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Case Report

Coinfection of genital herpes simplex virus with human immunodeficiency virus and hepatitis B virus infection- a case report

Kaushik Datta[1]*, Debadatta Dhar Chanda[1], Sudip Paul[2]

[1]Department of Microbiology, Silchar Medical College and Hospital, Silchar, Assam, India
[2]STI Laboratory, Silchar Medical College and Hospital, Silchar, Assam

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***Correspondence:**
Dr. Kaushik Datta,
E-mail: Kaushikpal097@gmail.com

ABSTRACT

A rare case of coinfection with 3 viral sexually transmitted infections (STIs) namely Human immunodeficiency virus (HIV), Hepatitis B virus (HBV) and Herpes Simplex virus 2 (HSV 2) is presented here. Although this type of simultaneous coinfection is rare but is not impossible, as all of them share similar routes of transmission and they augment each other's risk of transmission either by immunosuppression or by increasing viral shedding.

Keywords: Coinfection, HSV 2, HIV, HBV, STI

INTRODUCTION

Viral STIs are nowadays showing an upward trend globally and the effects of it can be seen in India too. These include infections by HIV, HSV, HBV, HPV and HTLV-1.[1] All these viruses can be transmitted to people having similar high-risk behaviour like having multiple sexual partners, unprotected sex with commercial sex workers, MSM individuals, people living in prisons or other closed spaces, intravenous drug users, etc. To further worsen the condition, many countries lack the adequate health facilities and health coverage consequentially resulting in undermining the responses to these infections.[1] Moreover, the associated social stigma further hinders their access to health and other vital services.[1]

It is estimated that among patients with HIV infection, there is co-infection with HSV-2 among 30%–70% patients in Europe and among 50%-90% in Africa.[2] It has also been found that HSV-2 increases plasma HIV viral load to upto 0.5 log (10) copies/ml.[3] Co-infection with HIV also increases HSV-2 genital shedding and transmissibility. Antiviral drugs are frequently required in higher doses than normal. Also, it is mostly observed that PLHIV individuals possess HSV strains which are refractory to treatment with standard antiviral drugs. Globally it is estimated that 8-10% of the population has HIV-HBV coinfection. HIV-HBV coinfected persons may have an altered immunological response and are at an increased risk of ART related hepatotoxicity.[1] Moreover, these people tend to progress faster to liver cirrhosis and hepatocellular carcinoma.[4]

CASE REPORT

A 24-year-old male hailing from a village situated in Cachar district of Assam, India presented to the STI clinic of Silchar Medical College and Hospital with complains of painful genital ulcers for the last 7 days. Initially the lesions were vesicular with oozing of fluid from those lesions and ultimately, they formed ulcers.

He had similar lesions on and off for the last 1.5 years which resolved spontaneously or after applying some over the counter ointment. On asking further, he revealed that he was working as a daily wage worker in

Bengaluru, Karnataka for the past 2 years where he had unprotected sexual intercourse with multiple partners including commercial sex workers. The patient however, didn't give any history of intravenous drug abuse. On general examination, the patient had icterus which was evident in the sclera. Rest of the findings were within normal limits. On local examination of the genital area, multiple tender ulcerative lesions were noted over the glans penis with no discharge as such. The margins of the ulcers were well defined (figure 1).

One genital swab was collected in VTM for virological examination and another swab was taken for making Tzanck smear from the lesions. Blood of the patient was taken for various laboratory investigations.

Direct microscopy

Tzanck smear made from the genital lesions and stained with Giemsa showed the presence of Tzanck cells (multinucleated giant cells) (figure 2).

Serological tests

Liver function tests showed increased AST and ALT with values of 297.50 U/l and 709.30 U/l respectively. Coomb Aids was done first and it came to be reactive for HIV. Later second test (Standard Q) and third test (Q line) for HIV was done showed reactive for HIV1 antibodies. HBsAg kit test came out to be positive. HSV IgM and IgG ELISA results revealed HSV IgM negative and IgG positive.

Molecular tests

HSV DNA PCR was carried out from the genital specimen using RealStar® HSV PCR kit 1.0/Bio-Rad CFX 96 Real Time System. It revealed HSV 2 positive result with a Ct value of 29 (figure 3). HBV DNA PCR was carried out from patient's serum using ARTUS HBV QS-GQ unit (Qiagen)/Bio-Rad CFX 96 Real Time System. The viral load estimated was 5.3×108 IU/ml.

Other tests

CD4 testing revealed a CD4+ T cell count of 521cells/mm3. Rest of the tests were within normal limits and didn't reveal any significant finding.

Treatment received

Antiretroviral Therapy was started with TLD regimen containing Tenofovir 300 mg, Lamivudine 300mg and Dolutegravir 50 mg.

The patient didn't receive any specific Anti-Hepatitis drug as he was already prescribed Tenofovir 300mg which also works well against Hepatitis B virus. The patient also received NACO Kit 5 containing Acyclovir 400 mg for genital herpes.

Follow up

The patient gradually showed signs of improvement clinically with healing of genital ulcers and disappearance of icterus. On his visit after 6 months, AST and ALT were reduced to 46.50 U/l and 94.50 U/l respectively. CD4 +T cell count increased to 754 cells/mm^3. The HBV viral load reduced to 2.8×10^5 IU/ml. There were no further recurrences of genital ulcers.

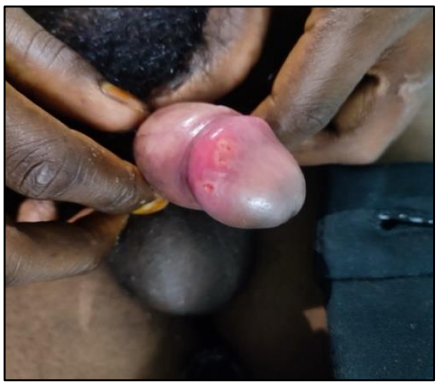

Figure 1: Multiple genital ulcers over the glans penis.

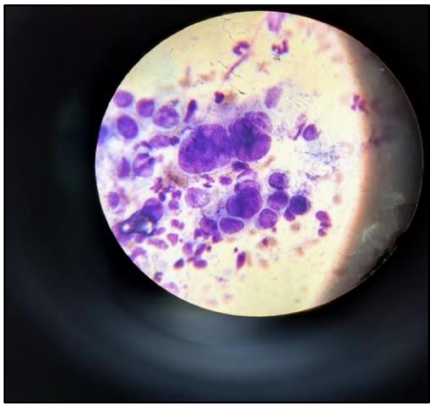

Figure 2: Giemsa stain of Tzanck smear showing multinucleated giant cells (Tzanck cells).

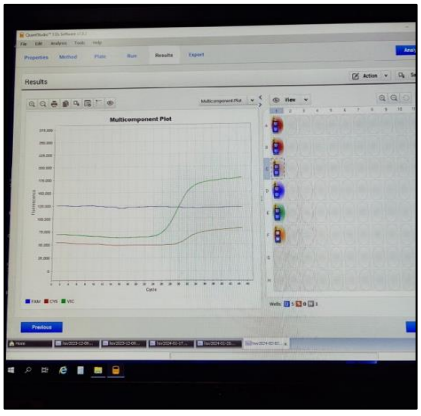

Figure 3: Real Time PCR HSV DNA amplification curve showing HSV2 positive.

DISCUSSION

The prevalence of HSV-2 and HIV are interlinked with each other.[5] Herpetic ulcers facilitate the transmission of HIV because the integrity of the skin and mucosal surface is compromised. It augments the concentration of CD4+ T lymphocytes in the genital area which in turn leads to further disruptions in the mucosal layer.

Similarly, HIV and HBV are 2 important viruses which have similar modes of transmission including the sexual route. Due to diminishing cell-mediated immunity in patients with HIV infection, HBV replication also speeds up.[6] These patients are obliged to take antiviral treatment for the rest of their lives.[4]

This is a rare case of simultaneous coinfections with HIV 1, HSV 2 and HBV. Since the patient was detected at a relatively early stage, hence, early initiation of treatment was possible. Subsequently it resulted in a better therapeutic response and better clinical outcome. It is evident in this patient as he now has reduced HBV load, improved CD4+ T cell count and no further recurrence of genital ulcers.

ART drug Tenofovir can lead to substantial reduction in viral loads of HIV and HBV, thereby improving prognosis. Anti-Herpetic drugs like Acyclovir and Valacyclovir can effectively reduce HSV2 reactivation in HIV coinfected persons.[7]

CONCLUSION

The conclusion that can be drawn from this is that even though the possibility of co-existence of all 3 viral STIs is very rare, but it can't be ignored as they possess shared routes of transmission and high-risk behaviour. Clinicians and laboratorians alike should keep in mind the coinfections whenever a genital ulcer patient comes for a visit. Rampant awareness campaigns should be carried out to curb the morbidity and mortality associated with these coinfections.

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REFERENCES

1. World health Organisation- Sexually transmitted infections (STIs). Available at- https://www.who.int/health-topics/sexually. Accessed on 16 August 2024.
2. Corey L. Synergistic copathogens – HIV-1 and HSV-2. N Engl J Med. 2007;356:854-6.
3. Tan DHS, Kaul R, Walsmley S. Left out but not forgotten: Should closer attention be paid to coinfection with herpes simplex virus type 1 and HIV? Can J Infect Dis Med Microbiol. 2009; 20(1):1-7.
4. Singh KP, Crane M, Audsley J, Lewin SR. HIV-Hepatitis B virus co-infection: epidemiology, pathogenesis and treatment. AIDS. 2017;31(15):2035–52.
5. Wald A, Link K. Risk of human immunodeficiency virus infection in herpes simplex virus type 2-seropositive persons: A meta-analysis. J Infect Dis. 2002;185:45-52.
6. Chhina D, Garg S, Chinna R, Dhiman P, Gupta D. Study of Prevalence of Hepatitis B, Hepatitis C, and Other Opportunistic Coinfections in HIV-infected Patients in a Tertiary Care Hospital of North India. J Gastrointest Infect 2020;10(1):7-10.
7. Strick LB, Wald A, Celum C. Management of Herpes Simplex Virus Type 2 Infection in HIV Type 1–Infected Persons. Clin Infect Dis. 2006;43:347-56.

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