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Seroprevalence of hepatitis b surface antigen among pregnant women attending ante-natal clinics in North-Western zone of Rajasthan

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Abstract

Hepatitis B virus (HBV) infection is a public health issue and a major cause of mortality especially in developing countries. Vertical transmission of hepatitis B virus infection is thought to be one of the major routes of transmission in developing countries. In spite of this, routine antenatal screening for hepatitis infection is not yet practiced in many hospitals. This study was undertaken with the aim of determining the prevalence of HBsAg among women attending ante-natal clinic at PBM Hospital Bikaner Rajasthan . A total of two thousand two hundred twelve women were screened for this study for HBsAg using the one step rapid HBsAg Test Kit (Alere Trueline, Alere Medical Pvt.Ltd, Gurgaon, Haryana, India). The HBsAg prevalence was determined to be 0.54% (12/2212) with the highest prevalence (0.27%) recorded in pregnant women aged 25-30 years. Hence it is necessary for screening of pregnant women with Hepatitis B to know the prevalence and prevent further transmission by effective treatment and with necessary precautions. This in turn improves the outcome of the patient and the newborn.

Keywords: Hepatitis B virus, Sero-prevalence, Hepatitis B surface antigen, ante-natal clinics

Introduction

Infectious disease exposures and infections during pregnancy are common events; infectious diseases may impact the pregnant women in several ways, including morbidity and mortality, precipitating fetal loss and transplacental infection of the fetus. Hence pregnant women are at higher risk for morbidity and mortality for several infectious diseases than age matched non pregnant women [1].

Hepatitis B virus (HBV) infection during pregnancy presents with unique management issues for both the mother and the fetus. These include the effects of HBV on maternal and fetal health, the effects of pregnancy on the course of HBV infection, treatment of HBV during pregnancy, and prevention of mother-to-child transmission. Prevention of mother-to-child transmission is an important component of global efforts to reduce the burden of chronic HBV since vertical transmission is responsible for approximately one-half of chronic infections worldwide. The risk of developing chronic HBV infection is inversely proportional to the age at time of exposure. The risk is as high as 90 percent in those exposed at birth without vaccination, while the risk is much lower (about 20 to 30 percent) in those exposed during childhood. Maternal screening programs and universal vaccination of infants have significantly reduced transmission rates [2]. The age group most likely to be affected around the world is the newborn population, particularly in areas with a high prevalence of disease and lack of identification of infected women whose infants are at risk for becoming chronic carriers. In regions with widespread perinatal screening and adequate newborn prophylaxis, horizontal transmission secondary to exposure to contaminated blood products, body fluids, or sexual contact become the primary modes of transmission of HBV in the young adult population [3].

Material & Method: The study was carried out in Department of Microbiology, Sardar Patel medical college, P.B.M. & Attached group of hospitals Bikaner. The study population comprised of 2212 pregnant women attending ANC. Two ml of blood sample was collected

with aseptic conditions. The serum was separated and it was used for the present study. Specimens containing visible precipitates or cloudy specimens were clarified prior to testing by high speed centrifugation i.e. 10,000 revolutions per minute for fifteen minutes before testing. The test was performed within twenty four hours from the time of sample collection.

For qualitative detection of HBsAg, test was done by Immunochromatographic method to diagnose HBV infection. The test was performed and interpreted according to manufacturer's instructions described by Alere Trueline, Alere Medical Pvt. Ltd, Gurgaon, Haryana, India. The HBsAg test result (positive or negative) was noted of individual person. The collected data was represented in tabular form and prevalence rate was calculated. The speed,

sensitivity, ease to perform and interpret the results makes it more useful for both individual as well as large scale studies.

Results: Of the 2212 pregnant women screened for the study only 12 (0.54%) were tested to be positive. The rates of infection were then compared with other variables (age and Socioeconomic Status). Maximum prevalence was found in 25-30 years i.e. 6(0.27%). HBsAg majority of cases (0.41%) were from urban area and only (0.13%) were from rural area. In present study, 1483(67.04%) were middle or upper middle women and 729(32.96%) were poor, 5(0.23%) out of 12 HBsAg positive cases were middle or upper middle women and 7(0.32%) cases were poor.

Table 1: Prevalence of HBV infection and in different age groups of pregnant women

Age	No. of cases	% in terms of total population	No. of HBsAg positive cases	% of HBsAg positive cases
18-24	1349	60.98	2	0.09
25-30	654	29.57	6	0.27
31-34	149	6.74	2	0.09
≥35	60	2.71	2	0.09
Total	2212	100	12	0.54

Table 2: Prevalence of HBV infection in rural vs urban pregnant women.

Residence	No.	No. of HBsAg positive cases	% of HBsAg positive cases
Rural	443	3	0.13
Urban	1769	9	0.41

Table 3: Prevalence of HBV infection in relation to poor and middle upper, middle classes of society.

Socioeconomic status	No.	% in terms of total population	No. of HBsAg positive cases	% of HBsAg positive cases
Poor	729	32.96	7	0.32
Middle or Upper middle	1483	67.04	5	0.23

Discussion: Infection with hepatitis B virus is an accepted global problem and it is estimated that there are more than 350 million HBV chronic carriers worldwide. Whereas the classification of high endemicity of HBV infection has been defined as HBsAg greater than 7% in adult population. Screening asymptomatic people is an important instrument in disease detection, prompt diagnosis and intervention, particularly at an early stage of the disease. This may

improve the health outcome as well as better understanding of the transmission pattern of the disease [4]

The present study reports a prevalence rate of HBs Ag in pregnant women as 0.54%. This rate was relatively low, compared to previous studies which showed the prevalence ranging between 4.1-8.4% [5]. The difference in prevalence rate may be due to geographical variation or detection methods. Similar Indian studies reports a prevalence rates of 0.9% to 7.8% [6, 13].

Study	Year	Location	Prevalence Rate
Bakthavatchalu <i>et al.</i> [6]	2012	Bangalore	7.8%
Khakhkhar <i>et al.</i> [7]	2012	Jamnagar	3.07%
Paranjithi <i>et al.</i> [8]	2009	Krishnagiri	5.1%
Dwivedi <i>et al.</i> [9]	2011	Allahabad	0.9%
Oladimeji <i>et al.</i> [10]	2013	Nigeria	3.9%
Murad <i>et al.</i> [11]	2013	Yemen	10.8%
Zenebe <i>et al.</i> [12]	2014	Ethiopia	3.8%
El-Magrahe <i>et al.</i> [13]	2010	Libya	1.5%

Conclusion: This study provides information on the prevalence of HBV in North western zone of Rajasthan and reveals a slightly low prevalence rate as compared with rates reported among pregnant women in some other parts of the country. This study enumerates the importance of antenatal screening and advocates considering it for the daily practice in decreasing the mortality and morbidity associated with HBV infections.

High prevalence of seropositivity of HBsAg among antenatal female calls for routine vaccination against HBV

infection. Up to 90% of babies born to HBV carrier mothers develop chronic liver disease at a younger age and represent the most important reservoir of infection in the community. Thus prevention of transmission of infection in this group would be helpful to decrease overall carrier rate. Prevention of perinatal transmission is possible with immunoprophylaxis of risk babies shortly after birth. Universal free screening for HBV infection should be offered to all antenatal females on an opt-out basis to

prevent the next generation from being grappled by chronic hepatitis, cirrhosis and hepatocellular carcinoma.

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