Original Research Article

To Determine the Seroprevalence of Herpes Simplex Type 2 (HSV-2) Infection in Pregnant Females in a Tertiary Care Hospital.

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Abstract

Genital herpes is a preventable chronic disease. Although most HSV infections are subclinical, clinical disease can be associated with substantial physical and psychosocial morbidity. The clinical manifestations are diverse; hence a suspected diagnosis of HSV should be confirmed by laboratory tests. **Aims and Objectives:** To determine the seroprevalence of herpes simplex type 2 (HSV-2) infection in pregnant females. **Materials and Methods:** Two Hundread Ninety Nine Serum specimens were screened for HSV-2 infection by detecting IgG class antibodies against HSV-2-specific glycoprotein G-2 using an enzyme-linked immunosorbent assay kit in the department of Microbiology, DMCH, Darbhanga. **Results:** A seroprevalence of 8.9% was found in our study. Seropositivity was maximum in the age group ≥30 years (22.24%), followed by 26–30 years (9.70%), 21–25 years (2.20%) and ≤20 years (0%).**Conclusion:** Our findings suggest that type-specific serotesting could be an efficient strategy to diagnose clinically asymptomatic HSV-2 infections.

Keywords: Herpes simplex virus type 2, Seroprevalence

Introduction

Herpes simplex is a viral infection caused by the herpes simplex virus.[1] Infections are categorized based on the part of the body infected. Oral herpes involves the face or mouth. It may result in small blisters in groups often called cold sores or fever blisters or may just cause a sore throat.[2][5] Genital herpes, often simply known as herpes, may have minimal symptoms or form blisters that break open and result in small ulcers.[1] These typically heal over two to four weeks.[1] Tingling or shooting pains may occur before the blisters appear.[1] Herpes cycles between periods of active disease followed by periods without symptoms.[1] The first episode is often more severe and may be associated with fever, muscle pains, swollen lymph nodes and headaches.[1] Over time, episodes of active disease decrease in frequency and severity.[1] Other disorders caused by herpes simplex include: herpetic whitlow when it involves the fingers,[6] herpes of the eye,[7] herpes infection of the brain,[8] and neonatal herpes when it affects a newborn, among others.[9]There are two types of herpes simplex virus, type 1 (HSV-1) and type 2 (HSV-2).[1] HSV-1 more commonly causes infections around the mouth while HSV-2 more commonly causes genital infections. [2] They are transmitted by direct contact with body fluids or lesions of an infected individual.[1] Transmission may still occur when symptoms are not present.[1] Genital herpes is classified as a sexually transmitted infection.[1] It may be spread to an infant during childbirth.[1] After infection, the viruses are transported along sensory nerves to the nerve cell bodies, where they reside lifelong.[2] Causes of recurrence may include: decreased immune function, stress, and sunlight exposure.[2][3] Oral and genital herpes is usually diagnosed based on the presenting symptoms.[2] The diagnosis may be confirmed by viral culture or detecting herpes DNA in fluid from blisters.[1]

Testing the blood for antibodies against the virus can confirm a previous infection but will be negative in new infections.[1]The most effective method of avoiding genital infections is by avoiding vaginal, oral, and anal sex.[1] Condom use decreases the risk.[1] Daily antiviral medication taken by someone who has the infection can also reduce spread.[1] There is no available vaccine [1] and once infected, there is no cure.[1] Paracetamol (acetaminophen) and topical lidocaine may be used to help with the symptoms.[2] Treatments with antiviral medication such as aciclovir or valaciclovir can lessen the severity of symptomatic episodes.[1][2]Worldwide rates of either HSV-1 or HSV-2 are between 60% and 95% in adults.[4] HSV-1 is usually acquired during childhood. [1] Rates of both increase as people age.[4] Rates of HSV-1 are between 70% and 80% in populations of low socioeconomic status and 40% to 60% in populations of improved socioeconomic status.[4] An estimated 536 million people worldwide (16% of the population) were infected with HSV-2 as of 2003 with greater rates among women and those in the developing world.[10] Most people with HSV-2 do not realize that they are infected.[1] The name is from Greek: ἕρπης *herpēs*, which is related to the meaning "to creep", referring to spreading blisters.[11] The name does not refer to latency.[12]

Materials and Methods

Two Hundread Ninety Nine Serum specimens were screened for HSV-2 infection by detecting IgG class antibodies against HSV-2-specific glycoprotein G-2 using an enzyme-linked immunosorbent assay kit (RADIM SpA, Italy) in the department of Microbiology, DMCH, Darbhanga. The serum specimen was screened for HIV-1 and HIV-2 antibodies by the ELISA technique. Statistical analysis was performed using *t*-test, chi-square test and Fischer test, and referenced for *P*-values for their significance.

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Results

Out Of total 299 serum sample enrolled for the study .The age of the patients ranged from 16 to 40 years (mean 25.52 ± 5.05). The most common age groups were 21–25 years (45%), followed by 26–30 (36%), ≥30 (13.50%) and ≤20 (5.5%%). In our study, seropositivity was maximum in the age group ≥30 years (22.20%), followed by 26–30 years (9.70%), 21–25 years (2.20%) and ≤20 years (0%). [Table 1]. No any one sample is HIV Positive.

Table 1: Correlation between HSV-2 serology with Age (Years)

Patient Characteristic	Total No. Of Patients	HSV-2 Serology	
		+	-
<20	16(5.35)	0(0.00)	16 (100%)
21-25	135(45.15)	3(2.2%)	133(98.51)
26-30	108(36.12)	10(9.2)	97(89.81)
30	40(1.33)	9(22.5)	31(77.5)

Discussion:

In recent years, genital herpes has become an increasing common sexually transmitted infection. From the late 1970s, HSV-2 seroprevalence has increased by 30%, resulting that one out of five adults is infected [4, 5].HSV seroprevalence in patients with STD varies from 17% to 40% (6% in the general population and 14% in pregnant women) [6, 7].Age and sex are important risk factors associated with the acquisition of genital HSV-2 infection. In fact, the prevalence of HSV infection rises with age, reaching the maximum around 40 years [4]. This infection appears related to the number of sexual partners, and regarding sex it is more frequent in women than in men [8, 9].In addition, ethnicity, poverty, cocaine abuse, earlier onset of sexual activity, sexual behavior, and bacterial vaginosis can facilitate a woman's risk of infection before pregnancy [10, 11].Regarding pregnant population, there is a high prevalence of genital herpes. Among Italian pregnant women, the seroprevalence varies from 7.6% to 8.4% seroprevalence [9].In contrast to our study, a much higher HSV-2 seroprevalence has been reported from various rural and urban populations from Africa (60–90%[11] and South and North America (30–70%).[12] This could be because of a higher prevalence of promiscuous sexual behavior, large number of sexual partners and high prevalence of other sexually transmitted infections in these communities. Nizami *et al*.[13] reported a seroprevalence of 63.1% in pregnant women whereas Tideman *et al*. reported a seroprevalence of 11.3%[14] and Dan *et al*. reported a seroprevalence of 13.3%.[15] Prevalence in the general population in developing Asian countries appears to be lower (10–30%).[16] Maitra and Gupta[7] found a seroprevalence of 23.3% in a general gynecology clinic and Chawla *et al*.[8] reported a seroprevalence of 7% and 8.6% in two urban communities in Delhi.In our study, the HSV-2 seroprevalence rose steadily with age (2.2% among women aged 21–25 years to 22.20% among women aged ≥30 years). These findings are comparable to the studies of Breinig *et al*.,[9] Tideman *et al*.[4] and Nizami *et al*.[3] No statistically significant correlation was observed with other demographic variables in our study, such as place of residence, whether rural or urban, education, annual family income, occupation and socioeconomic status. Similar findings were reported by Fleming *et al*.[2] However, Stavraky *et al*.,[20] Breinig *et al*.,[9] Tideman *et al*.[14] and Chawla *et al*.[2] found a significant association between HSV-2 seropositivity and sociodemographic factors while assessing the risk factors for HSV-2 infection in women. The effect of increasing number of previous pregnancies on seropositivity may not be direct but may be a reflection of increased duration of sexual activity, which itself is a risk factor for HSV seropositivity. Stavraky *et al*.,[2] Cowan *et al*.[9] and Narouz *et al*.[2] observed that patients with multiple sex partners and increasing duration of sex activity and early age of sexual intercourse were at a higher risk of being seropositive to HSV-2. Our study failed to demonstrate an increased risk of seropositivity with early age of first intercourse. Breinig *et al*.[11] and Frankel *et al*.[12] reported a positive association between seropositivity and previous history of abortions No statistically significant association of seropositivity to HSV-2 with respect to history suggestive of other sexually transmitted infections and HIV serology was seen in our study. Similar findings have been reported by Chawla *et al*.[16]

Conclusion

Genital herpes is a preventable chronic disease. Although most HSV infections are subclinical, clinical disease can be associated with substantial physical and psychosocial morbidity. The clinical manifestations are diverse; hence a suspected diagnosis of HSV should be confirmed by laboratory tests. The management of genital herpes should be tailored to the individual and should include counselling about the variable natural history appearance of lesions, education about prevention of transmission, the link between HSV and HIV, and discussion to assess the psychosexual effects of the disease. Antiviral therapy is safe and effective, both for episodic treatment and chronic suppression of HSV.

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