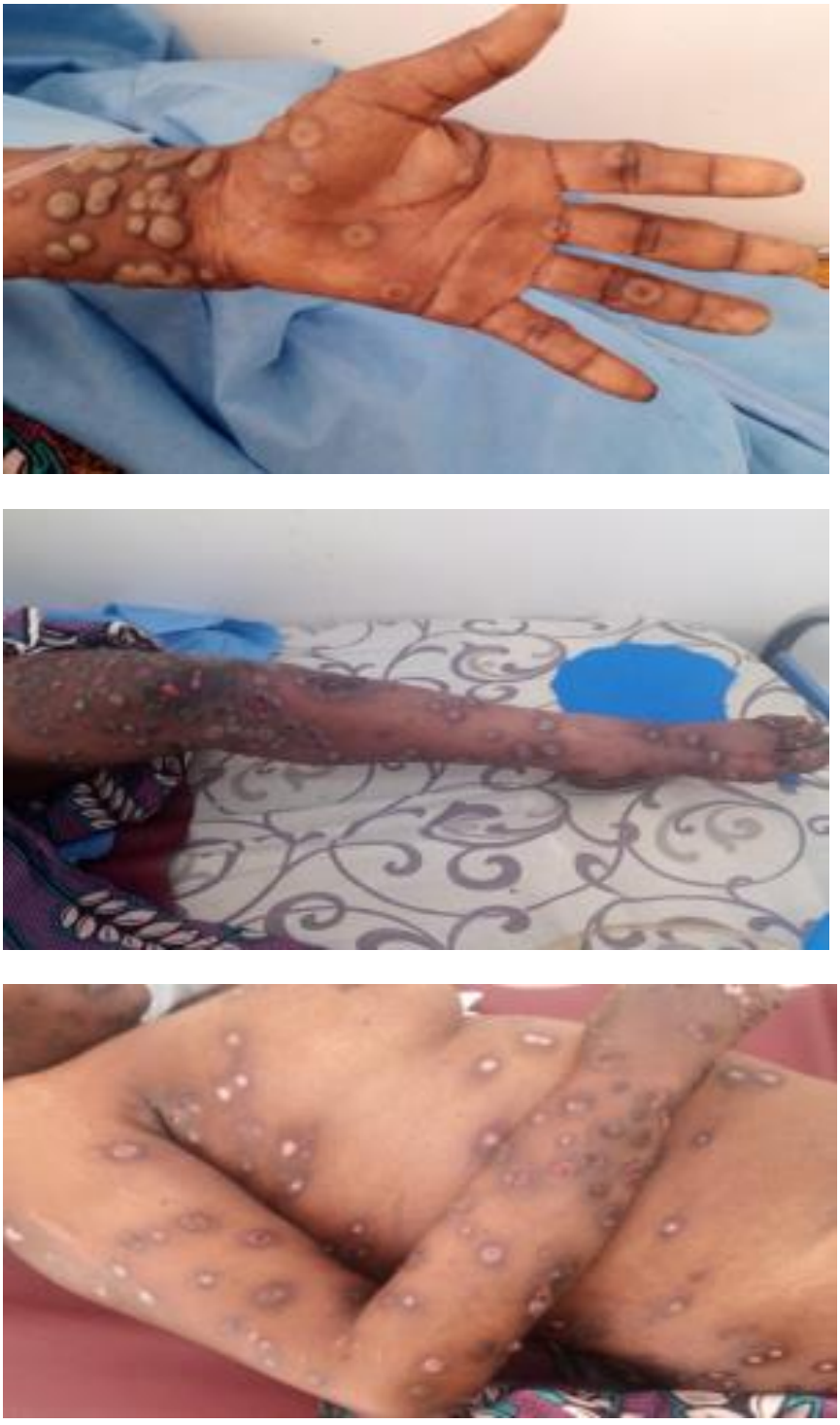
Both patients had two uneventful follow-up visits and had significantly improved before their final discharge from the clinic.



Pictures of case 2 patient

DISCUSSION

The two patients were young females, of 27 and 32 years old. By the nature of their occupations, they were both at risk of Mpox. Both were co-infected with HIV and Mpox. Their clinical presentations were similar but with one having more severe symptoms than the other.

Both patients were diagnosed with HIV about the same period. The first patient was diagnosed 5 months before her diagnosis of Mpox. She commenced anti-retroviral medication and had a CD4 count of 120 cells

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/µL. The second patient was diagnosed with HIV 4 months before her diagnosis of Mpox. She refused anti-retroviral medication. Her CD4 count was 69 cells /µL. Her symptoms were more severe with more florid lesions; grade 4 skin eruption as against grade 1 for the first case. She had a longer hospital stay of 65 days when compared to 13 days hospital stay of the first patient. This adds to the growing body of evidence that suggests a significant association between immunosuppression and adverse outcomes in patients, including more severe symptoms, poorer prognosis, and prolonged hospitalization [1-4].

Furthermore, research conducted by Ogoina et al during the 2017-2018 Mpox outbreak in Nigeria demonstrated a significant correlation between HIV-1 and MPXV coinfection and adverse clinical outcomes. Specifically, coinfected patients experienced prolonged clinical courses, extensive lesions, increased bacterial superinfections, and genital ulcers compared to HIV-negative MPXV patients [5]. This heightened susceptibility to severe disease manifestations can be attributed to the compromised immune status inherent to coinfection, which can exacerbate symptoms, complicate treatment, and ultimately increase mortality risk [1,2,6].

Mpox transmission has been associated with high-risk sexual behaviour including having multiple sexual partners (MSP) and condomless casual sex (CCS).[7] The transmission could occur during intimate body contact and possibly from infected seminal fluid. The Seminal fluid of infected patients have been found to be positive for Mpox virus DNA and Mpox virus [8-9] The virus isolated has also been shown to be infective invitro.[10] It has been observed that areas like the genitalia, oropharynx and rectum are the initial areas affected. These areas subsequently have more florid eruptions among those who practice receptive oral and condomless receptive anal intercourse. [7,9,11-13] The second patient who was a sex worker presented with several coalescing lesions in the vulva and vagina. This could lend credence to the fact that the presence of infected seminal fluid could be a major transmission vehicle for Mpox. It is possible that the more immunosuppressed patient who was a sex worker could have had sexual transmission of Mpox because she had florid and coalesced vulval lesions in the vagina and mouth compared to the first case.

In Nigeria, Ogoina and James also documented 6 linked cases of sexual transmission of Mpox. In these cases, they had MSP and also involved in CCS. They and their sexual contacts had skin lesions and confirmed Mpox while the members of their families including their children at home did not have rashes or confirmed Mpox.[14]

Coinfections can also cause delay in diagnosis because of the similarity in symptomatology of the individual diseases. For instance, the similar maculopapular rash, vesicles and pustular manifestations that both Mpox and HIV can cause could be confusing in attempting to make a diagnosis with just the disease symptoms.[15] However, with the coming of Real-time Polymerase Chain Reaction (PCR), infectious disease diagnostics has become better with rapid turnaround time and high sensitivity, specificity, and accuracy [16]. Thus, this delay was removed and accurate diagnosis was made by the use of PCR in the management of patients.

By 2022, Mpox disease was less well-known than it is now. Case 2 traveled from Ghana to Nigeria by road, exposing other passengers to the disease. To prevent similar situations in future, it will be beneficial to use the One Health initiative which promotes inter-sectoral collaboration, inter-border screening, cross-border collaboration, capacity building for border officials and information sharing. This will help prevent possible spread. Another component of the one health programme will require coordinated vaccination efforts where there will be vaccines for the at-risk populations into which the two patients fit into.[17] Capacity building initiatives can enhance the ability of professionals across human, animal, and environmental health sectors to recognize and respond effectively to Mpox outbreaks.

LIMITATION

The series looked at only two patients. More patients would have been more representative of the outcome in terms of generalization of the results.

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CONCLUSION

These cases suggest that lower CD4 counts and poor. immune status can extend Mpox recovery, underscoring the importance of timely HIV treatment and a One Health approach to address preventive strategies tailored to high-risk occupations, promote ART adherence and the needed collaboration

WHAT IS ALREADY KNOW ON THIS TOPIC

People living with HIV are more at risk of Mpox disease.

Mpox is transmitted via sexual route

WHAT THIS STUDY ADDS:

This study adds more clinical evidence to show that reduced immunity has a poor outcome in patients with Mpox.

This case series suggests that One health initiative can be efficiently used to prevent spread of Mpox.

RECOMMENDATIONS

As a result of the above, it is recommended that all persons diagnosed with Mpox be screened for immunosuppressive diseases like HIV.

Moreover, if the suggestion that the transmission of the Mpox virus is via sexual intercourse, then there will be no need for the long isolation period that the patient is made to go through. Attempts should rather be on encouraging safe sex.

COMPETING INTERESTS: None

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