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PREVALENCE OF HEPATITIS B IN ANTENATAL WOMEN OF TIRUPATI IN ANDHRA PRADESH

DR. K. H. VASUDEVA NAIDU¹, DR. M. NISSIPRIYA², DR. B. V. RAMANA¹

1. Associate Professor, Department of Microbiology, Sri Venkateswara Institute of Medical Sciences.

2. Senior Resident, Department of Microbiology, Sri Venkateswara Institute of Medical Sciences

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Abstract: Introduction: Hepatitis B virus (HBV) is an important chronic infection transmitted vertically from mother to child. However, the prevalence of HBV infection in antenatal women of Tirupati area was not reported Aim: The prevalence of HBV infection and association of predisposing demographic factors were studied in pregnant women. Materials and Methods: A total of 350 pregnant women were recruited for this study. Blood samples were collected and serum was used to detect HBV surface antigen using ELISA. The data was analysed by Chi-square test. Results: The prevalence of hepatitis B virus in antenatal women of Tirupati of Andhra Pradesh was 6.57% [23/350; 95%CI: 4.20% to 9.70%]. Demographic factors such as age, parity, and socio-economic status was associated with HBV prevalence. Age and parity were directly correlated whereas as socio-economic condition was inversely correlated with HBV prevalence. Conclusion: Pregnant women are more likely to be harbor HBV infection if older, multiparous and belonging to low socio-economic status.

Keywords: Hepatitis B virus (HBV), Pregnant Women, Tirupati



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Corresponding Author: DR. K. H. VASUDEVA NAIDU

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INTRODUCTION

Hepatitis B virus (HBV) is responsible for chronic liver infections globally leading to cirrhosis and hepatocellular carcinoma (Hadziyannis, 2011). Annually over 20 million people are being affected by this virus (Ahmad, 1998) during perinatal period and early childhood (Otto et al., 2012). Individual acquiring HBV during perinatal period remain chronic carriers for the virus (Stevens, 1985).

Antenatal women with HBV infection are more likely to transmit the virus to the infants and newborns (Alter, 2003). Further, the transmission of HBV from mother to foetus occurs perinatally in acute HBV infection and postpartum in chronic infections (Levy and Koren, 1991). HBV is also an important cause for maternal mortality involving hepatic dysfunction (Elinav et al., 2006; Hill et al., 2002). Therefore, screening of pregnant women for HBV and vaccination of infants born to positive mothers is of paramount importance (WHO, 2001; US Preventive Services Task Force, 2009).

The epidemiology of HBV during pregnancy helps health planners for formulating effective strategies to tackle the infection (Ejele and Ojulu, 2004). Hence, in this study, the prevalence of HBV infection among pregnant women attending the antenatal unit of SVRR Hospital, Tirupati was studied by using ELISA for HBsAg. The influence of predisposing demographic factors associated with the prevalence of HBV was also studied.

MATERIAL & METHODS

This study was conducted during February 2016 to May 2016 on pregnant women attending for routine screening at SVRRG Medical Hospital, Tirupati who were willing to participate in the study. Ethical committee clearance was obtained prior to the study. A predesigned proforma was used to collect detailed history from each patient. A total of 350 pregnant women were included in this.

COLLECTION OF BLOOD SAMPLES

Five mL of venous blood was collected from each patient in plain vacutainers and the blood was allowed to clot. Later, the vacutainers were centrifuged at 3000 RPM for 15 min and serum was separated.

DETECTION OF HEPATITIS B VIRUS SURFACE ANTIGEN

Hepatitis B antibodies were detected in the serum samples using ELISA targeting HBV surface antigen. (Monolisa™, BIO-RAD). Positive samples were repeat tested in duplicate using the same ELISA kits.

The prevalence was expressed as percentage (%) with 95% confidence intervals. Chi-square test was used to test the association of various predisposing demographics with the prevalence of hepatitis B. IBM Statistical package for social sciences (SPSS) 19.0V was used for the analysis.

RESULTS

The prevalence of hepatitis B virus in antenatal women of Tirupati of Andhra Pradesh was 6.57% [23/350; 95%CI: 4.20% to 9.70%]. The effect of various predisposing demographics on the prevalence of HBV was presented in Table 1. Among the various demographics studied, age, parity, and socio-economic conditions showed significant influence on the prevalence of HBV in antenatal women. Higher prevalence of HBV (22.78%) was observed in 22-32 years, which was significantly (P=0.001) higher than 19-25 years (3.76%) age group. The prevalence of HBV was significantly (P=0.036) higher in multiparous women (9.55%) than primiparous women (1.54%). Similarly, the prevalence of HBV was significantly higher in lower middle class economic group (10.00%) than middle class (2.50%). Demographics such as education and locality had no significant influence on the prevalence of HBV in antenatal women.

Table 1: Prevalence of Hepatitis B virus in antenatal women.

Age Group (y)	HBV positive (%)	(χ^2 , df)	Sig
19-25	3.76 (10/266) ^a [01.80-06.80]	(19.921,2)	0.001
26-28	12.12 (08/66) ^{ab} [05.40-22.50]		
29-32	22.78(05/18) ^b [09.70-53.50]		
Education			
Literate	6.00 (15/250) [03.40-09.70]	(0.465, 1)	0.926
Illiterate	8.00 (08/100) [03.50-15.20]		
Parity			
Primiparous	01.54 (02/130) [00.19-05.40]	(8.532,1)	0.036
Multiparous	09.55 (21/220) [06.00-14.20]		
Locality			
Urban	6.15 (16/260) [03.60-09.80]	(0.287,1)	0.962
Rural	7.78 (07/70) [03.20-15.40]		
Economic status			

Middle class	2.50 (04/160) [00.69-06.30]	(7.95,1)	0.046
Lower middle class	10.00 (19/190) [06.10-15.20]		

Values in () are actual numbers and in [] are 95% Confidence Intervals; Chi-square test for between and within group values using SPSS software 19.0 V (P<0.05). Proportions with different superscripts are significantly (P<0.05) different

DISCUSSION

In this study the prevalence of HBV surface antigen in antenatal women of Tirupati was found to be 6.57%. This finding is in agreement with earlier studies by Mittal et al. (1996) who found a prevalence of 6.34% in pregnant women in India. Similarly, Gill et al. (1995) found a prevalence of HBVs Ag of 5% in antenatal women. However, several studies reported much lower prevalence of HBV in antenatal women. Mehta et al. (2013) found a 2.9% sero-prevalence of HBV in antenatal women of India. Pandey et al. (2011) reported a HBV prevalence of 1.1% among pregnant women in a government of India study during 2004 to 2008.

In this study, age related prevalence of HBV infection was observed in pregnant women. The prevalence of HBV was lower in young age groups 19-25 years (3.76%) and higher in older age groups 22-32 years (22.78%). Similar results were found in an earlier study by Lao et al. (2014) in China. The authors observed that women younger than 18 years of age are less likely to have HBV infection. In another study, Afzali et al. (2015) found that the prevalence of HBV was the highest among the 25- 29 year age group with the mean age of 26.9 years for pregnant women. The authors opined that higher HBV prevalence in old age group was due to marriage and pregnancy which allows them to attend antenatal care centers where they are detected during screening.

The results of the present study showed that multiparous women (9.55%) were at a greater risk of HBV, compared to primiparous (1.54%) women. This finding is in agreement with Kheiri et al. (2015) who reported positive HBV infection highly correlated with parity. Similarly, in an earlier work, the risk of HBV infections was reported to increase with number of births due to more sexual intercourse during the life time and exposure to obstetric and surgical procedures during child birth (Suen et al., 2010).

The association of economic class was also found on the prevalence of HBV infection in antenatal women. It was observed that HBV infection was more prevalent in lower middle class (10.00%) than middle class (2.50%) women. In one study in Jordan, the authors found that HBV infection was inversely correlated with socio-economic status and women belonging to low

socio-economic class were at higher risk of HBV infection (Batayneh and Bdour, 2002). In another study in Kenya, Okoth et al. (2006) found higher sero-prevalence of HBV in women due to low-socio economic status and genital mutilation.

In conclusion, pregnant women who are in older age, multiparous and belonging to low economic status are likely to be harbor HBV infection. Hence, appropriate vaccination and awareness programmes need to target these high risk groups.

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