

Seroprevalence of Hepatitis B Virus in Pregnant Women at a Tertiary Care Hospital of Eastern India

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ABSTRACT

Introduction: Hepatitis B virus is a DNA virus causing hepatitis in humans. It is thought to be responsible for chronic liver diseases in 75% of cases. Besides other routes, vertical transmission from mother to child is an important one. Testing for Hepatitis B virus infection during pregnancy will help in managing the infants of positive patients and improve their future. Though studies have been carried out on Hepatitis B virus infection in different sub-groups like blood donors, information regarding its incidence in pregnant women is less from our state.

Aim: This study was aimed at throwing light on the magnitude of Hepatitis virus transmission among pregnant women visiting our hospital and its future implications.

Materials and Methods: A prospective study was carried out in Department of Obstetrics and Gynecology at IGIMS, Patna to know the magnitude of transmission of Hepatitis B virus infection in the pregnant population visiting our OPD (booked

and labour room (unbooked) during one year from March 2015 to February 2016. All pregnant women were tested after counselling and informed consent for HBsAg. All negative for it were immunised after delivery. Those who tested positive were further tested for HBeAg, Anti HBe antibodies and HBV DNA levels and referred to gastroenterologist.

Results: Altogether 1150 pregnant women were screened for HBsAg of them 45 tested positive (3.9%), 5 tested positive for HBeAg (11.11%) and 10 had AntiHBe antibodies (22.22%). The seroprevalence rate for Hepatitis B virus infection was 3.9% in this study. This corresponds with the national average of 2-5%.

Conclusion: Screening of pregnant women for HBsAg infection is an important tool to decrease the risk of vertical transmission by timely giving immunoprophylaxis to neonates of infected mothers. Also it provides the opportunity to immunise those women who are negative for HBsAg with Hepatitis B vaccine after delivery.

Keywords: HBeAg, HBsAg, HBV vaccine, Screening, Vertical transmission

INTRODUCTION

Hepatitis B virus affects around 350 million people globally [1]. The seroprevalence is about 5-10% in Sub-Saharan Africa and East Asia [1,2].

India is an intermediate zone for this infection, the seroprevalence rate being 2-7% [2]. Around 40 million people are infected here. Hepatitis B virus is transmitted by blood, body fluids, sexual contact and by vertical transmission. Maternal to child transmission is very common in endemic areas [3]. Acute viral infection is denoted if HBsAg and IgM-AntiHBc get detected in patient's blood. Presence of HBeAg shows that the patient is highly infectious. If HBsAg persists beyond 6 months with or without HBeAg, then the person is labelled chronic carrier [4]. Chronic carriers have a high risk for developing chronic liver disease and hepatocellular carcinoma later in life [5]. Risk of vertical transmission is 20% during third trimester and delivery and the risk becomes 90% if mother is HBeAg positive as well [6].

In India a lot of stress is being given nowadays to reduce

maternal and neonatal mortality. For this, institutional delivery is being promoted. So number of patients coming for antenatal check-up is increasing. This provides us the opportunity to screen patients for Hepatitis B virus infection and improve management of HBsAg positive mothers and their neonates. Also screening of pregnant mothers help the healthcare providers indirectly because they use universal precaution in handling such patients.

AIM

This study was aimed at throwing light on the magnitude of Hepatitis B virus transmission in the pregnant population and its future implications.

MATERIALS AND METHODS

An observational, cross-sectional study was conducted in the Department of Obstetrics and Gynaecology at Indira Gandhi Institute of Medical Sciences, a tertiary care centre in Patna, Bihar. The study was conducted in collaboration with Department of Microbiology over a period of one year,

from March 2015 to February 2016.

This study was approved by Institutional Ethics Committee.

Sample Size

All pregnant women attending our antenatal OPD (booked), or unbooked patients coming for delivery in our labour room were subjected to testing for HBsAg, after proper counselling and informed consent. History of blood transfusion, surgery and jaundice (if any), were noted. Age of the patient was also noted. Total 800 booked pregnant women and 350 unbooked patients in labour were subjected to HBsAg screening testing over a period of one year (sample size i.e. n=1150).

Those women who gave history of immunisation with Hepatitis B virus vaccine were excluded from this study to avoid bias.

Blood sample was taken and detection for HBsAg was done using ELISA technique (AVANTOR Performance Materials, BeneSphera).

Those who tested positive underwent retesting by another ELISA kit (Microscreen) to confirm and were further tested for HBeAg and anti HBeAntibodies to know their infectivity status. Such patients were referred to Department of Gastroenterology for further management.

All patients who tested negative for HBsAg were advised immunisation with Hepatitis B vaccine postnatally. Neonates of positive patients were given both active and passive immunisation.

RESULT

A total of 1150 (n) antenatal women underwent screening for Hepatitis B virus infection over a period of one year.

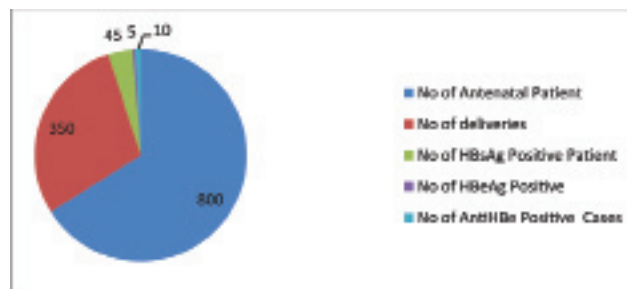
Out of all 45 patients tested positive for HBsAg. The seroprevalence of Hepatitis B was 3.9%. Those who tested positive for HBsAg underwent further test for HBeAg and Anti-HBeAntibodies.

Among these, 5 tested positive for HBeAg and Anti-HBeAntibodies were detected in 10 patients.

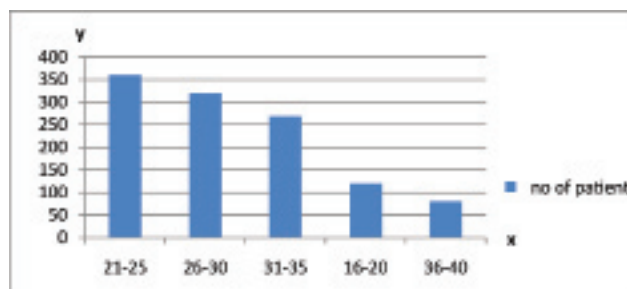
In this study, maximum women were in the age group of 21-25 years (360). 320 women were in the age group of 26-30 years. 120 women were in the age group of 16-20 years whereas 80 were in the age group of 36-40 years. Jaundice was found in 34 patients, while that of blood transfusion and surgery were present in 20 and 18 patients, respectively. All these findings were statistically insignificant. The only statistically significant association was whether the HBsAg positive women were HBeAg or AntiHBe positive or not [Table/Fig-1-3] highlight the findings of this study.

DISCUSSION [TABLE/FIG-4]

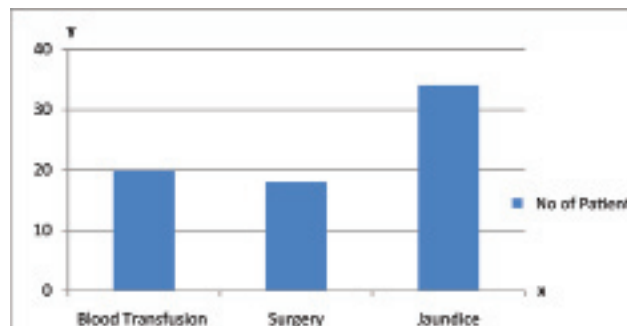
Hepatitis B virus infection is responsible for chronic liver diseases and hepatocellular carcinoma. About 50 million new infections occur every year, majority being vertically



[Table/Fig-1]: Distribution of patients who underwent the screening.



[Table/Fig-2]: Age distribution (years).



[Table/Fig-3]: History of associated illnesses.

transmitted from mother to neonate [7].

It accounts for around 350 million chronic infections worldwide. Transmission of Hepatitis B virus results also occurs by exposure to infectious blood or body fluids, and reusing contaminated syringes and needles.

Without intervention, the risk of perinatal transmission of Hepatitis B virus is greatest for infants born to women who are HBeAg –positive, with infectivity rate being 70%-90% at 6 months of age, 90% of these remain chronically infected [8]. The risk of perinatal infections among the infants born to HBeAg –negative mothers range from 10-40%. Chronic infection persists in 40-70% of such neonates [9-11].

Children born to HBsAg positive mothers who escape perinatal infection might get infected in early childhood due to contact of non-intact skin or mucous membrane with maternal secretions like saliva [12].

So screening pregnant women for HBsAg status helps in

identifying neonates at risk and giving them immunoprophylaxis both active and passive within 12-24 hours of delivery [8]. Active immunisation is done by giving Hepatitis B vaccine and passive immunisation is done with Hepatitis B Immunoglobulin.

India is an intermediate zone in terms of prevalence rate of Hepatitis B virus infection. The rate varies between 2-7%. Even though studies have been carried out in different parts of India in different group of individuals like blood donors, information regarding the prevalence of this infection in pregnant population is sparse, particularly from our state of Bihar.

In this study, seroprevalence rate of HBsAg in pregnant women was 3.9%. The seroprevalence of Hepatitis B virus infection varies between 4-8% in pregnant women in South Africa [13]. This shows that the disease is more endemic in African countries. In Thailand, the prevalence rate varies between 4.1-8.4% [14]. The variation may be attributed to difference in geographical location or in the detection method.

MC Kew (South Africa, 2008) [13]	4-8%
Chanprapah P (Thailand, 1998) [14]	4.1-8.4%
Banerjee (Calcutta, 2005) [15]	3.8%
KM Vipul (Jamnagar, 2012) [11]	3.07%
Present study	3.9%

[Table/Fig-4]: Comparative chart showing seroprevalence rates of different studies.

As the policy of universal screening is increasingly being applied for HBsAg testing in pregnant women, detection rate has increased. Our hospital is a tertiary care centre of Eastern India where patients also come from neighbouring states of Jharkhand & Bihar and even from Nepal.

A study by Banerjee et al., showed the prevalence rate of HBsAg among pregnant women to be 3.8% [15]. Vipul K et al., reported a seroprevalence rate of 3.07% [11].

The outcome of our study corresponds to the national average of 3-5%.

Among the HBsAg positive cases, around 11% turned out to be HBeAg positive as well in our study. Similar results have been reported by Sharavanan TKV et al., [16]. Maximum positivity was seen in the age group of 21-25 years.

History of jaundice was present in many patients but both these findings were statistically insignificant (p value > .05).

LIMITATIONS

The limitation of this study was that sample size was small. Hence, the prevalence of Hepatitis B virus infection in the general population cannot be correctly estimated.

CONCLUSION

In resource-constrained settings like ours, diagnosis of

hepatitis B virus infection is often delayed and hence patients present with its deadly complications like hepatocellular carcinoma requiring liver transplantation.

Screening of pregnant women for HBsAg infection is an important tool to decrease the risk of vertical transmission by timely giving immune prophylaxis to neonates of infected mothers. Also it provides the opportunity to immunise those women who are negative for HBsAg with Hepatitis B vaccine after delivery. There should be emphasis on testing for HBeAg and AntiHBe antibodies in those women who are positive for HBsAg infection. Universal screening of pregnant women, immunisation of negative mothers and proper immune prophylaxis of newborns of positive mothers will prove helpful in reducing the transmission of hepatitis B virus in general population and its acute and chronic complications. In the long run, these methods will help in eradicating this global menace just as we have been able to make India polio-free.

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