



STUDY OF PREVALENCE OF HEPATITIS 'B' IN DIFFERENT GROUPS OF PREGNANT WOMEN ATTENDING AT A TERTIARY CARE CENTRE, AJMER

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ABSTRACT

Background: Viral hepatitis causes both acute and chronic forms of infection with serious complications and sequelae. Prevalence of hepatitis B in pregnant women worldwide ranges from 1.5% to 2.5% whereas in India it varies from 0.2 to 7.7%. Acute HBV infection in early pregnancy is associated with 10% perinatal transmission rate and the rate increases considerably with HBV infection in the third trimester. Present study was conducted to determine prevalence HBV infection in pregnant women and to determine the usefulness of serological methods in the diagnosis of HBV. **Methods:** A prospective laboratory based study was conducted in pregnant women visiting ANC clinic at Rajkiya Mahila Chikitsalaya, Ajmer from May 2022 to October 2022. Samples were tested for HBsAg by rapid card test and for viral load via Truenat (Chip-based Real Time PCR Test for Hepatitis B Virus). **Results:** Out of 245 samples, 07 were positive for HBsAg by rapid card test and 06 were positive for HBV by viral load method. The sero-prevalence of HBV among pregnant women was 2.86% by rapid card test and 2.45% by viral load method. Urban background, 18-25 yrs age group of pregnancy, Muslim religion, secondary level of education, low economic strata and primi-gravida contributed to high sero-prevalence of HBV infection among pregnant women. Blood transfusion, tattooing and jaundice were the major contributing risk factors. Sensitivity, Specificity and Accuracy of Rapid card test (RCT) were found to be 100%, 99.58% & 99.59% respectively. **Conclusion:** Accuracy of Rapid Card Test was found to be 99.59%. Therefore, rapid card tests have a great value for screening large population in a short interval of time. Safe blood transfusion and use of sterile needle for tattoo making must be practised. Screening for HBsAg as well as vaccination of all pregnant women irrespective of risk factors will definitely help to reduce HBV infection.

KEYWORDS : Hepatitis B surface antigen, Pregnant women, Perinatal Transmission, Rapid card test, Truenat viral load

INTRODUCTION

Hepatitis B virus is a partially dsDNA virus, in which transmission occurs via parenteral route, sexual contact, vertical transmission or direct skin contact. Hepatitis B caused by the hepatitis B virus, is a potentially life-threatening infection of liver that affects millions of people worldwide. It is generally accepted that at least 50% people acquired their infection during perinatal period or in early childhood, especially in endemic regions¹. Prevalence of hepatitis B in pregnant women worldwide ranges from 1.5% to 2.5% whereas in India, it varies from 2% to 7.7%.² In most of cases of HBV infection during pregnancy, does not increases mortality or does not have teratogenic effects.

Acute HBV in early pregnancy is associated with 10% perinatal transmission rate and the rate increases considerably with HBV infection in the third trimester. Needle stick injury, blood transfusion, tattooing and jaundice are highly contributing risk factors for HBV infection. When a person is infected with HBV, the first virological marker detectable in the serum is HBsAg, which appears after 1-8 weeks of exposure. Other markers are HBeAg, AntiHBs, AntiHBc and AntiHBe. Management of HBV during pregnancy includes recognition of maternal virological status, assessment of liver disease and perinatal transmission risk minimization.³

The present study aims to know the prevalence of HBV infection in different groups of pregnant women at a tertiary care centre, Ajmer, Rajasthan and to determine the usefulness of serological methods in the diagnosis of HBV infection.

MATERIALS & METHODS

The study was conducted at the Rajkiya Mahila Chikitsalaya, Ajmer from the period of May 2022 to October 2022. 2-5 ml of blood was collected from each participant using aseptic precautions and serum was collected using standard precautions. Primarily samples were tested using commercially available rapid HBsAg test kits (Hepacard supplied by J-Mitra) for detection of HBV infection and Serum samples were further tested for viral load via Truenat (Chip-based Real Time Micro PCR Test) for HBV DNA in the laboratory of Department of Microbiology, J.L.N. Medical College, Ajmer.

RESULTS

Table-1: Seroprevalence Of HBsAg Among Pregnant Women

Results	Number of Cases	Percent Positivity
HBsAg Positive	07	02.86
HBsAg Negative	238	97.14
Total	245	100.00

Table-2: Age Wise Distribution HBV Positive Pregnant Women

Age (in years)	Total Positive	Percent Positivity
18-25	04	3.17
26-30	02	2.35
>31	01	2.94

Table-3: Sero-prevalence Of Hbv Infection For Different Variables

Variables	Total Positive	Percent Positivity
Residence wise distribution		
Rural area	01	1.35
Urban area	06	3.51

Religion wise distribution		
Hindu	04	2.11
Muslim	03	6.38
Sikh	00	0.00
Sindhi	00	0.00
Education wise distribution		
College & above	00	0.00
Higher Secondary	01	2.33
Secondary school	04	6.15
Primary School	01	2.50
Non-literate	01	3.13
Socio- economic Status wise distribution		
High	00	0.00
Medium	05	2.59
Low	02	4.26
Parity wise distribution		
Primigravida	05	4.20
Multigravida	02	1.59

Table-4: Risk Factors Wise Distribution Of HBV Positive Pregnant Women

Risk Factors	HBsAg Positive	Total Cases	% of risk factors
History of Blood transfusion	02	06	33.33%
History of Jaundice	03	13	23.08%
History of previous surgery	02	11	18.18%
Health care worker	00	05	0.00%
Spouse of Health care worker	02	09	22.22%
Tattooing	02	05	40.00%
Piercing	07	213	03.29%

Table-5: Comparison Of Rapid Card Tests To Viral Load Via Truenat

Statistic	Value	95% CI
Sensitivity	100.00%	54.07% to 100.0%
Specificity	99.58%	97.69% to 99.99%
Disease prevalence (*)	2.45%	0.90% to 5.25%
Positive Predictive Value	85.71%	45.91% to 97.70%
Negative Predictive Value	100.00%	
Accuracy	99.59%	97.75% to 99.99%

* by Truenat (Viral load method)

From June 2022 to Sept 2022, a total of 245 blood samples of pregnant women were tested for HBsAg by rapid card test. Of the total samples tested, 2.86% (n=07) were found to be positive for HBsAg (Table-1).

Out of the total samples 51.43% (n= 126) were in 18-25 years age group, 34.69% (n= 85) in 26-30 years age group and 13.88% (n= 34) in >31 years age group. Highest seroprevalence was reported in 18-25 years age group (i.e. 3.17%). Sero-prevalence in age group of 26-30 years & >31 years were 2.35% and 2.94% respectively (Table-2).

Table-3 shows the seroprevalence among different groups of pregnant women. Urban background, Muslim religion, secondary level of education, low economic strata and Primi-gravida contributed to high sero-prevalence of HBV infection among pregnant women in the socio-demographic profile. All positives belonged to the third trimester.

The seropositivity was 33.33% (02 out of 06) with a history of blood transfusion, 23.08% (03 out of 13) with a history of jaundice, 18.18% (02 out of 121) with a history of previous surgery. Seropositivity was 22.22% (02 out of 07) in spouse of HCW, 40.00% (02 out of 05) in women with history of tattooing (highest among all risk factors) and 03.29% (07 out of 213) with a history of piercing for HBsAg. No health care workers were found HBsAg positive (Table-4)

Sensitivity, Specificity and Accuracy of Rapid card test (RCT)

were found to be 100%, 99.58% & 99.59% respectively. Disease prevalence was 2.45% by viral load via Truenat chip based micro PCR. Positive Predictive Value and Negative Predictive Value were 85.71% & 100% respectively (Table-5)

DISCUSSION

In the present study, prevalence for HBsAg was 2.86% among pregnant women. The seroprevalence of HBsAg among pregnant women in our study is comparable with Khakhkhar Vipul et al¹(3.07%). Few other studies from India by Chatterjee et al³ (0.82%), Vijay C Ambade et al⁶ (1.15%), Sharma M, Golia S et al⁷ (1.28%) reported seroprevalence rate lower than the present study. This difference may be explained by different sample sizes and socio-demographic characteristics of the studied females.

Primi-gravida, 18-25 yrs age group of pregnancy, urban background, low economic strata, Muslim religion and secondary level of education contributed to high seroprevalence of HBV infection among pregnant women in the socio-demographic profile. Similar results were found by Khakhkhar Vipul et al,⁴ Vijay C Ambade et al,⁶ Mohammed Hammad Abuelgasim et al⁸ and Dwivedi M et al.⁹

In Muslims, prevalence rate was very high in the current study, which is similar to many other studies conducted in Muslim countries.^{10,11,12}

Sensitivity, Specificity and Accuracy of Rapid card test (RCT) were found to be comparable with Sharma M, Golia S et al¹³ & Ansari MH et al.⁽¹⁴⁾

CONCLUSION

Although people are aware about using sterile needles for tattoo making and screening of blood before transfusion, still they are major risk factors for HBV transmission. Therefore, Safe blood transfusion and use of sterile needles for tattoo making must be practised strictly to prevent HBV infection. Accuracy of rapid card test was found to be 99.59%. Therefore, rapid card tests are of great value in screening large population over a short interval of time.

Early screening, increasing awareness about HBV transmission and hepatitis B vaccination of all pregnant women irrespective of risk factors will definitely help to reduce burden of HBV infection in the future.

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