



ORIGINAL RESEARCH PAPER

Dermatology

SERO-PREVALENCE OF HERPES SIMPLEX VIRUS TYPE 1 AND TYPE 2 IGG ANTIBODY AMONG PATIENTS ATTENDING STD OUTPATIENT DEPARTMENT, TERTIARY CARE CENTRE AT KARAİKAL.

KEY WORDS: Herpes Simplex Virus Type-2, antibodies, patients.

Dr. Sivakumar Sivasubramaniam*

Professor, Department of Dermatology venereology & leprosy, Vinayaka Missions Medical College & Hospitals, Karaikal- 609609 *Corresponding Author

Dr Tony Kuncheria

Post Graduate, Department of Dermatology venereology & leprosy, Vinayaka Missions Medical College & Hospitals, Karaikal- 609609

ABSTRACT

Background:Infection with Herpes Simplex Virus Type-2 (HSV-2) is the primary cause of genital herpes and the most common cause of genital ulcer disease (GUD) worldwide. There is little information on the prevalence of HSV-2 and HSV-1 in India.

Methodology: Specimens were collected from 162 patients attending Vinayaka Missions STD Outpatient department and tested for HSV-1 and HSV-2 antibodies using HSV-1 and 2 Type specific IgG CLIA test kit . Data were analyzed using SPSS version 13.0. P values ≤0.05 were considered significant number.

Results: Out of the 162 individuals tested, 141 (87.0%) were HSV-1 and 2 IgG positive. Infected individuals were more likely to be male than female. There were high rates of infection in all age groups, and the prevalence increased with age. However, multivariate logistic regression analysis showed that HSV-2 prevalence was not significantly associated with increasing age, sex, marital status, occupation, educational status, and number of sex partners (P > 0.05).

Conclusions: The results highlight the potential public health impact of HSV-1 and HSV-2 in India where anti-HSV-2 and anti-HSV-1 testing is not generally performed in all populations, especially considering the risk of neonatal transmission and the attendant complications at birth.

INTRODUCTION

Herpes simplex virus (HSV) has been characterized into two distinct serotypes: HSV -1 and HSV -2 [1]. HSV type 1 has been associated with orofacial infections and HSV type 2 with genital infections. Clinical reports citing an increasing number of genital infections caused by HSV -1 have been recognized, although HSV -2 dominates as a causative agent. Sixty to 95 % of mature humans are either carrying HSV viruses or are affected by associated infections which are usually present in the host in latent state [3]. The large majority of persons with genital herpes do not know they have the disease. Infection and reactivation are typically “asymptomatic,” and depend on the host’s immune system as well as the frequency of entries [3, 4]. Both types are highly infectious and can be transmitted from mother to neonate and increase the mortality rate [5]. Additionally, infection with HSV-2 increases the risk of human immunodeficiency virus (HIV) and human papillomavirus (HPV) acquisition [6, 7]. Estimation of the burden of infection is important in appreciating the scale of the epidemic. Although HSV infection is not a curable medical condition, there are effective medications available to treat symptoms and prevent outbreaks. Unfortunately there is currently no approved vaccine to prevent HSV infection either. The World Health Organization (WHO) reports that HSV prevalence shows variations between regions and populations [9]. The worldwide prevalence of HSV-1 infection in 2012 was 67.0%, with the highest estimated prevalence of infection in Africa (87%) and lowest in America (40–50%). The overall prevalence of HSV -2 worldwide was 11.3% [10]. The prevalence of HSV-2 was consistently higher in females compared to males (14.8 and 8.0% respectively). The highest prevalence was reported in Sub-Saharan Africa, where prevalence reached 31.5% followed by America – 14.4% [9, 10]. In the meantime, there is a paucity of data on the prevalence of HSV infection in India.

AIM OF THE STUDY

To provide relevant baseline data on sero-prevalence of HSV-1 and HSV-2 infection and associated risk factors among patients attending STD outpatient department at Vinayaka Missions Hospital so as to inform the development of future studies and guide public health policy in the context of HSV infections.

MATERIALS AND METHODS:

Study type: cross-sectional descriptive study

Study design: Open label, prospective clinical study.

Study period: September 2019 to November 2019

Study sample : 162 attending STD outpatient department

Study place: STD outpatient department at the Vinayaka Missions Hospital, karaikal, Puducherry

Inclusion criteria

- Patients who had come to STD outpatient department for the complaints of burning micturition and discharge per vagina and urethra
- Participants who were more than 10 years old, and who had written informed consent

Exclusion criteria

- Participants, who were less than 10 years old
- Patients who are diabetic , pregnant, those who on steroid treatment and those who had refused to sign an informed consent

Methodology

5 ml of venous blood was drawn from all subjects to determine the presence of HSV-1 IgG and HSV-2 IgG. The samples were allowed to clot before centrifugation. Serum obtained by centrifugation was aliquoted into eppendorf tubes for storage at 20° C till analyzed. The serum HSV-1 IgG and HSV-2 Ig G were determined by ELISA method using commercial test kits (CLIA).

Statistical Analysis

Data were subjected to statistical analysis using the software SPSS version 13.0 (SPSS Inc, Chicago, USA). Multivariate logistic regression analysis was performed at 95% confidence interval. P values ≤0.05 were considered statistically significant.

Quantitative variables were tested for normal distribution and reported as means ± standard deviation. Qualitative variables were presented as count (percentages). The Chi-square test was used to investigate the association between sero -prevalence of HSV type 1 and type 2, and socio-demographical and behavioral factors using the Statistical Package for the Social Scientists (SPSS) version 22. Statistical

significance was conventionally set at $p < 0.05$.

RESULTS

Table 1. Age and Sex Distribution of Herpes Simplex virus 1 and 2 IgG Positive.

Age (years)	Total No Tested/ (%) Positive	MALES		FEMALES	
		No. Tested	No.(%) Positive	No. Tested	No.(%) Positive
15-20	14(85.7)	14	12(85%)	0	0(0.00)
21-30	81(82.7)	78	65(83.3)	3	2(66.6)
31-40	52(92.3)	42	38(90.4)	10	10(100.0)
41-50	12(91.6)	11	10(90.9)	1	1(100.0)
51-60	3(100.0)	3	3(100.0)	0	0(0.00)
Total	162	148	128(86.4)	14	13(92.8)

The prevalence of HSV-1 and 2-IgG was 128 out of 148 Male (86.4%) and 13 out of 14 female (92.8%) . The prevalence of the infection appeared to have increased with age among both males and female.

Table 2. Sero-Prevalence of Herpes Simplex Virus 1 and 2 IgG in relation to Occupational Status.

Occupational status	No. Tested	No.(%) Positive
Fisherman	39	34(94.0)
Drivers	32	26(81)
Housewives	38	30(78.0)
Traders	36	36(92.3)
Farmers	6	5(83.0)
Students	1	0(0.00)
Unemployed	10	10(100.0)
Total	162	141(87.0)

The prevalence of the infection was found to be higher among Fisherman (94.0%) and the unemployed (100%).

Table 3. Sero-Prevalence of Herpes Simplex Virus 1 and 2 IgG in relation to Educational Status.

Occupational Status	No. Tested	No.(%) Positive
Fisherman	39	36(92.3)
Drivers	32	26(81.0)
Housewives	38	30(78.0)
Traders	36	34(94.0)
Farmers	6	5(83.0)
Students	1	0(0.00)
Unemployed	10	10(100.0)
Total	162	141(87.0)

Also, the prevalence of the infection was found to be highest among those with secondary education (91.8%) and lowest among those with no formal education (80.0%).

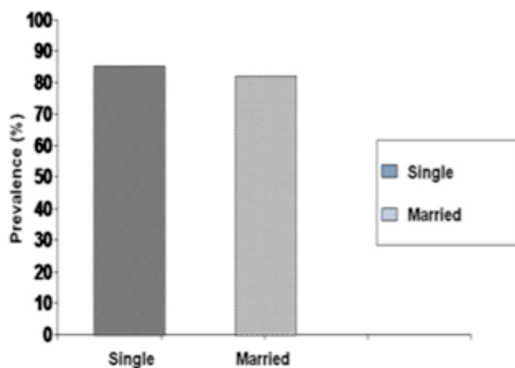


Figure 1. Seroprevalence of HSV1 and 2 IgG in relation to marital status of parents attending sexually transmitted infections clini

Of the 116 (71.6%) married individuals tested, 86.2% were positive and of the 46 (28.3%) singles tested, 89.1% were positive.

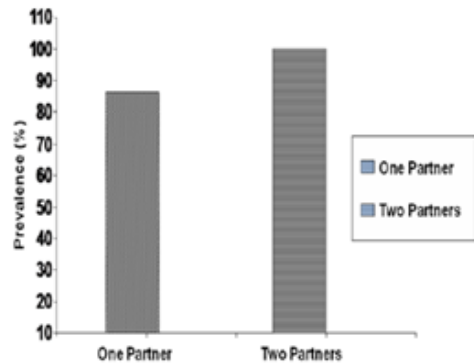


Figure 2. Seroprevalence of HSV-1 and 2 IgG in relation to number of sex partners of patients attending sexual transmitted infections clinic at Vinayaka Missions Hospital.

The prevalence of the HSV-2 infection was higher among those with two sex partners than among those with one sex partner.

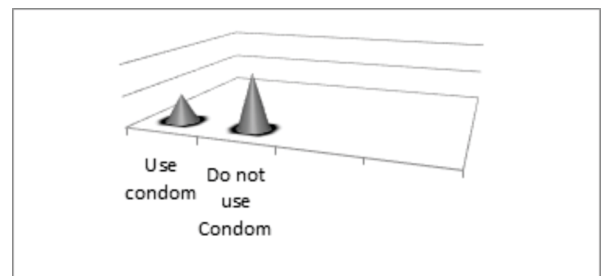


Figure 3. Sero-Prevalence of HSV 1 and 2 IgG in relation to condoms use among patients attending STD clinic at Vinayaka Missions Hospital

The prevalence of the HSV-2 infection was higher among those who did not use condoms than among those who used condoms.

Of the 162 cases analyzed using multivariate logistic regression analysis, the full model was non-significantly reliable ($X^2 = 9.76$; $DF = 9$; $P > 0.05$). Multivariate logistic regression analysis showed that HSV-2 prevalence was not significantly associated with age, sex, marital status, occupation, educational status, and number of sex partners ($P > 0.05$).

DISCUSSION

Serological testing showed that the prevalence of HSV-2 was 87.0%, although all cases were devoid of clinical signs and symptoms. Our findings further confirm the high prevalence of HSV-2 infection in India .The trend of a higher prevalence of HSV-2 infection with increasing age (though, not statistically significant) is substantiated by similar reports in Sweden and Lagos [9,6], which suggests that increasing age is a possible risk factor for HSV-2 infection and that HSV-2 infection is a lifelong infection with a high rate of transmission [4]. However, a higher prevalence reported among men than women (92.8% versus 86.4% respectively) contrasts previous reports [9,4], probably because of the difference in sample size between males, 14 (8.6%) and females 148 (91.3%) recruited in this study. It is interesting to note that there was a consistently high prevalence of HSV-2 infection irrespective of educational status. This agrees with a review conducted in 2004 which showed that there is a common finding among sero-epidemiological surveys that socio-economic, religious and educational status have no significant effect on the

prevalence of HSV-2 infection [4]. Also, in this study, there was a higher prevalence of HSV-2 infection among singles compared to married individuals which contradicts previous reports. This can likely be attributed to the impact of other determinants, such as contact with commercial sex workers, early age of first sexual activity with HSV-2 seropositive persons and presence of other STIs [10, 11]. The report also indicated that there was a higher prevalence of infection among patients with more than one sex partner, which is in line with other reports [12]. However, the fact that the high prevalence of the infection did not attain statistical significance underlines the urgent need for education and counselling to discourage unprotected sexual contact and reduce the number of sexual partners, especially in the general population. The results highlight the potential public health impact of HSV-2 in India where anti-HSV-2 testing is not generally performed in all populations, especially considering the risk of neonatal transmission and the attendant complications at birth as well as the synergy between HIV and HSV-2 transmission [6]. Considering the risk of neonatal herpes and TORCH syndrome, testing of pregnant women should be conducted as part of routine antenatal care and appropriate therapy with acyclovir employed. Identifying, testing and counselling those at risk should have a major impact on reducing the incidence of the infection. Thus this report underlines some public health concerns when placed in the context of recent biological studies which show that mucosal HSV-2 ulcerations, whether symptomatic or asymptomatic, are associated with influx of CD4+T cells, which are easily infected with HIV

CONCLUSION

The prevalence of HSV-1 and HSV-2 among the patients attending the STD Outpatient department in Vinayaka missions hospital was high. The major factor found to be associated with sero-prevalence of HSV-2 was age at contact and number of life time sexual partners. This could be due to the high endemicity and inadequate intervention in this population, the lack of awareness of some viral infections among the population and environmental factors. There is the need to raise awareness through organized public health screening and education to ensure control.

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