

Seroprevalence of hepatitis B and associated factors among pregnant women in tertiary health care center located in central India

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Abstract

Aim: To study the seroprevalence of Hepatitis B surface antigen (HBsAg) and associated factors among pregnant women in tertiary health care center.

Materials and Methods: A total of 2224 antenatal women (age ranging from 18-40 yrs) attending the outpatient department of Maharaja Yashwant Rao Hospital, Indore from Jan 2019 to May 2019 were included in the study. They were screened for hepatitis B surface antigen (HBsAg) by rapid test based on immunochromatography in the Department of Microbiology, M.G.M. Medical College.

Results: Out of 2224 pregnant women, 26(1.16%) women were found to be positive for Hepatitis B surface antigen result. The age of women varied between 20 and 40 years with mean age was 25.6 years. History of blood transfusion were found in nine females (34.6%) statistically significant for HBV infection. 4(0.17%) of the patients who tested seropositive for HBsAg had tested positive for HIV infection also.

Conclusion: Hepatitis B is emerging as a significant health problem in India. Programme for prevention and control of Hepatitis B should be considered as priority basis by the government and health services in India. Screening of all pregnant women for HBV irrespective of high risk factors can reduce risks of HBV infection and carrier state.

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

Introduction

Hepatitis B is caused by the hepatitis B virus, an enveloped Deoxyribonucleic Acid (DNA) virus that infects the liver causing hepatocellular necrosis and inflammation.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. HBV can be transmitted by transfusion of blood, infected blood and blood products, transplacental, urine, semen, sweat, saliva, tears, breast milk, vaginal secretions and pathological effusions.^{7,8} The virus can be transmitted perinatally from HBV-infected mother to the newborn.⁹ Perinatal transmission is the most common mode of HBV infection transmission.¹⁰ Pregnant women who are positive for HBsAg have nearly 10-40% risk of transmitting HBV infection to their infants. If pregnant women are seropositive in terms of both HBsAg and HBeAg, the ratio of the risk transmitting infection increases to 70-90% to their neonates.^{11,12} Perinatal transmission of HBV many times causes to serious long-term sequelae.¹³ The aim of the study

is to find the seroprevalence of hepatitis in pregnant women attending the ANC clinic.

Materials and Methods

The prospective study was conducted in the Microbiology Department of a tertiary care hospital for the period of six months from January 2019 to June 2019. Hepatitis B surface antigen (HBsAg) was determined to be the serological marker for the viral infection among antenatal women. Serum samples from 2224 pregnant women attending the antenatal Outpatient Department were subjected to HBsAg by using rapid test based on immunochromatography (MERISCREEN.MERIL) and results obtained.

Results

A total of 2224 cases in the age group of 20-40 years who attended the antenatal Outpatient Department in the study period were included. Among the 2224 cases studied 26(1.16%) antenatal women were found to be seropositive for HBsAg.

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Table 1: HBsAg - Age specific seroprevalence

S. No	Age group (years)	No. of HBSAG positive Cases (%)
1	20-25	6(23%)
2	26-30	12(46.13%)
3	31-35	5(19.33%)
4	36-40	3(11.5%)

The highest prevalence was observed in the age group 26-30 years (46.13%), followed by the age group 20-25 years (23%) (Table 1), followed by the age group 31-35 years (19.3%) and at last age group 36-40 years (11.5%). 4(0.17%) 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 to child transmission of the virus.

History of blood transfusion were found in nine females (34.6%) statistically significant for HBV infection.

Discussion

In the present study, we investigated the seroprevalence of HBsAg and potential risk factors associated with HBV infection among pregnant women visited a tertiary care hospital of central India. The study revealed that the seroprevalence of HBsAg among pregnant women was 1.16% in our study. The overall rate of HBsAg positivity has been reported to range between 2 and 8% in most studies¹⁴ This is comparable to seroprevalence of 0.82% reported by Chatterjee et al, 1.1% reported by Pandey et al 0.9% reported by Dwivedi, 0.61% reported in a study by Parveen et al and 1.11% reported by Sibia et al.¹⁵⁻¹⁷

In our study the prevalence of HBV infection was highest in the age group 26-30(46.1%). Pontius Bayo et al¹⁸ found that the prevalence of HBV infection was higher among women aged 20 years or younger (20%) compared with the older women. Sibia P et al found 25-30 years to be the most common age group with HBV infection¹⁷

The infants born to seropositive HBsAg mothers should receive 0.5 ml Hepatitis B Immunoglobulin and Hepatitis B vaccine within 12 hours of birth. Blood transfusion is one of the means of transmission of blood borne pathogen and it is found to be significantly associated with HBsAg in our study. Similarly blood transfusion is found significant in the number of studies^{22,23}

We found coinfection with HIV among HBsAg positive pregnant women in 4 patients (0.17%), in Nigeria it was 4.2%²¹ 4.9% in Uganda¹⁹

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.

A number of limitations are there in this study that 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. Also screening should have been done by ELISA method because it is more sensitive method. 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.²⁰

Conclusion

Up to 90% of babies born to HBV carrier mothers develop chronic liver disease at a younger age and represent the most important reservoir in the community. Thus prevention of transmission of infection would be helpful to decrease overall carrier rate. Prevention of perinatal transmission is possible with Immunoprophylaxis of babies shortly after birth. If the pregnant women would not have been diagnosed and managed properly, the future burden of the disease for society and health care resources will be very high. Screening of all pregnant women for HBV infection irrespective of high risk factors and increasing awareness about HBV infection will reduce the risk of HBV infections and carrier state.

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None.

Conflict of Interest

None.

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