

Seroprevalence & Risk Factors of Hepatitis B Surface Antigen among Pregnant Women Attending a Tertiary Care Hospital of Southern Rajasthan, India

Megha Sharma¹, Saroj Golia², S.K. Mehra³, Manoj V Jani^{4*}

¹Assistant Professor; ²Professor, Department of Microbiology, Ananta Institute of Medical Sciences Research Centre, Rajsamand. Ex-Professor & Head of The Department, Department of Microbiology, Geetanjali Medical College & Hospital, Udaipur. ⁴Assistant Professor, Department of TB and Chest, Ananta Institute of Medical Sciences Research Centre, Rajsamand

ABSTRACT

Background: Hepatitis B virus infection is a major global health problem and India accounts for 10-15% of the entire pool of HBV carriers of the world. Prevalence of Hepatitis B in pregnant women worldwide is 2.5 to 1.5%, whereas in India it is 2 to 7%. Hepatitis B virus is a double stranded DNA virus. The study was undertaken to determine the seroprevalence of Hepatitis B among the pregnant women in southern part of Rajasthan at a rural based tertiary care teaching hospital. **Methods:** This is a prospective study conducted at a tertiary care hospital, Udaipur, Rajasthan, from August 2015 to December 2017. Blood samples were collected from 1011 pregnant women with age ranging from 15-45 years. Screening of HBsAg was done by RPHA method and positive HBsAg tests were confirmed by ELISA. The data of those, who were found to be positive for HBsAg was statistically analyzed with the chi square tests, and results were considered significant if the p value was <0.05.

Results: The overall HBsAg seroprevalence rate was 1.28%, among the total 1011 pregnant women included in this study. HBsAg seroprevalence was highest, (1.64%) in 15-25 years of age group, and 1.71% in the second trimester of pregnancy. The correlations of seroprevalence rate of HBsAg among selected age groups and according to second trimester of pregnancy were not found statistically significant. (p value>0.05)

Conclusion: In this study the seroprevalence of Hepatitis B surface antigen was 1.28%. To prevent vertical transmission in the pregnant women, they should be screened for HBsAg at the first antenatal visit for appropriate management.

Keywords: Hepatitis B surface antigen, pregnant women, Vertical Transmission

DOI:10.21276/iabcr.2018.4.4.23

Received: 28.11.18

Accepted: 16.12.18

*Corresponding Author

Dr. Manoj V Jani

Assistant Professor, Department of T.B. & Chest, Ananta Institute of Medical Sciences Research Centre, Rajsamand.

Email I.D. manojjani27@yahoo.com

Copyright: © the author(s) and publisher. IABCR is an official publication of Ibn Sina Academy of Medieval Medicine & Sciences, registered in 2001 under Indian Trusts Act, 1882.



This is an open access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial

INTRODUCTION

Hepatitis B Virus (HBV) infection is one of the most common public health problems. India has over 40 million hepatitis B virus carriers accounting for 10-15% of the entire pool of HBV carriers of the world.^[1,2] However, the epidemiology and pattern and consequence of HBV infection varies greatly from one part of the world to another also changes with time. Hepatitis B is caused by double stranded DNA virus belonging to hepadnaviridae family. It leads to acute hepatitis and may also have serious complications like acute and chronic hepatitis, cirrhosis and hepatocellular carcinoma.^[3-5] Hepatitis B Virus infection during pregnancy, is associated with a high risk of maternal complications. Prevalence of hepatitis B in pregnant women worldwide is 2.5 to 1.5%, whereas in India is 0.2 to 7.7%⁶ Ten percent of infants born to women with acute HBV infection during the first trimester

of pregnancy are HBsAg positive at birth, and 80 to 90% of neonates become HBsAg positive without prophylactic therapy, if acute maternal infection develops during the third trimester of pregnancy.^[7,8] Screening and evaluation of hepatitis during the pregnancy is much more important to prevent mortality of mother and child. However there is a scarcity of systematic information on the prevalence of HBV infection among pregnant women in India including the study area. This will be useful to address the current prevalence status of hepatitis B during pregnancy, the present study aimed to determine the seroprevalence of hepatitis B surface antigen among pregnant women. The risk factors of Hepatitis B infection like IV drugs, previous Blood transfusion history, previous surgeries, tattooing, piercing etc were also

Access this article online	
Website: www.iabcr.org	Quick Response code
DOI: 10.21276/iabcr.2018.4.4.23	

How to cite this article: Sharma M, Golia S, Mehra SK, Jani MV. Seroprevalence & Risk Factors of Hepatitis B Surface Antigen among Pregnant Women Attending a Tertiary Care Hospital of Southern Rajasthan, India. Int Arch BioMed Clin Res. 2018;4(4):77-79.

Source of Support: Nil, **Conflict of Interest:** None

evaluated, which would provide information to institutional and public measures to reduce the transmission of infection.

METHODS

The present study was undertaken over a period of one and half year from August 2015 to December 2017, approved by the institutional Ethics Committee. The present study was conducted at a rural based tertiary care teaching hospital at Udaipur district of Rajasthan. A population of 1011 pregnant women age ranging from 15-45 years attending Antenatal clinic was involved in the study. Individuals were interviewed by structured questionnaire including data regarding obstetric history, previous HBV vaccination, HBsAg status of self and spouse and the associated risk factors of infection were also asked.

Laboratory Assay: About 2 ml of venous blood was collected from each individual after obtaining a written consent under strict aseptic precautions. Rapid immunochromatography test (HEPA card) was employed to detect the presence of HBsAg. For confirmation, blood samples tested positive for HBsAg were subjected to commercially available fourth generation ELISA (Enzyme Linked Immunosorbent Assay) Kit Hepalisa by J. Mitra & Co. Pvt. Ltd with antigen sensitivity 0.1ng/ml was used. Manufacturer's instructions were followed during the entire test procedure.

RESULTS

A total of 1011 pregnant women attending antenatal clinic in a tertiary care hospital, were studied. All the women were asymptomatic and were unaware of Hepatitis B status. The subject age ranges from 15-45 years. The seroprevalence of HBsAg positivity in this current study was 1.28% among 1011 participants 13 women tested positive for HBsAg. Age distribution and HBsAg screening tests were given in Table 1. In statistical analysis, the p-value obtained was >0.05 (statistically insignificant). The distribution of trimester of pregnancy and HBsAg screening results were given in Table 2. The p value obtained was >0.05 which is statistically insignificant. Analysis of age distribution of HBsAg positive women revealed a high prevalence (1.71%) among 15-25 years majority of them were primigravidae in second trimester of pregnancy. Associated risk factors distribution among HBsAg positive women was shown in Table 3.

Table 1:- Age wise distribution and HBsAg status (n=1011)

Age	Number tested	HBsAg positive	HBsAg negative
15-25	364	6(1.64%)	358 (98.35%)
26-30	384	4 (1.04%)	380 (98.95%)
31-35	208	3(1.44%)	205 (1.44%)
36-40	47	0	47(100%)
41-45	8	0	8(100%)
Total	1011	13	998

Table 2:- HBsAg seropositivity in different trimesters of pregnancy (n=1011)

Trimesters	No of Pregnant women	HBsAg positive (%)
First	243	3 (1.23%)
Second	467	8(1.71%)
Third	301	2 (0.66%)

Table-3 Risk Factors observed in HBsAg Positive women (n=13)

Risk Factors	No of ANC
History of Blood Transfusion	3(23.07%)
Previous Surgeries	2 (15.38%)
HIV status	0
Tattooing	4 (30.76%)
Piercing	13(100%)

DISCUSSION

The prevalence of HBsAg varies widely in different parts of the India. The variety of socioeconomic status of the population studied, genetic factors, and other risk factors contribute to the variance of seroprevalence rate. The prevalence of HBsAg positivity in pregnant women has been reported to range from 2.61-6.3% in various studies.^[9-12] In our study, the overall seroprevalence of HBsAg positivity in pregnant women 1.28%, was in accordance with a seroprevalence of 1.1% reported by Pande et al^[13] and also comparable to the seroprevalence 1.15% by Ambade et al.^[14] Dwivedi et al^[15] study shows the declining seroprevalence of HBsAg 0.91. Few other studies from India by Chatterjee et al^[16] (0.82%) and Shazia Parveen S. et al^[17](0.61%), the seroprevalence rate reported were lower than the present study. Other studies from India as carried out by Mittal et al,^[18] Gill et al,^[19] Nayak et al,^[20] and Khakhkhar Vipul et al,^[21] reported higher seroprevalence rate of 6.3%, 5%, 3.7% and 3.07% respectively in comparison of our study. Also, the seroprevalence of HBsAg among pregnant women in our study can also be comparable with 1.6%, 1.47% and 1.37% as reported in some countries respectively like Saudi Arabia,^[22] Turkey^[23] and Pakistan.^[24] Regarding age, in the present study, high HBsAg seropositivity rate in pregnant women was found in age group of 15-25 years (1.64%) in agreement with Ambade et al, Dwivedi M et al and Khakhkhar Vipul et al, and smita Thakkarwad et al.^[25] In our study highest seroprevalence of HBsAg positivity was found in second trimester 1.71%. This was with comparable studies of Padmavati Palange et al^[23] and Mehta et al^[26] and variance with the findings from similar works, Dwivedi M et al and Khakhkhar Vipul et al, and smita Thakkarwad et al.^[25]

CONCLUSION

This study provides necessary information to detect the risk factors to formulate necessary preventive measures. The HBsAg seropositivity rate of 1.28% in pregnant women in this study recommends and supports an appropriate antenatal screening, so that the vertical transmission of Hepatitis B virus infection can be avoided. Public health policies should include routine universal screening of HBV infection and immunization of risk infants immediately after birth.

Funding: No funding sources

Conflict of interest: None

Ethical Approval: Obtained

REFERENCES

- World Health Organization. Introducing Hepatitis B Vaccine in Universal Immunization Programme in India. A Brief Scenario. 2012. Available from: <http://www.whoindia.org/en/section6/section8.htm>
- Uyar Y, Cabar C, Balci A. Seroprevalence of hepatitis B virus among pregnant women in Northern Turkey. Hepatitis Monthly. 2009;9(2):146-149.

3. Kolawole OM, Wahab AA, Adekanle DA, Sibanda T, Okoh AI. Seroprevalence Of hepatitis B Surface antigenemia and its effects on hematological parameters in pregnant women in Osogbo, Nigeria. *Virol J*.2012;9:317.
4. Jonas MM, Reddy RK, Demedina M, Sehiif ER. Hepatitis B Infection in large municipal obstetric population: characterization and preventon of perinatal transmission *Am J Gastroenterol*.1990;85:277.
5. Tse KY, Ho LF, Lao T. The impact of maternal HBsAg carrier status on pregnancy outcomes: a case-control study. *J Hepatol* 2005;43:771–5.
6. Gukk HH, Majumdar PD, dhurinjiboy KR, Desai HG, prevalence Of Hepatitis B, antigen In pregnant women and patients with liver disease. *J Assoc. Physicians Of India*.1995;43:247-48.
7. Hieber JP, Dalton D, Shorey J. Hepatitis and pregnancy. *J Pediatr* 1977;91:545-9.
8. Reinus J, Leikin E. Viral hepatitis in pregnancy. *Clin Liver Dis* 1999;3:115-30.
9. Shazia PS, Shyamala R, Rao JR, Rao RMV. Sero-prevalence of Hepatitis B surface antigen among pregnant women attending antenatal clinic in a teaching hospital. *J Microbiol Biotech Res* 2012;2:343-5.
10. Pande C, Sarin SK, Patra S, Bhutia K, Mishra SK, Pahuja S, et al. Prevalence, risk factors and virological profile of chronic hepatitis B virus infection in Pregnant Women in India. *J Med Virol* 2011;83:962-7.10.
11. Biswas SC, Gupta I, Ganguly NK, Chawla Y, Dilawari JB. Prevalence of hepatitis B surface antigen in pregnant mothers and its perinatal ransmission. *Trans R Soc Trop Med Hyg* 1989;83:698-700.11.
12. Mittal SK, Rao S, Rastogi A, Aggarwal V, Kumari S. Hepatitis B:potential of perinatal transmission in India. *Trop Gastroenterol* 1996;17:190-2.12.
13. Horvat RT, Tegtmeier GE. Hepatitis B and D viruses.Manual of Clinical Microbiology. In: Murray PR, Baron EJ,Jorgensen JH, Pfaller MA and Tenen RH.editors. Washington D.C: ASM Press.2003:1464-78.
14. Vijay C Ambade, Indu Bhushan, Rashmi Sinha, Seroprevalence Of Hepatitis B Surface Ntigen Among Pregnant Women In Rural Based Teaching Hospital Of Northern Maharashtra, India. *International Journal of Medical Science and PublicHealth* | 2014 | Vol 3 | Issue 12
15. 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. *Indi-an J Gastroenterol.*, 2012; 30(2): 66-71
16. Chatterjee S, Ravishankar K., Chatterjee R., Narang A, Kinikar A. Hepatitis B Prevalence during Pregnancy. *Indian Pediatr* 2009;46:1005-8.
17. Banerjee A,Chakravarty R, Mondal PN, Chakraborty MS; Hepatitis B virus gen-otype 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.
18. Hepatitis in pregnancy. ACOG Technical Bulletin Number 174-- November 1992. *Int J Gynaecol Obstet* 1993;42:189-98.
19. Gill HH, Majumdar PD, Dhunjibhoy KR, Desai HG. Prevalence of hepatitis B e antigen in pregnant women and patients with liver disease. *J Assoc Physicians India* 1995;43:247–8.
20. 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* 1987;21:137–45.
21. Khakhkhar VM, Bhuvu PJ, Bhuvu SP, Patel CP, Cholera MS. Sero-prevalence of Hepatitis B amongst Pregnant Women attending the Antenatal clinic of a Tertiary Care Hospital, Jamnagar(Gujarat). *National Journal of Medical Research* 2012;2:362-5.
22. Alrowaily MA, Abolfotouh MA, Ferwanah MS. Hepatitis B virus sero-prevalence among pregnant females in Saudi Arabia. *Saudi J Gastroenterol* 2008;14:70–2.
23. Yavuzcan A, Altinbas A, Altinbas S. An unexpected low Hepatitis B seroprev alence in pregnant women from the rural Southeastern Turkey. *African Journal of Microbiology Research* 2011;5:3942-5.
24. Khattak ST, Ali Marwat M, Khattak lu, Khan TM, Naheed T. Comparison of frequency of hepatitis B and hepatitis C in pregnant women in urbanand rural area of district Swat. *J Ayub Med Coll Abbottabad* 2009;21:12-5.
25. Padmavali Palange¹, B Mohan Rao², Seroprevalence of Hepatitis B surface antigen among preg-nant women attending rural based tertiary care teaching hospital in Northern Telangana, India: A cross sectional study. *Perspectives in Medical Research*|January–April 2018 | Vol 6 | Issue 1.
26. Mehta KD, Antala S, Mistry M, Goswami Y. Seropositivity of hepatitis B, hepatitis C, syphilis, and HIV in antenatal women in India. *J Infect Dev Ctries*2013; 7:832-37.doi:10.3855/jidc.2764.

