



A seroprevalence evaluation study of Hepatitis B virus, Hepatitis C virus and Herpes Simplex Virus - 2 among a special study group

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ABSTRACT

Viral STI are silent diseases. Most of them are symptomless, but have the potential to be transmitted to fetus and other sexual partners. Female sex workers, men who have sex with men are at high risk of getting STIs and individuals with certain STIs are at three to five-fold risk of getting HIV infection. Hence, the present study was carried out to know the seroprevalence of HBV, HCV and HSV-2 among our study group. A multi-centric cross sectional study was conducted. A total of 4062 serum samples were tested during the period January to December 2010. Serum samples were tested for HBsAg, anti-HCV and HSV-2 IgM using commercially available ELISA kits. Overall prevalence of HBV, HCV and HSV-2 were 2.8% (114/4062), 2% (84/4062) and 2.4% (96/4062) respectively. Most of the HBsAg positive cases were in the age-group of 20 to 25 years. We have observed that the positivity of all STIs studied was higher in transgender. Individuals infected with STIs are at the risk of contracting HIV, and co-infection with hepatitis can complicate the treatment for HIV. Screening of asymptomatic individuals will be helpful; prompt treatment of these STI will prevent ongoing transmissions as sex works are the critical core group.

Keywords: Hepatitis, Herpes simplex, STI, ELISA

INTRODUCTION

Viral STI are silent diseases. Most of them are symptomless, but have the potential to be transmitted to fetus and other sexual partners. Sexually transmitted viral infections and viral hepatitis are major health problem in developing countries. Prolonged infections with hepatitis B virus (HBV) and hepatitis C virus (HCV) are a leading cause of hepatocellular carcinoma^[1]. WHO estimated that more than 1 million people acquire a sexually transmitted infection (STI) every day and more than 530 million people have the herpes simplex virus – 2 (HSV-2) infection^[2].

Infections due to hepatitis B and herpes are incurable, but we can reduce the severity through treatment. Female sex workers (FSW), men who have sex with men (MSM) are at high risk of getting STIs and individuals with certain STIs are at three to five-fold risk of getting HIV infection^[3].

Study reports from United States indicated that about 33% of all HIV-infected persons are HCV infected, and 5-15% of HIV-infected persons are co-infected with HBV^[4,5]. Genital herpes, which is one of the most prevalent STIs

globally including India, has been rising significantly over the past few years ^[6]. Hence, the present study was carried out to know the seroprevalence of HBV, HCV and HSV-2 among FSW, MSM and transgender (TG).

MATERIALS AND METHODS

A multi-centric cross sectional study was conducted to know the prevalence of sexually transmitted diseases among FSW, MSM and TG across Tamil Nadu. Institutional ethical clearance was obtained to conduct this study. Participation of individuals was voluntary and free of cost. All participants were informed about the test outcome and medical advice and counseling were given accordingly.

After getting informed consent from the patients, 5ml blood sample was aseptically drawn in a vacutainer, serum separated, correctly labeled and stored in a refrigerator. These samples were sent to Department of Serology, Institute of Venerology, RGGGH and MMC, Chennai on a weekly basis, cold chain was maintained until testing.

A total of 4062 serum samples were tested at the above lab during the period January to December 2010. Serum samples were tested for HBsAg by a commercially available ELISA kit (ErbaLisa, Germany). Antibodies to HCV were tested by SP-NANBASE C-96, 3.0 (General Biologicals Corporation, Taiwan). Serological diagnosis for IgM antibody to HSV-2 was done using HSV-2 IgM ELISA kit (Calbiotech, Inc. CA, USA). All the tests were carried out according to the manufacturers' instruction. Individuals who were HBsAg negative were guided for vaccination.

RESULTS

A total of 4062 patients were included in this study of which the majority were females (62.3%, 2532/4062) followed by males (34.4%, 1398/4062) and transgender (TG) (3.2%, 132/4062). Overall prevalence of HBV, HCV and HSV-2 were 2.8% (114/4062), 2% (84/4062) and 2.4% (96/4062) respectively (Table 1). Most of the HBsAg positive cases were in the age-group of 20 to 25 years. The positivity of STIs with respect to the age-group was given in table 2. We have observed that the positivity of all STIs studied (i.e. 4.5% positive for HBV and 3% positive for both HCV and HSV-2) was higher in transgender. The prevalence of HBsAg was high (3.6%) in males than females (2.3%), where as anti-HCV and HSV-2 IgM positivity was higher in female participants than male participants (Table 1).

Table 1. Gender-wise distribution of HBV, HCV and HSV-2 infection.

Gender	Total No. of Cases	Number of positives (%)		
		HBV	HCV	HSV-2
Male	1398	50 (3.6)	27 (1.9)	20 (1.4)
Female	2532	58 (2.3)	53 (2.1)	72 (2.8)
TG	132	6 (4.5)	4 (3)	4 (3)
Total	4062	114 (2.8)	84 (2)	96 (2.4)

Table 2. Age-wise prevalence of HBV, HCV and HSV-2 infection.

Age group (years)	HBV Positive			HCV Positive			HSV-2 Positive		
	M	F	TG	M	F	TG	M	F	TG
Upto 19	1	0	0	1	0	0	2	1	0
20 to 25	23	8	0	9	4	1	6	13	2
26 to 30	10	9	1	14	5	1	5	13	0
31 to 35	5	13	2	2	12	0	1	21	0
36 to 40	6	16	2	0	17	1	1	17	2
41 to 45	2	10	1	0	10	0	4	2	0
46 to 50	1	2	0	1	5	1	0	4	0
Above 50	2	0	0	0	0	0	1	1	0
Total	50	58	6	27	53	4	20	72	4

DISCUSSION

Sexually Transmitted Diseases are among the most common infectious diseases around the world. In our study, HBV (2.8%) was the commonest infection followed by HSV-2 (2.4%) and HCV (2%). Commercial sex workers and individuals with high risk sexual behaviours are at greater chance of acquiring STIs ^[7].

Studies on the prevalence of viral STIs among FSW, MSM and transgender are limited. HBV prevalence in different study population has been reported to vary widely from 0.1% in the developed countries to 20% in the developing nations^[8]. Recent study from North India revealed that the prevalence of HBV and HCV among FSW was 8% and 2.4% respectively, which is comparatively higher than our study result^[9]. Study report on Hepatitis B and C prevalence in high risk groups in north Kerala, India reported 3.47% HBsAg positivity and 2.6 % anti-HCV positivity in commercial sex workers; 4.49% HBsAg positive and 3.37% anti-HCV positive in male homosexuals^[10]. Recent study on the prevalence and risks of hepatitis and STIs in China during the period of 2000–2011 revealed the seroprevalence of hepatitis B and hepatitis C among FSW were 10.7 % and 1.0 %, respectively^[11].

According to the recent report, there were 417 million people living with HSV-2 infection world-wide with the global prevalence of 11.3%^[12]. Very few reports on HSV-2 prevalence were available in India and varies between 1.0% and 18.9% among general population^[13-19]. The HSV-2 prevalence among sexually transmitted disease clinic attendees has been reported to range between 9.7% and 83% and between 2.0% and 79.0% among high risk groups^[20]. The prevalence of HSV-2 in our study was 2.4%.

CONCLUSION

Individuals infected with STIs are at the risk of contracting HIV, and co-infection with hepatitis can complicate the treatment for HIV^[11]. It has been documented that STI treatment interventions can help significantly in the prevention of HIV infection^[21]. The epidemiological profile of STIs varies considerably based on ethnographic, demographic, socioeconomic and health factors^[22]. Screening of asymptomatic individuals will be helpful; prompt treatment of these STI will prevent ongoing transmissions as sex works are the critical core group. We can control these infectious diseases by developing strategies to reduce high risk behavior, sex education and awareness regarding sexually transmitted infections among the vulnerable population.

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