

Comparative Study of HSV 2 IgG and IgM Antibodies in PLHA

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Abstract: HSV 2 is the most common distressing genital ulcer among the people in the reproductive age group worldwide. Among PLHA, 60-70% has HSV 2 co infection with severe presentation and frequent recurrences and 3-4 fold increased HSV 2 viral shedding. Among 100 HIV positive cases 78% were HSV 2 positive with female preponderance (56.41%), 37% were in 31-40 yrs age group, 42.5% were labours, symptom were shown by 19%. Among symptomatic and asymptomatic cases 20% were IgM positive. 16 of 25 symptomatic cases were showing both IgG and IgM antibodies, 2 were showing only IgM antibodies, rest only IgG positive. Detection of HSV 2 antibodies is an effective tool in screening HSV 2 infection in typical and atypical presentations.

1. Introduction

Genital Herpes simplex virus infection is a disease of major public health importance with markedly increasing prevalence throughout the world during the last four decades¹.

The morbidity of illness, its high recurrence rates and its complications following primary genital herpetic infections such as aseptic meningitis, meningoencephalitis neonatal transmission, sacral radiculomyelitis, which can lead to urinary retention, neuralgia paresthesia and dyesthesia involving the lower extremities and perineum², have made the disease of great concern of patients and health care providers.¹

The ability of the virus to successfully avoid the clearance by immune system by entering a long non replicating phase known as latency leading to lifelong infection.³

In HIV positive individuals the HSV 2 virus can be asymptomatically secreted in genital fluids⁴. So sometimes it cannot be diagnosed resulting in underestimation of its prevalence. But asymptomatic cases and pregnant women can be identified only by antibody status. As the infection is followed within a few days by appearance of IgM antibodies, closely followed by IgG and IgA. IgG persists indefinitely⁵.

Virus Isolation is the gold standard for detection of HSV2 but not all Labs have the facility, Serological assay by ELISA⁶ utilizing purified type specific proteins such as glycoprotein gG1 and glycoprotein gG2 which are antigenically distinct between two subtypes,^{1,7} can be used for an epidemiological survey.

With regard to paucity of published reports in this region, the present study was taken up to detect the HSV 2 seroprevalence that is IgG antibodies to know the active infection of HSV 2 IgM antibodies in HIV positive serum

2. Material and Methods

This was a prospective study which was carried out in the Department of Microbiology, Guntur Medical College and Government General Hospital.

The duration of the study was from January 2017 to December 2017.

A total of 100 blood samples from HIV Positive individuals who attended ART centre in GGH, Guntur.

Inclusion criteria- All HIV positive cases attending ART center in GGH, Guntur.

Exclusion criteria- children and who got infection by vertical mode

Methodology

The blood was centrifuged to collect serum for conducting HSV 2 IgG and IgM ELISA by using type specific ELISA kit, following the literature given along with the kit.

3. Results

A total of 100 HIV positive cases were enrolled in the present study, for the detection of HSV 2 IgG, IgM, over a period of 1 year from 2017 January to 2017 December.

The seroprevalence of HSV 2 in HIV positive cases in the present study was 78%. There were more number of positive cases in the age group 31-40 yrs (34.6%) followed by 41-50 yrs (32%). But in females there were more cases from 21-30 yrs group than 51-60 yrs age group. In males 51-60 yrs(23.53%) more than 21-30 yrs(8.82%). There were 2 cases in males above 61 yrs, but there were no cases reported in females. Most of the cases in the present study were labours, followed by housewives and farmers. The highest prevalence (85%) was observed in illiterates, followed by primary school group (77.142%). More percentage (27.5%) of males were symptomatic than females (13.33%). In males having >1 sexual partners 33(91.66%) were positive for HSV 2 antibodies.

20% of HIV positive cases were showing HSV 2 IgM antibodies with equal distribution among males and females. There were more number of positive cases seen in the age group 31-40 yrs (40%) in both sexes, same as that of IgG. But in males there were more cases from 41-50 yrs group than 21-30 yrs age group, and in females there were more

cases from 21-30 yrs group than 41-50 yrs age group. There were no cases reported in females above 61 yrs.

Table 1: Comparison of IgG and IgM positive cases

	IgG Positive	IgM Positive
Males n=40	34 (43.59%)	10(50%)
Females n=60	44 (56.41%)	10(50%)
Total n=100	78%	20%

In the present table it was observed that more percentage (56.41%) of females were positive for HSV 2 IgG compared to males (43.59%). IgM positive cases were equal among males and females.

75.64% of IgG positive cases were asymptomatic, 95% of IgM positive cases were symptomatic. 20.58% of IgG positive cases were showing IgM antibodies.

4. Discussion

As HSV 2 is a lifelong infection, serological testing provides the best method to estimate its prevalence. HSV 2 type specific serological testing in HIV positive individuals is the best method to diagnose clinically asymptomatic HSV 2 infection and to reduce risk of transmission.⁸

The seroprevalence of present study was similar to, a study from Nigeria by Pennap GRI et al (77.65%), a study from Tamilnadu, India by Shameen Banu et.al (83.3%). Seroprevalence rates vary greatly with geographical area and socioeconomic groups. This is due to high proportion of asymptomatic infections, and influence of other factors like, race (blacks more than whites), gender (women more than men), marital status (divorced more than single or married), place of residence (cities more than sub urbans).²

There was female predominance in the present study. A study from Sudan by Nihal A. Ahmed et.al also showing the female predominance. The estimated risk of susceptible females for contracting HSV 2 from infected males is 80% following a single contact². This gender difference for HSV 2 may be explained in part by biological susceptibility of the female genital tract which makes the women more vulnerable to sexually transmitted disease, due to innate biological factors, such as possession of large mucosal surface area of female genital tract prone to infection and the receptor role of women in the act of sex with a consequent higher male to female transmission risk per exposure⁹

HSV 2 can be excreted in the absence of symptoms at the time of primary, initial, or recurrent infections, providing a reservoir for transmission of infection. Following the first episode of genital herpes, asymptomatic shedding was detected in approximately 12 %, 18%, 23% of women with primary HSV 1, primary HSV 2, and non primary HSV 2 respectively².

Polygamy or multiple sexual partners increases the acquisition of HSV 2 infection. Also number of sexual partners correlates directly with the acquisition of HSV 2 infection. 91.66% in the present study. For heterosexual women with 1 partner, the probability of acquiring HSV 2 is <10% but increases to 40%, 60%, 80% as the number of

sexual partners increases from 2-10 and for heterosexual males it was 0 for 1 sexual partner and 20%, 35%, 70% as the number of sexual partners increases from 2-10. Thus having multiple sexual partners, irrespective of sexual performance, correlates directly with acquisition of HSV 2 infection.²

In the present study seroprevalence of IgG and IgM was 78% and 20% respectively. A study from Eastern India by Saumyabrathi Nag et.,al, was showing seroprevalence of IgG and IgM was 61.5% and 34.5% respectively. A study from Tamilnadu, India by Shameen Banu et.al seroprevalence of IgG and IgM was 83.33% and 56.6% respectively. The overall prevalence of IgM was too low, whereas it was too high with IgG in all studies. As the infection is followed within a few days by appearance of IgM antibodies, indicates active infection closely, followed by IgG and IgA. IgG persists indefinitely¹⁰.

5. Conclusion

HSV 2 seroprevalence is high among the PLHA, and most of the cases are asymptomatic so they cannot be identified. It indicates the requirement of regular screening of all HIV positive cases for HSV 2 antibodies. As there can be asymptomatic viral shedding in the genital fluids, which increase the transmission, prophylactic treatment of all HIV positive cases should be considered. Early treatment of HSV 2 infection by Acyclovir or Valacyclovir can decrease both HSV 2 and HIV viral shedding.

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