

## ORIGINAL RESEARCH

# Seroprevalence of HSV Coinfection Among HIV-1 Positive Cases Attending at Tertiary Care Centre, Jaipur, Rajasthan

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### Abstract

**Introduction:** India has an estimated 2.3 million HIV positive persons. Sexual route appears to be the major mode of transmission though injectable drug use is also emerging as an important mode of transmission in some parts of the country<sup>3</sup>. HSV-1 & HSV-2 are common human pathogens which may cause severe illness. This study was aimed to observe the burden of HSV coinfection among the HIV positive cases in Jaipur Rajasthan

**Materials & Methods:** Total 100 HIV Positive patients were enrolled in this study. Samples were collected from the patients attending at ICTC, from MGMCH Jaipur from period of 2019-22 after taking ethical approval from MGUMST University. All such patients were tested for seroprevalence of HSV1 & HSV2 by Calbiotech HSV1 & HSV2 IgM & IgG detection kits as per the standard protocol.

**Results:** Out Of 100 HIV patients, 62% were males while 38% were females. The mean age of the HIV positive patients was 31-50 yrs (59%) and the male to female ratio was 1:1.63. Among these HIV Positive cases HSV1 IgM were -27%, HSV1 -IgG 33%, HSV2 -IgM 10% & HSV2-IgG 12%.

**Conclusion:** The seropositivity of HSV was found to be higher in HIV-positive patients which indicates that the two viruses collaborate in infection of patients. HSV-1 was predominant among males than females and was more evident among patients with reduced CD4 counts.

**Keywords:** HIV, Coinfection HSV, Seroprevalence HSV.

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## INTRODUCTION

Infection with Human Immuno-Deficiency Virus and its end stage Acquired Immuno-Deficiency Syndrome are the major public health challenges of modern times with 2 million people already dead and 40.4 million people living with HIV/AIDS<sup>1</sup>. India has an estimated 2.3 million HIV positive persons. Sexual route appears to be the major mode of transmission though injectable drug use is also emerging as an important mode of transmission in some parts of the country<sup>2</sup>. Secondary infection in HIV infection is very common due to poor immunity. HSV-1 & HSV-2 are common human pathogens which may cause severe illness. Co-infection with HIV, herpes viruses establish lifelong latent infection and are transmitted by close contact, both sexual and nonsexual. In most cases, primary HSV-1 and HSV-2 infections are asymptomatic and self-limited in immunocompetent individuals but can be complicated with fulminant diseases in neonates, young children, and immunocompromised hosts<sup>3</sup>.

Immunologic responses to HSV infections can be by innate and viral specific anti-HSV. Advance protective responses might involve viral specific cytotoxic T-cells and antibody- producing humoral immunity. In our world of increasing importance of the prevalence studies to guide vaccine trials and to monitor trends associated with herpes infections<sup>4</sup>, there are few data on the seroprevalence of herpes simplex infection in the tropics; therefore, This study was aim to observe the burden of HSV coinfection among the HIV positive cases in Jaipur Rajasthan.

## MATERIALS & METHODS

Total 100 HIV Positive patients were enrolled in this study. All the samples were collected from the patients attending at ICTC, from Mahatma Gandhi Medical College & Hospital Jaipur from period of 2019-22 after taking ethical approval from the Mahatma Gandhi University of Medical Sciences & Technology. All such patients were tested for seroprevalence of HSV1 & HSV2 by Calbiotech HSV1 & HSV2 IgM&IgG detection kits as per the standard protocol<sup>5</sup>.

**Study Area:** All the HIV Suspected Cases in Rajasthan region.

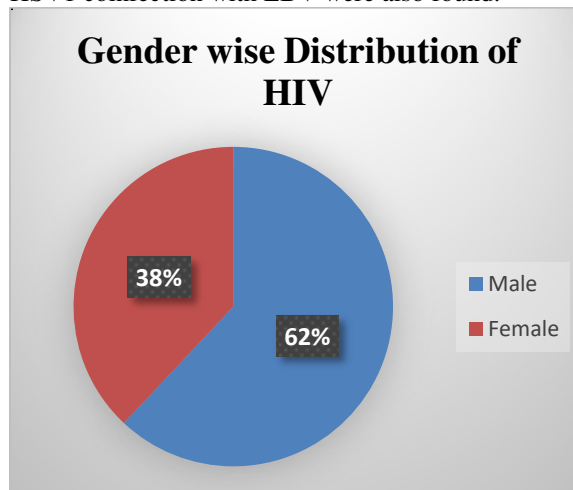
**Study Period:** 3 years

**Study Design:** This is a hospital based descriptive type of observational study.

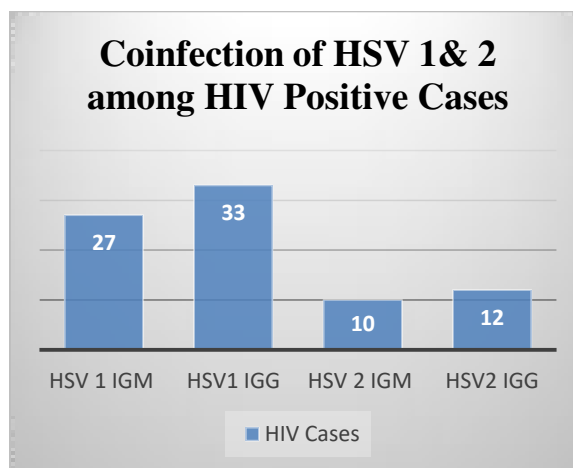
## RESULTS

In the present study total 100 HIV positive patients were screening for HSV1&2 IgM & IgG to observe the burden of HSV coinfection among HIV positive patients in the study area. Out Of 100 HIV patients, 62% were males while 38% were females (Fig.1). The

mean age of the HIV positive patients was 31-50 yrs (59%) and the male-to-female ratio was 1:1.63. Among these HIV Positive cases HSV1 IgM were -27%, HSV1 -IgG 33%, HSV2 -IgM 10%, HSV2-IgG 12% (Fig.2) & 1 case of HSV1 coinfection with VZV and 1 case of HSV1 coinfection with EBV were also found.



**Figure 1** Gender wise distribution of HIV positive cases



**Figure 2** Coinfection HSV among HIV Positive cases.

## DISCUSSION

Infections with HSV-1 and HSV-2 are among the most common human viral infections. HSV-1 is the usual cause of orolabial herpes and HSV-2 of genital herpes. Most people who are infected shed this virus at various times and are therefore potentially infectious. HSV-2 is almost always sexually transmitted and as such has been shown to be a good marker of sexual behavior in populations. In the present study Prevalence of HSV1 was 27% while HSV2 was 10% found. One patient was coinfecting with EBV and One with VZV. While in the study of Sanchez J et al, 2002<sup>6</sup>&Marais G et al 2004<sup>7</sup>

Western countries prevalence rate of 50%–70% is seen and as high as 99%–100% from Sub-Saharan African populations was reported by Smith JS et al 2000<sup>8</sup>, Wald A et al 2002<sup>9</sup>. This may be due to several mechanisms which include mucosa mucosal inflammation during HSV-2 reactivation allowing free movement of HIV and may also be due to recruitment of macrophages to site of herpes inflammation acting as cofactor in the entry of HIV. The seroprevalence of HSV-1 infection (27%) was higher than that of HSV-2 (10%) In the present study 10 % cases were found Positive for HSV2 by IgM ELISA which was in an agreement with ShameemBanu et al<sup>10</sup> reported (10%) for HSV2 among HIV positive patients while Safrin et al<sup>11</sup> reported high incidence rate 50%. In the study MinooMohraz et al, 2018<sup>12</sup> showed the prevalence of HSV-2 infection in HIV subjects (18.1%) in Iran. HSV-2 infection is the most common genital ulcer disease in HIV patients. High seroprevalence of HSV-2 in HIV individuals has been reported from different parts of the world Moss NJ, Harper, 2007<sup>13</sup> San francisco&Douglas JM, 2009<sup>14</sup> 63-77% in the USA, Hill C et al<sup>15</sup> reported 81% in the UK, Lupi O et al<sup>16</sup> 1996 73% in Braziland Feng Y et al, 2010<sup>17</sup> 88% in China.

There might be several factors responsible for the location of lesions in patients with HSV infections. Predominance of HSV-1 in the oronasal mucosa might be due to age-specific appearance of lesion in HIV-positive patients. Predominance of HSV-2 lesion in the Buttock (60%) higher than vulva/penile lesion was observed, and this might be due to preferred sexual practice among the patient. Non-genital route of transmission may account for higher prevalence of HSV-1 with buttocks lesions. Factors such as hygiene and cultural behaviors might be involved, especially during naming ceremony in our environment. Herpes simplex Type 2 was predominantly isolated from patients with reduced CD4 counts (<200 cell/mm) which was consistent with the role of immunity in preventing herpes infections.

## CONCLUSION

The seropositivity of HSV was found to be higher in HIV-positive patients which indicates that the two viruses collaborate in infection of patients. HSV-1 was predominant among males than females and was more evident among patients with reduced CD4 counts.

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