



SEROPREVALENCE OF HERPES SIMPLEX VIRUS-2 AMONG HUMAN IMMUNODEFICIENCY VIRUS POSITIVE CASES ATTENDING SEXUALLY TRANSMITTED INFECTIONS CLINIC AT A TERTIARY CARE HOSPITAL, JAIPUR .

Medical Microbiology

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ABSTRACT

Background: Infection with herpes simplex virus (HSV), known as herpes, is quite common worldwide. HSV type 1 (HSV-1) is usually transmitted by oral-to-oral contact and causes infection in or around the mouth (oral herpes), but it can also cause genital herpes. HSV-2 is mainly sexually transmitted and leads to genital herpes. It is increasingly evident that HSV-2 facilitates HIV transmission. **Objective:** To determine the seroprevalence of HSV-2 in HIV-positive patients. **Methodology:** A Hospital based, Descriptive type of Observational study was conducted from June 2021 to May 2022 and 100 HIV-positive patients were enrolled into the study after obtaining written informed consent. Demographic characteristics were recorded and serum samples were tested for HSV-2 specific immunoglobulin G (IgG) antibodies. **Results:** Among 100 HIV-positive patients, 75% were men and 25% were women. Overall, 48% of HIV-positive patients had HSV-2 IgG antibodies. Seroprevalence of HSV-2 among HIV-positive men and women was 44% and 64%, respectively. The highest HSV-2 seroprevalence was detected in the age group of 25-34 years. **Conclusion:** Almost half of the HIV positive patients were sero positive for HSV-2. HSV-2 prevalence was significantly higher in HIV-positive women than in men, and was higher in younger and middle aged adults. These findings have relevant public health implications of Epidemiological Synergy where in STIs acts as cofactor and facilitator of HIV transmission. Offering serological HSV-2 testing routinely to HIV-infected persons will identify asymptomatic or unrecognized HSV-2 infection. The implementation of preventive measures for sexually transmitted infections and HIV will decrease the prevalence and spread of both HSV-2 and HIV.

KEYWORDS

HSV-2, HIV, seroprevalence

INTRODUCTION

Infection with herpes simplex virus (HSV), known as herpes, is quite common worldwide. HSV type 1 (HSV-1) is usually transmitted by oral-to-oral contact and causes infection in or around the mouth (oral herpes), but it can also cause genital herpes. HSV-2 is mainly sexually transmitted and leads to genital herpes.¹

The person with Genital herpes are seen to have two to three fold increased risk of Human Immunodeficiency Virus (HIV) acquisition and up to fivefold HIV transmission on a per sex act basis.² The characteristics of HSV infection are periodic and symptomatic reactivation and asymptomatic viral shedding.³

HSV-2 once in a while shed within the genital tract of the human being, most commonly asymptotically. The majority of sexual disease transmissions take place during the phase of symptomless shedding of the virus.⁴ It was reported for HSV-2 that subclinical viral shedding might be responsible for most of the transmissions.⁵ Therefore, Sero-epidemiological studies are critical to understand the pattern and distribution of infection within populations.⁶

In India, there is limited published data on the prevalence of HSV-2 in HIV-seropositive patients. Therefore this study was carried out to determine the seroprevalence of HSV-2 in HIV-positive patients in Indian setting.⁷

Methodology

A Hospital based, Descriptive type of Observational study was conducted from June 2021 to May 2022 and 100 HIV-positive patients aged more than 18 years were enrolled into the study after obtaining written informed consent. Demographic characteristics were recorded and serum samples were tested for HSV-2 specific immunoglobulin G (IgG) antibodies.

RESULTS

Table 1: Number wise distribution of HSV

HIV Positive cases	HSV IgM		HSV IgG		Both	
	Positive	Negative	Positive	Negative	Positive	Negative
100	5 (5%)	94 (94%)	48 (48%)	51 (51%)	1 (1%)	46 (46%)

Chi-square = 67.768 with 2 degrees of freedom; P < 0.001 (S)

Out of total 100 HIV positive cases, HSV IgM antibody was found in 5 cases (5%), HSV IgG antibody in 48 cases (48%) and one case (1%) showed both IgM and IgG antibodies. Out of 100 total HIV positive cases 46 (46%) were negative for HSV antibodies.

Table 2: HSV IgM & IgG positivity in relation to gender of study subjects

Gender	Male (N=75)		Female (N=25)		Total
	N	%	N	%	
HSV IgM	6	8	0	0	6
HSV IgG	33	33	16	64	49

Chi-square = 1.407 with 1 degree of freedom; P = 0.236

Out of 75 Male cases, 6 (8 per cent) were HSV IgM antibodies positive and 33 (44 per cent) were HSV IgG antibodies positive. Out of 25 Female cases, none showed HSV IgM positivity while 16 (64 per cent) demonstrated HSV IgG positivity.

Table 3: Age wise distribution of HSV IgM & IgG positive cases

Age group (years)	HSV IgM		HSV IgG		Both	
	N	%	N	%	N	%
18-24	0	0	5	10.4	0	0
25-34	0	0	17	35.4	0	0
35-44	0	0	11	22.9	0	0
45-54	0	0	8	16.6	0	0
55-64	4	80	4	8.3	0	0
≥65	1	20	3	6.3	1	100

Chi-square = 30.960 with 10 degrees of freedom; P < 0.001 (S)

- All of HSV IgM antibodies positive cases were from above 55 years age group.
- In case of HSV IgG antibodies, maximum cases were noted in 25 to 34 years age group (35.4 %) followed by 35 to 44 years age group (22.9 %) and 45 to 54 years age group (16.6 %).
- There was only one case which was positive to both HSV IgM and IgG antibodies and it belonged to ≥65 years age group.

DISCUSSION

The present study was carried out to determine the sero-prevalence of HSV-2 in HIV-positive patients in Indian setting. HIV Positive Cases

attending STI clinic were included in the study.

The findings revealed that out of total 100 HIV positive cases, HSV IgM antibodies were found in 5 cases (5%), HSV IgG antibodies in 48 cases (48%) and one case (1%) showed both IgM and IgG antibodies. Out of 100 HIV positive cases 46 were negative for HSV antibodies.

The above-mentioned results confirm the strong association of HSV-2 infection with HIV. HSV-2 is the most common cause of genital ulcers and it can result in increased transmission of HIV to sexual partners. However HSV-2 infected patients are mostly asymptomatic or have mild symptoms. The majority of sexual HSV transmission occurs during asymptomatic periods because the patients are unaware of asymptomatic virus shedding. Multiple studies have shown that frequent genital herpes recurrences increase the amount of HIV in the blood and the genital tract. The HIV virus is also discharged from genital herpes ulcers and persons with such ulcers can transmit HIV to others more efficiently. The prevalence of HSV-2 shedding is four to five times greater in HIV-positive individuals than in HIV-negative individuals, likely increasing HSV transmission.⁸

In the present study, out of total 100 HIV positive cases, 75 (75%) were male and 25 (25%) were female. Male – Female ratio is found to be 3:1. Sero-prevalence of HSV-2 is found to be consistently higher among females in HIV cases compared to men. The suggested explanation for the difference in prevalence is partner selection, in that girls are more likely than boys to have older sexual partners, who in turn are more likely to be HSV-2 seropositive than younger men.⁹ Studies have found that women are more susceptible to HSV-2 infection biologically. Transmission of the virus from male to female is more common than from female to male.⁹ Moreover, the female genitalia have plenty of soft tissue that is exposed for skin contact, which is presumably more receptive to any virus or STD.⁹

In our study, all of HSV IgM positive cases were from above 55 years age group and 80 per cent were from 55-64 years age group and 20 per cent were equal or above 65 years.

Our study found that, in case of HSV IgG antibody, maximum cases were noted in 25 to 34 years age group (35.4 %) followed by 35 to 44 years age group (22.9 %) and 45 to 54 years age group (16.6 %). There was only one case which was positive to both HSV IgM and IgG antibody and it belonged to ≥ 65 years age group.

Out of total 100 cases, there were 49 HSV-2 IgG antibody positive cases. Out of these 49 cases, 5 belonged to 18-24 years age group, 17 to 25-34 years age group, 11 to 35-44 years age group, 8 to 45-54 years age group, 8 to 55-64 years age group and 4 to more than 65 years age group. When these age groups were stratified on the basis of HSV-2 IgG Seropositivity (total HSV-2 IgG antibody positive cases / total cases), it has been found that the maximum seropositivity was in more than 65 years age group (66.6%) followed by 25-34 years age group (58.6%), 35-44 years age group (50%), 45-54 years age group (44.4%), 55-64 years age group (40%) and 18-24 years age group (33 %).

This likely reflects the association of risk of HSV-2 acquisition with the cumulative increase in the number of sexual partners and the duration of sexual activity in the context of the chronic nature of HSV-2 infection, as the individual grows older.¹⁰

CONCLUSION

Almost half of the HIV positive patients were sero positive for HSV-2. HSV-2 prevalence was significantly higher in HIV-positive women than in men, and was higher in younger and middle aged adults. These findings have relevant public health implications of Epidemiological Synergy where in STIs acts as cofactor and facilitator of HIV transmission. Offering serological HSV-2 testing routinely to HIV-infected persons will identify asymptomatic or unrecognized HSV-2 infection. The implementation of preventive measures for sexually transmitted infections and HIV will decrease the prevalence and spread of both HSV-2 and HIV.

Conflict of interest:

The authors declare no conflict of interest.

Ethics Statement

Informed consent and Institutional ethical clearance (Ethical clearance no 1244/MC/EC/2021 dated 03/12/2021) was obtained.

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