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Original Research Article

Seroprevalence of Hepatitis B infection among pregnant women in South India

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ABSTRACT

Background: Vertical transmission of infection from mother to infants is a very important route of transmission of hepatitis B virus. Hepatitis B virus infection in pregnant women usually goes undetected. The hepatitis B surface antigen in serum is the first seromarker to indicate active HBV infection. This study was done to determine the seroprevalence of HBsAg in healthy asymptomatic antenatal women.

Methods: It was a hospital based study over a period of two years. A total of 1282 antenatal patients were tested for hepatitis B surface antigen.

Results: The prevalence rate of HBsAg was found to be 1.01 % (13 positive out of 1282 cases). Highest prevalence was in age group 26-30(46%) followed by age group 31-35(30.8%) followed by age group 20-25 yrs (23.1%).

Conclusions: Screening of all pregnant women for HBV irrespective of risk factors will reduce the prevalence and risks of HBV infection.

Keywords: Hepatitis B surface antigen, Pregnant women, Perinatal transmission, Seroprevalence

INTRODUCTION

Hepatitis B virus infection occurs globally and constitutes a major public health problem.¹ Over 20 million people are infected globally with this virus every year and there are around 350-400 million chronic carriers of hepatitis B virus.² More than 1.2 million deaths occur annually from HBV related disease making HBV infection the 10th leading cause of death globally.^{3,4} It has been estimated that up to 10% of the 350 million hepatitis B chronic carriers are in India. The carrier rate of hepatitis B in India may vary in the different regions and is being quoted as being 4.7%.^{5,6} Hepatitis B infection leads to a wide spectrum of clinical presentations ranging from asymptomatic carrier state to acute self-limiting infections or fulminating hepatic failure, chronic hepatitis with progression to cirrhosis and hepatocellular carcinoma.⁷ The hepatitis B surface antigen (HBsAg) in serum is the first seromarker to indicate active HBV

infection either acute or chronic.⁸ Hepatitis B virus (HBV) infection usually goes undetected. Unawareness of an on-going infection delays the diagnosis of HBV related liver disease and favours the spread of the virus.⁹ Pregnant women are a vulnerable group and there is risk of transmitting infection to the new-born if mother is infectious. Vertical transmission of infection from mother to infants is a very important route of transmission of HBV.¹⁰ Fetal and neonatal hepatitis acquired from mother during pregnancy leads to impaired cognitive and physical development in later life of the children.¹¹ In the absence of immunoprophylaxis 10-20% of women seropositive for HBsAg transmit the virus to their neonates.¹² Effective strategies for reducing incidence of chronic infections include maternal screening combined with post exposure prophylaxis consisting of HBV vaccination immediately after delivery in all children born to HBsAg positive mothers ideally with immunoglobulin prophylaxis.¹³ Several studies worldwide

have recommended that pregnant women should be screened for hepatitis B before delivery as this offers an opportunity to prevent another generation from being chronically infected by the virus.¹⁴ Hence this study was done to determine the seroprevalence of HBsAg in otherwise healthy antenatal women.

METHODS

This study was conducted in the obstetrics and gynaecology department in a tertiary level teaching hospital for a period of two years from October 2014 to September 2016. Hepatitis B surface antigen (HBsAg) was determined to be the serological marker for the viral infection among antenatal women. All pregnant women attending the antenatal outpatient department were offered the test and were included in the study if they agreed to participate. Informed consent was taken. A total of 1282 antenatal women were tested for hepatitis B surface antigen using sandwich ELISA immunoassay and results obtained.

RESULTS

A total of 1282 cases in the age group of 20-35 years who attended the antenatal outpatient department in the study period were included. Out of these 1282 cases 13 antenatal women were found to be seropositive for HBsAg. The prevalence rate was found to be 1.01%.

Table 1: HBsAg - Age specific seroprevalence.

Age Group (years)	No. of HBsAg positive cases (%)
20-25	3(23.1%)
26-30	6(46.1%)
31-35	4(30.8%)

The highest prevalence was observed in the age group 26-30 years (46.1%), followed by the age group 31-35 years (30.8%), followed by the age group 20-25 years (23.1%). One of the patients who tested seropositive for HBsAg had tested positive for HIV infection also. All the women who tested seropositive for HBsAg were followed up till delivery and the baby received joint administration of hepatitis B vaccine and specific immunoglobulin in the early neonatal period to prevent the mother/child transmission of the virus.

DISCUSSION

Screening asymptomatic people is an important instrument of disease detection, prompt diagnosis and intervention especially concerning a typically asymptomatic infection such as chronic HBV infection itself.¹⁵ The USPSTF¹⁶ recommends screening for hepatitis B virus (HBV) infection in pregnant women at their first prenatal visit. In the present study the seroprevalence of HBsAg among pregnant women was found to be 1.01%. This is comparable to the

seroprevalence of 0.9% reported by Dwivedi M and colleagues, 0.61% reported in a study by Parveen S et al, 0.82% reported by Chaterjee S et al, 1.1% reported by Pandey et al and 1.11% reported by Sibbia P et al.¹⁷⁻²¹ Lodha et al in their review article on hepatitis B epidemiology have suggested the prevalence rate in India as 1-2%.⁵ In our country in the different regions there is a wide variation in prevalence and a high prevalence has been reported by Prakash et al in North India (9.5%).²² An extensive review by INASL has arrived at a consensus figure of 4.7 % as the national average for carrier state.²³ A systematic review of prevalence of hepatitis B in India by Ashish Batham et al found the point prevalence among non-tribal population is 2-4% and the point prevalence among tribal population is 15.8%.⁶ In our study the prevalence of HBV infection was highest in the age group 26-30(46.1%). Pontius Bayo et al²⁴ found that the prevalence of HBV infection was higher among women aged 20 years or younger(20%) compared with the older women while Frambo AAB et al found that the highest prevalence was in age group 15-19 (20%) followed by age group 30-34(13.64%).¹⁵ Sibbia P et al found 25-30 years to be the most common age group with HBV infection.²¹ The infants born to seropositive HBsAg mothers should receive 0.5 ml Hepatitis B Immunoglobulin and Hepatitis B vaccine within 12 hours of birth.¹⁶ Between 30-40% of all chronic HBV infection results from perinatal transmission. The USPSTF found convincing evidence that universal prenatal screening for HBV infection substantially reduces perinatal transmission of HBV and the subsequent development of chronic HBV infection. They also found no published studies that describe harms of screening for HBV infection in pregnant women.¹⁶ In order to prevent perinatal transmission and spread of infection within the larger community, pregnant mothers should be screened for hepatitis B. Neonates who are infected by hepatitis B will have an almost 90% risk of developing chronic hepatitis B surface antigen carriage and chronic liver disease.¹⁸ A number of limitations are there in this study. Only HBsAg was tested as marker for hepatitis B infection. If other markers were combined with HBsAg the study would have been more informative and reliable. This study only determined the seroprevalence of HBsAg in pregnancy in our area. As vertical transmission is responsible for majority of HBsAg infections it may be enough if we screen all antenatal women and give combined immunization and immunoprophylaxis to the high risks infants born to the seropositive mothers. However in a country like India where a large number of deliveries are still non-institutional this high risk strategy may not be feasible.²⁵

CONCLUSION

Screening of all pregnant women for HBV infection irrespective of risk factors and increasing awareness about HBV infection will reduce the prevalence and risk of HBV infections. If the pregnant women are not diagnosed and managed properly, the future burden of the

disease for society and health care resources will be very high.

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