

A retrospective study of seroprevalence of Hepatitis B virus infection among antenatal women in a tertiary care hospital, Ahmedabad

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Abstract

Background: Type B hepatitis is the widest spread and most important type among all viral hepatitis. The spread of infection from mothers who are carriers of HBV to their babies appears to be an significant mode of transmission in China and Southeast Asia. The screening of Hepatitis B virus infection in antenatal women helps to prevent vertical transmission. This study was carried out to know the prevalence of hepatitis B virus in asymptomatic Antenatal women. **Material and Method:** All the blood samples were collected in sterile plain vaccutte in Antenatal care clinic and sent to Microbiology laboratory. Samples were then tested to detect HBsAg (viral marker) by Enzyme Linked Immunosorbent Assay (ELISA) and Immunochromatography ((rapid) technique. **Result:** In our study seroprevalence of hepatitis B virus in pregnant women was 0.50% of which the maximum patients were of age group 21-30 which is a child bearing age. Therefore screening of pregnant women for hepatitis B virus is necessary in order to identify those neonates at risk of transmission. **Conclusion:** As this viral infection is preventable through vaccination, early screening and creating awareness would be helpful to the community to reduce the number of Hepatitis B virus infection in new born and improve health of community. **Key words:** Hepatitis B virus, antenatal screening, ELISA, immunochromatography.

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INTRODUCTION

Hepatitis B virus infection is a serious global public health problem.² Hepatitis B virus is a double stranded DNA virus composed of a nucleocapsid core (HBcAg), surrounded by an outer lipoprotein coat (also called envelope) containing the surface antigen (HBsAg).³ It is a type of DNA virus belonging to the family Hepadnaviridae.⁴ The virus was first discovered as 'Australian antigen' and later named Hepatitis B surface Antigen (HBsAg) in the blood of

patient.⁵ Hepatitis B envelope Antigen (HBeAg) was discovered later as a marker for patients at a high risk for transmission of the disease.^{6,7}

More than a one third of global population is estimated to be infected by HBV. About quarter of them become HBV carriers⁸. Worldwide about 1 million deaths occur each year due to chronic form of disease⁹. The sera of infected patients may contain as many as 10^{10} infectious Virion per ml³. The natural reservoir of HBV is man. Hepatitis B virus attacks liver cells and can lead to liver failure, cirrhosis or cancer of liver later in life. The asymptomatic HBsAg positive pregnant women can be identified by detecting HBsAg in their blood. Transmission can occur at any stage; in utero, during delivery (maximum risk) and during breast feeding. Risk is maximum if mother is HBeAg positive.¹ If mother is positive for HBsAg) then immediate care of baby to be taken in form of immunoglobulin and vaccination. Antenatal screening will also help in preventing further transmission to her spouse by taking due precaution during sexual contact.¹⁰

OBJECTIVE

To determine seroprevalence of Hepatitis B infection in antenatal women and to prevent vertical transmission to the baby.

MATERIAL AND METHODS

For the present study 4131 pregnant women visiting antenatal care clinic in the Department of Obstetrics and Gynecology, GMERS medical college and hospital, Sola were studied for detection of HBsAg between January 2020 to December 2020. The approval was obtained from the institute research council and ethics committee of sola civil hospital, Ahmedabad prior to the commencement of this study. Every pregnant woman coming for antenatal care at the study location was screened for Hepatitis B virus according to national guidelines.¹¹ All pregnant women were evaluated for serum HBsAg using ELISA (Merilisa kit) and Rapid immunographic test. (Reckon Kit).

Study design

This retrospective study was conducted to determine the seroprevalence of the HBsAg among the women visiting antenatal care clinic at GMERS medical college and hospital, Sola, Ahmedabad.

Study population

The study population was pregnant women attending antenatal clinic in GMERS medical college and hospital.

Study duration

The study was conducted from 1st January 2020 to 31st December 2020

Inclusion criteria

All the pregnant women who visited for antenatal care at the institute

Exclusion criteria

Women who were not pregnant.

OBSERVATION AND RESULT

Total 4131 antenatal women were screened for Hepatitis B Surface Antigen in GMERS medical college and hospital, sola, Ahmedabad from January 2020 to December 2020. A total of 21 cases were found to have HBsAg positive out of 4131 who underwent testing, indicating a prevalence rate of 0.50%. Such low prevalence is suggestive of increased awareness of people towards vaccination and routine antenatal screening. The mean age of HBsAg positive pregnant women was 26.23 years. Four subjects (19%) were from rural area while 17 (81%) were residing in urban area. None of these antenatal women had HBV-HCV or HBV-HIV co-infection. Most common age group with HBV infection was 25 – 30 years, with 21 subjects indicating a prevalence rate of 0.50%.

TABLE: 1 Seroprevalence based on age group of Antenatal women

Age group(year)	Prevalence
15-20	0.25%
21-25	0.43%
26-30	1.19%
31-35	0.34%
36-40	0%
41-45	0%

TABLE: 2 Seroprevalence based on domicile among HBV positive antenatal women

Domicile	Prevalence
Urban	81%
Rural	19%

DISCUSSION

Seroprevalence of hepatitis B virus in antenatal women was 0.50% in our study. We have also compared some other studies from different parts of India showing different prevalence of Hepatitis B virus in antenatal women.

Name of study	Year of publication	Sample size	Prevalence rate
Mehta K <i>et al.</i> ¹⁵	2013	1810	2.9
Bakthavatchalu <i>et al.</i> ¹⁶	2012	500	7.8 %
Khakhkhar <i>et al.</i> ¹⁷	2012	2050	3.07%
Dwivedi M <i>et al.</i> ¹³	2011	4000	0.9
Pande C <i>et al.</i> ¹⁴	2011	20104	1.2
Chaterjee S <i>et al.</i> ¹²	2009	36379	0.82

Our study showed Hepatitis B prevalence rate 0.50% out of 4131 samples in antenatal women which is lower than the previous studies mentioned in the above table which might be due to increase awareness in form of increase number of screening in antenatal population, due to availability of an effective vaccine against Hepatitis B and awareness amongst population for use of this vaccine.

CONCLUSION

The risk of chronic infection in Hepatitis B is more if the infection is acquired in early age. The risk of chronicity is >90% in newborn. Neonates who acquire infection from their mother during pregnancy have higher chances of becoming chronic carrier. Such babies develop chronic liver disease at a younger age and represent the most important reservoir of infection in the community. Thus early screening and detection helps in prevention of vertical transmission from mother to foetus and decreases overall carrier rate. Perinatal transmission can be prevented by administration of HBIG to babies within 48 hours of birth. The risk of transmission increases if mother is Hepatitis B envelope Antigen (HBeAg) positive. So, along with HBsAg detection, HBeAg detection should be included in antenatal screening. To further reduce the prevalence, awareness campaign should be run among

community regarding modes of transmission, screening and availability of effective vaccine for hepatitis B virus.

REFERENCES

1. Essential of Medical Microbiology. 2nd edition. Jaypee publishing. 2019:554
2. Knipe DM, Howley PM. Field's virology, 6th edition Philadelphia, Lippincott Williams and Wilkins. 2016:2932-2969.
3. Gitlin N. Clinics in liver disease. Hepatitis B virus update. Elsevier press. August 2019
4. Hollinger FB, Liang TJ. Hepatitis B : The virus and disease. Ncbi.2001:2971-3036
5. Mahoney FJ, Kane MH. Hepatitis B vaccine 3rd edition. W.B. Saunders Company. 1999:158-182
6. Robinson WS. Hepatitis B viruses. General feature. Encyclopedia of virology. London, Academic press Ltd. 1994:554-569
7. Robinson WS. Hepatitis B Virus and Hepatitis D Virus. Principles and Practice of Infectious Diseases. 4th edition. Churchill Livingstone. 1995:1406-1439
8. Jorgensen JH, Pfaller MA, Carroll KC. Manual Of clinical microbiology. 7th edition. American society of microbiology. 2015:1025-42
9. R Anantnarayan, Paniker CK. Textbook of Microbiology. 10th edition. The orient black swan. 2017:542-543.
10. Viral Hepatitis Prevention board. The clock is running. Deadline for integrating Hepatitis B vaccination into all national immunization programmes. 1996.VHPB:1
11. Operational guidelines for lifelong ART for all pregnant women living with HIV for prevention of parent to child transmission of HIV in India. NACO. 2013
12. Chatterjee S, Ravishankar K, Chatterjee R, Narang A, Kinikar A. Hepatitis B prevalence during pregnancy. Indian pediatrics. 2009;46(11):1005-1008.
13. Dwivedi M, Misra P, Misra V. Seroprevalence of Hepatitis B infection during pregnancy and risk of perinatal transmission. Ind. J. Gastroenterology. March 2011;30:66.
14. Pande C, Sarine SK, Patra S. Prevalence risk factors and virological profile of Chronic Hepatitis B virus infection in pregnant women in India. Journal of Medical Virology. June 2011; 83(6):962-967.
15. Mehta K, Antala S, Mistry M, Goswami Y. Seropostivity of Hepatitis B, Hepatitis C, Syphilis and HIV in antenatal women in India. The journal of infection in developing countries. Nov 2013; Vol 7(11):832-837.
16. Bakthavatchalu S. Hepatitis B surface antigen carrier state among asymptomatic pregnant women and its correlation with vertical transmission. Int J Res Pharm Sci. 2012;2(3):1-20.
17. Khakhkhar VM, Bhuvu PJ, Bhuvu SP, Patel CP, Meera SC. Sero-prevalence of Hepatitis B amongst pregnant women attending the antenatal clinic of a tertiary care hosp Jamnagar (Gujarat). Natl J Med Res. 2012;2(3):362-65.

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