



Prevalence & Risk Factor of Hepatitis B Surface Antigen Among Pregnant Women in Tribal Medical College District Adilabad (Telangana)

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ABSTRACT

Background: Hepatitis B virus infection is an important global health problem and India accounts for 10–15% of the entire pool of HBV carriers of the world. Hepatitis B virus infection during pregnancy is associated with a high risk of maternal complications and has been reported as a leading cause of maternal morbidity and mortality. Furthermore, the strong possibility of vertical transmission lends importance to diagnosing acute or chronic hepatitis B virus infection in pregnant women and justifies mandatory antepartum serum HBsAg screening. **Aims & Objectives:** objective of this prospective study, conducted over a period of one year, was to determine the prevalence of Hepatitis B carriers in rural antenatal mothers registered at Rajiv Gandhi Institute of Medical Sciences Adilabad. **Materials and Methods:** The risk factors for HBV infection were also studied. Blood samples collected from the study population under standard procedure were investigated for Hepatitis B surface Antigen (HBsAg) by Rapid Immunochromatography test and positive samples were further confirmed by commercially available ELISA kit. **Results:** The result of this study will help to identify HBsAg positive pregnant women and administer immunoprophylaxis to newborns of infected mothers, thus reducing the mother to child transmission risk. **Conclusion:** This emphasizes the need for mandatory HBsAg testing in pregnant mothers. Women of reproductive age should be involved in a routine vaccination schedule considering the high risk of HBsAg positivity in neonates through perinatal transmission

KEYWORDS

Antenatal Screening, HBsAg, Vertical Transmission

INTRODUCTION

Hepatitis B infection is one of the global public health problems. Its prevalence varies significantly between different populations of the world. The wide variations in social, economic and health factors in different regions may explain the variations in carrier rates from one part of the country to another. Hepatitis B virus causes a spectrum of disease from self-limited hepatitis to acute fulminant and chronic hepatitis which may result in sequelae like liver cirrhosis and hepatocellular carcinoma. It is estimated by WHO (World Health Organization), that about 2 billion people (one-third of the world population) have serological evidence of Hepatitis B infection and 350 million people (5–7% of the world population) harbor chronic infection, and approximately one million die annually from chronic liver disease [1]. The average estimated carrier rate of Hepatitis B infection in India is 4% (area of intermediate endemicity). It accounts for 10-15% of the entire pool of Hepatitis B virus carrier of the world [2]. Hepatitis B infection is transmitted sexually, through blood products and through vertical transmission. About 80% of the infants infected perinatally become carriers [3]. Vertical transmission from mother to child is a major mode of transmission in endemic areas. Antenatal screening of all women for Hepatitis B virus infection and vaccination of babies born to carrier mothers would prevent transmission [4]. Serosurveys are one of the primary methods to detect the prevalence of HBsAg positivity. This study was conducted to determine the prevalence of Hepatitis B surface Antigen (HBsAg) seropositivity in antenatal female attending the rural medical centre. The risk factors for Hepatitis B infection like sexual habits, intravenous drug use, previous blood transfusion, previous surgeries, and contact with infected persons, dental extractions, tattoos and sharing syringes were also evaluated, which would provide information to institute public measures to reduce the transmission of infection.

MATERIALS AND METHODS:

The study was observational and prospective, undertaken

over a period of one year from April 2015 to March 2016, approved by the Institutional Ethics Committee. The present study was conducted in Rajiv Gandhi Institute of Medical Sciences and Research, involving a population of 1400 pregnant women, aged 15–40 yrs attending antenatal clinic. Informed consent was obtained from the study group. Individuals were interviewed by structured questionnaire, including data regarding obstetric history, previous Hepatitis B vaccination, HBsAg status and risk factors for infection. Statistical Analysis was carried out using Statistical Package for Social Sciences (SPSS). The proportional data of this study were tested using Pearson's Chi Square Analysis test and Fisher exact probability test.

Laboratory Assay

About 2 ml of venous blood was collected from each individual under strict aseptic precautions. Rapid Immunochromatography test (HEPA card, Reckon Diagnostics Private Limited, Vadodhara) with a sensitive range of 0.5 ng/ml was employed to detect the presence of HBsAg. For confirmation, blood samples tested positive for HBsAg were subjected to commercially available third generation ELISA (Enzyme Linked Immunosorbent Assay) kit (Bene Sphera HBsAg Microwell ELISA, Avantor Performance Materials India Limited, Uttarakhand) with an analytical sensitivity of 0.2IU/ml. Manufacturer's instructions were followed during the test procedure

Result

A total of 1400 pregnant ladies attending antenatal clinic in a tertiary care hospital, situated in a tribal area, were studied. All the women were asymptomatic and unaware of Hepatitis B vaccination. The age range of the subjects was 15-40 years with a mean age of 27.5 years. The seroprevalence of HBsAg positivity in this current study was 3.07%. Among the 1400 participants, 43 women tested positive for HBsAg. The age distribution and HBsAg screening test results were given in Table 1.

In statistical analysis, the p-value obtained was < 0.001 (statistically significant). The distribution of trimester of pregnancy and HBsAg screening results were given in Table 2. The pvalue obtained was > 0.05, which is statistically insignificant. Analysis of age distribution of HBsAg positive women revealed a relative high prevalence among 26- 30 years. Majority of them were multigravida (66.7%) in first trimester of pregnancy. Risk factors distribution among HBsAg positive women was shown in Table 3.

Table 1:Shows the age wise distribution and HBsAg status (1400)

Age range	Number tested	HBsAg positive	HBsAg Negative
15-25	602	12(12.1%)	590 (87.9%)
26-30	504	20 (25.2%)	484(74.8%)
31-35	238	10 (23.8%)	228(76.2%)
36-40	56	01(5.6%)	55(94.4%)
TOTAL	1400	43	1357

Table-2: HBsAg seropositivity in different trimesters of pregnancy

Trimesters	No of pregnant woman	No. of pregnant women HBsAg positive (%)
First	240	22(10.9%)
Second	647	06(10.7)
Third	513	15(34.2%)

Table -3:Risk factors observed in HBsAg positive women (N=43)

RISK Factor	No. of Antenatal Women
Previous Surgery	19 (22.6%)
Blood Transfusion	14 (30.7%)
Tattoos	5 (8.6%)
Dental Extraction	04 (10.7%)

DISCUSSION

Hepatitis B virus infection is distributed worldwide and it is the 10th leading cause of death. Screening for Hepatitis B infection in pregnant women identifies new borns that will require prophylaxis against perinatal infection. In India, HBsAg prevalence ranges from 2- 8%, placing it in intermediate HBV (Hepatitis B virus) endemicity zone and the number of HBV carriers is estimated to be around 50 million, forming the second largest global pool of chronic HBV infection [5]. While it is generally accepted that the modality of HBV transmission in India is horizontal, the recent report by Dwivedi et al.[6] showing a high prevalence of hepatitis markers suggest that there may be a significant role of vertical transmission as well. A large study involving 8575 pregnant women from Northern India, documented HBsAg carrier rate to be 3.7% [7]. Also a study from Eastern India demonstrated that HBsAg prevalence among antenatal mothers is in conformity with national average of HBsAg prevalence (3-5%) in India [8]. These studies are in consistency with this present study which showed a prevalence of 3.07%. was in agreement with a seroprevalence of 1.1% reported by Pande et al.[9] and comparable to the seroprevalence 0.9% reported by Dwivedi M et al[10]. Some of the studies from India, as carried out by Mittal et al[11], Gill et al[12], Nayak et al[13] and Khakhkhar Vipul et al[14], reported higher seroprevalence rate of 6.3%, 5%, 3.7% and 3.07% respectively, in comparison to our study. In few studies from India, as by S. Chatterjee et al[15] (0.82%) and Shazia Parveen S. et al[8] (0.61%), the seroprevalence rate reported were lower than the present study. The seroprevalence of hepatitis B in pregnant women varies from country to country. Regarding age, in the present study, high HBsAg seropositivity rate in pregnant women was found in age group 26-20 years, which was in agreement with the study of Dwivedi M et al and Khakhkhar Vipul et al.[2,14]. In relation to trimester of pregnancy, the maximum HBsAg seropositivity of 10.20% during first trimester, as found in the present study, was in

accordance with the findings of Khakhkhar Vipul et al.[14]

A combination of Hepatitis B vaccine and human antiHBs Immunoglobulin has been shown in many studies to be highly effective in reducing vertical transmission from chronically infected mothers [13, 14].

CONCLUSION:

The results of this study shed light on many important aspects of HBV infection. It provides information necessary to detect the risk factors and to formulate necessary preventive measures to lessen the burden of new infection. The finding of HBsAg seropositivity in pregnant women in this current study supports that antenatal screening for HBsAg is a helpful strategy for the prevention of vertical transmission of HBV infection. Public health policies should include routine universal antenatal screening of HBV infection and immunization of at risk infants immediately after birth.

References:-

- World Health organization; Hepatitis-B. World Health organization Fact Sheet 204 (Revised August 2008)
- Tandon BN, Acharya SK, Tandon A; Epidemiology of Hepatitis B virus infection in India. Gut, 1996; 38(suppl 2): S56-S59.
- Bubb UK DN, Bassi AP, Mangoro ZM; Seroprevalence of Hepatitis B surface antigen among primary school pupils in rural Hawal Valley Boronto Street, Nigeria. J. Community Med and Primary Health Care, 2005; 7: 20-23.
- Goh KT; Prevalence and control of hepatitis B virus in Singapore. Am Acad Med Singapore, 1997; 26: 271-673. 5. Dutta
- An overview of molecular epidemiology of hepatitis B virus (HBV) in India. Virol J., 2008; 5: 156
- Dwivedi M, Misra SP, Misra V, Pandey A, Pant S, Singh R et al., Seroprevalence of hepatitis B infection during pregnancy and risk Sharavanan TKV et al., Sch. J. App. Med. Sci., 2014; 2(4C):1351-1354 1354 of perinatal transmission. Indian J Gastroenterol., 2012; 30(2): 66-71
- Nayak NC, Panda SK, Zuckerman AJ, Bhan MK, Guha DK; Dynamics and impact of perinatal transmission of hepatitis B virus in North India. J Med Virol., 1981; 21(2):137- 145.
- Banerjee A, Chakravarty R, Mondal PN, Chakraborty MS; Hepatitis B virus genotype D infection among antenatal patients attending a maternity hospital in Calcutta, India: association of infectivity status. Southeast Asian J Trop Med Public Health., 2005; 36(1): 203-206.
- Pande C, Sarin SK, Patra S, Bhutia K, Mishra SK, Pahuja S, et al. Prevalence, risk factors and virological profile of chronic hepatitis
- Dwivedi M, Misra SP, Misra V. Seroprevalence of hepatitis B infection during pregnancy and risk of perinatal transmission. Indian J Gastroenterol 2011; 30:66-71.
- American Academy of Pediatrics; Hepatitis B. In Pickering LK, Baker CJ, Long SS and McMillan JA editors; Red Book: 2006 Report of the Committee on Infectious Diseases. Elk Grove Village IL, 2006: 335-355.
- Kurien T, Thyagarajan SP, Jeyaseelan L, Peedicayil A, Rajendran P, Sivaram Set al.; Community prevalence of hepatitis B infection and modes of transmission in Tamil Nadu. Indian J Med Res., 2005; 121(5): 670-675
- Wheelely SM, Boxall EH, Tarlow MJ, Gatrad AR, Anderson J, Bissenden Jet al.; Hepatitis vaccine in the prevention of perinatally transmitted hepatitis B infection. Final report of a West Midlands Pilot study. J Med Virol., 1990; 30: 113-116.
- Andre FE, Zuckerman AJ; Review: protective efficacy of hepatitis B vaccines in neonates. J Med Virol., 1994; 44(2): 144-151.
- Chatterjee S, Ravishankar K., Chatterjee R., Narang A, Kinikar A. Hepatitis B Prevalence during Pregnancy. Indian Pediatr 2009; 46:1005-8.