



STUDY OF HSV-2 IN GENITAL ULCER DISEASES

Microbiology

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ABSTRACT

The sexually transmitted diseases are transmitted predominantly by sexual contact. Genital herpes simplex virus infection is the second most prevalent STI worldwide.

The present study was carried out in a Tertiary care hospital of Central India, from Oct 2015 to Sept 2017. The study group consisted of 102 syndromically diagnosed cases of Genital Ulcers who visited the SURAKSHA CLINIC

Out of 102 cases, 67.65% were of Herpetic Ulcers, 32.35% were of Non Herpetic Ulcers. Out of 102 serum samples, 76.47% samples were positive for IgG antibody and 20.59% were positive for IgM antibody, 11.76% samples were positive for both antibodies. Out of 87 seropositive cases for HSV-2, 10.53% cases were coinfecting with HIV.

HSV-2 infections are common and have spread worldwide. The present study was done to determine the seroprevalence of HSV-2 among GUD's and its association with other demographic and behavioural factors.

KEYWORDS

HSV-2, HIV, Genital Ulcer

INTRODUCTION

The sexually transmitted diseases (STD's) are a group of communicable diseases that are transmitted predominantly by sexual contact.⁽¹⁾ The annual global incidence of GUD exceeds 20 million cases.⁽⁵⁾ The advent of HIV/AIDS over the years has deepened the scope of morbidity, mortality, and various forms of clinical presentations of GUDs.⁽⁴⁾ Prevalence of Genital Ulcer Disease's (GUD) has been very high in STD patients in India with 50% to 60% patients.⁽²⁾ Genital herpes simplex virus (HSV) infection is the second most prevalent STI worldwide and the most common cause of GUD in the developed world.⁽³⁾

Herpes Simplex infection, once contracted seem to persist for life⁽⁷⁾. HSV-2 symptoms typically appear as one or more blisters on or around the genitals or rectum⁽⁶⁾ leading to painful ulcerative lesions.⁽⁷⁾ The virus remains latent in ganglia; but under the stimulus of trauma, fever, it may at any time be called into activity and provoke a visible herpes lesion.⁽⁷⁾ The seroprevalence of HSV-2 in the general population ranges from 5.2% to 14.5%.⁽⁸⁾

Because of the recurrence of genital herpes, high prevalence of genital herpes in populations at risk for HIV infection and large number of herpes infected persons who continue their sexual activities despite being infectious, genital herpes is a risk factor for acquisition of HIV-1 infection.⁽⁹⁾ and 40%-60% of new HIV infection is in high HSV-2 prevalent population.⁽¹⁰⁾

The HSV infection may be identified directly by detection of the virus or one of its components or indirectly by assaying for specific serum antibodies of the viruses.⁽²⁾ The present study was done to determine the seroprevalence of HSV-2 among GUD's and its association with age, sex, as well as other demographic and behavioural factors.

MATERIAL AND METHODS

The present observational study was carried out in Department of Microbiology, Indira Gandhi Govt. Medical College, Nagpur which is a Tertiary care hospital of Central India, from October 2015 to September 2017. The study group consisted of 102 syndromically diagnosed cases of Genital Ulcers who visited the SURAKSHA CLINIC

Sample collection⁽¹¹⁾

From the patients presenting with complaint of one or more genital ulcers, 2 ml venous blood samples were taken under aseptic precautions in vacutainers with no anti-coagulant, Serum samples were obtained by centrifuging the specimens for 20 min at 1100-

1300rpm and Samples were then stored at -80 deg C till assay was carried out in microbiology laboratory. The serological testing for HSV-2 was performed on all the specimens by using Ratio Diagnostics anti-HSV2 IgM ELISA and IgG ELISA. Serological testing for HIV was performed as per NACO guidelines.

RESULT

Out of 102 cases, maximum cases i.e. 69 (67.65%) were of Herpetic Ulcers and 33(32.35%) were of Non Herpetic Ulcers.(Table 1) Which includes 84 (82.35%) cases of age group of 25 – 44 yrs followed by 12(11.76%) cases of 20-24 yrs. The mean age of patients was 32.5yrs. The 102 cases comprised of 78 males and 24 females. The Male: Female ratio was 3.25:1 and the difference was statistically not significant. (p value .65)

Total 78.43% were married while 17.65% cases were unmarried and two (1.96%) cases were Widow/widower and Divorcee/Separated each. Most of them i.e 75(73.53%) were having multiple partners and 27 (26.47%) cases were having single partners. Regular use of condom as a barrier method was given by 48 (47.06%) while 54 (52.94%) neither used condom nor any other method as a preventive measure.

As far as education is considered Maximum cases i.e. 45(44.12%) were having education of secondary and higher secondary level.

Occupation wise Genital Ulcer diseases were most common in labourer's i.e. 54(52.94%) cases. Housewives comprised of 21(20.59%) cases while 18 (17.65%) cases were employed, 06 (5.88%) cases were comprised of students and 3(2.94%) were sex workers.

Out of 102 cases 87(85.29%) were positive for both HSV-2 antibodies by IgG and IgM ELISA. (Table 2)

Out of 102 serum samples, 78(76.47%) samples were positive for IgG antibody and 21(20.59%) were positive for IgM antibody while 12(11.76%) samples were positive for both antibodies. (Table 3)

Considering IgM as the marker for acute infection with HSV-2, we studied the co-relation of IgM seropositivity with Clinical Diagnosis. Out of 87 seropositive, 60 samples were clinically diagnosed as Herpes of which only 12(13.79%) were positive for IgM antibodies showing that 13.79% cases were clinically correlated.

Out of these 87, 52(59.77%) cases had the history of recurrent infection while 35(40.23%) were having the history of first episode

genital herpes.

Out of 87 seropositive cases for HSV-2, 9(10.53%) cases were coinfectd with HIV.

Table 1. Seroprevalence of HSV-2 among Genital Ulcers. (n=102)

	HSV 2 ELISA
Positive	87 (85.29%)
Negative	15 (14.71%)
Total	102(100%)

Table 2: ELISA Test Results of HSV – 2. (n=102)

IgM ELISA Result	IgG ELISA Result	Number of cases (n=102)
Negative	Positive	66(64.71%)
Positive	Positive	12(11.76%)
Positive	Negative	9(8.82%)
Negative	Negative	15(14.71%)
Total		102(100%)

Table 3: Correlation of clinical presentation with IgM Seropositivity. (n=87)

No of patients with genital Herpes(n=87)	Clinical Presentation	HSV-2 IgM Serology
12 (13.79%)	Herpes	Positive
48(55.17%)	Herpes	Negative
9(10.34%)	Non Herpetic	Positive
18(20.69%)	Non Herpetic	Negative

DISCUSSION

HSV-2 infections are common and have spread worldwide, with a reported variation in seroprevalence ranging from less than 1% to more than 80% in selected populations.^(8,12,13) HSV-2 is sexually transmitted and is the most common cause of GUD in developing countries.^(1,5,14)

Many patients with genital herpes may have atypical manifestations.⁽¹⁵⁾ Infection with HSV has also been shown to increase the risk of acquisition or transmission of HIV infection.⁽¹⁶⁾

In the present study, the GUD cases were grouped as GUD-H and GUD-NH. Clinically, maximum numbers of cases were GUD-H i.e. 69(67.65%) and GUD – NH were found in 33 (32.35%) cases. Similar results were observed for GUD-H cases by Shivaswamy et al.⁽¹⁷⁾ i.e. 69.81% and Tankhiwale et al.⁽¹⁸⁾ i.e. 73.96%. In contrast, Vora et al.⁽¹⁹⁾ observed GUD-H in 39.2% cases. Patients diagnosed as GUD-H mainly presented with multiple ulcers over genital area. The ulcers were superficial, erythematous and mildly tender. Few ulcers showed discharge while crust formation was seen in some of them.

In the present study maximum number of patients were in age group 25-44 yrs i.e.82.35%. This is associated with more number of sexual partners, increased sexual activity and change of sexual partners. Most of the study shows similar findings.^(1,2,3,4,5,6)

Present study shows male preponderance with Male: Female ratio of 3.25:1. The number of females is less because of asymptomatic nature of disease in females and lower awareness of need for availing health services.⁽⁴⁾

In the present study, majority of subjects were married i.e 80 (78.43%) while 18 (17.65%) cases were unmarried. Two (1.96%) cases were Widow/widower and Divorcee/Separated. Current trends show that numbers of married and adolescent individuals are being increased. Hence Married men need to be encouraged to motivate their regular sexual partners, to receive STI testing and care.⁽²⁰⁾

Maximum (96.08%) numbers of cases were Heterosexuals. Bisexual behaviour also seen in 4 (3.92%) cases. This reflects a small, but definite change in sexual behaviour.

Literacy has a definite impact on acquisition of GUDs. In the present study, most of the patients i.e. 45 (44.12%) were educated up to secondary education. Study of Tankhiwale et al.⁽¹⁸⁾ reported similar results with 42.7% cases with secondary education.

GUD's were most common among labourers i.e. 54(52.94%). Twenty one (20.59%) were Housewives, 18 (17.65%) were Employed, 6 (5.88%) were Students and 3 (2.94%) were Sex workers. Similar results were observed by Amudha et al⁽²¹⁾, Devi et al⁽²²⁾ and Tankhiwale

et al⁽¹⁸⁾. Labourers are migrants population who stay away from their families and are more vulnerable of acquiring STIs.

In the present study, all GUD cases were subjected for HSV-2 for antibodies by ELISA. Amongst 102 GUD cases, seropositivity of HSV 2 is 85.29% by using both IgM and IgG ELISA. (Table 1) Similar results were observed by Shivaswamy et al.⁽¹⁷⁾ i.e (85.1%) and Patwardhan et al.⁽²³⁾ i.e (83%). In contrast, Amudha et al.⁽²¹⁾ had reported a seroprevalence of 35.16%.

In present study, seroprevalence of HSV-2 IgM was observed in 21(20.59%) cases. (Table 2) Similar to present study Bhavsar et al.⁽²⁴⁾ had reported IgM in 22.2% cases. In Contrast, Nivedita et al.⁽²⁵⁾ had reported IgM seropositivity in only 5% cases and Tankhiwale et al⁽¹⁸⁾ in 35% cases. In present study seroprevalence of HSV-2 IgG was seen in 78(76.47%) of cases. Similar results for IgG HSV-2 were yielded by Banu et al.⁽²⁶⁾ i.e (76.67%) and Shivaswamy et al⁽¹⁷⁾ i.e (85%).

Out of 102 serum samples, 78(76.47%) samples were positive for IgG antibody and 21(20.59%) were positive for IgM antibody while 12(11.76%) samples were positive for both antibodies. Similar to present study, Banu et al.⁽²⁶⁾ showed 14.48% cases positive for both IgG and IgM antibodies. In contrast, Nivedita et al⁽²⁵⁾ and Amudha et al⁽²¹⁾ reported 4.9% and 3.3% cases positive for both IgG and IgM antibodies respectively.

Amongst the 102 patients, 87 serum samples were positive for HSV-2 antibodies. Out of 87, 12(13.79%) cases were of herpes and were positive for IgM while 18 (20.69%) cases were non herpetic as well as IgM negative showing the clinical congruence in 60(34.48%) cases.(Table 3) This shows that sensitivity and specificity of Syndromic diagnosis is 20% and 66.66% respectively which is not so high particularly for GUD herpetic syndrome. Bhavsar et al⁽²⁴⁾ reported correlation in 26.76% cases, Tankhiwale et al⁽¹⁸⁾ in 45.07% cases, Choudhary et al⁽²⁷⁾ in 56.6% cases and Banu et al⁽²⁶⁾ in 89.19%

In present study Recurrent Herpes was seen in 52 (59.77%) of cases while primary herpes Genitalis was seen in 35(40.23%) of cases. Similar to present study, Naraynan et al⁽²⁸⁾ Reported 54.47% cases of recurrent HG and 45.53% cases of primary HG.

In the Present study, amongst the 102 cases of GUD, 87(85.29%) cases were of Herpes genitalis. Amongst these 87 cases, 9(10.34%) were HIV positive showing the seroprevalence of co infection in 10.34% cases. Similarly Mehta et al⁽⁹⁾ reported 10.53% coinfection of Herpes with HIV.

There is a strong association between the presence of genital herpes and HIV infection, which may be related to reactivation of herpes because of increasing immunosuppression in HIV- infected people. In addition, the finding of genital herpes may also be a predictor of unprotected, multipartner sexual exposure and transmission of HIV infection.

CONCLUSION

The study provides useful information on the current patterns of Herpes Genitalis infection. It demonstrates that adolescent and married are likely to be suffering. It shows that Herpes Genitalis is the most common cause of GUD's. Due to recurrences in HSV more care needs to be taken in order to inculcate safe sex practices and thereby reduce the incidence of preventable infections, since HSV is known to increase the transmission of HIV. Moreover, Herpes Genitalis is difficult to diagnose and treat when they occur as coinfection with HIV because of atypical presentation and decreased immune response. Hence health resources should be adjusted to account for these infections.

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