

## Incidence of HBsAg Carrier State in Pregnancy in Eastern Orissa

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**OBJECTIVE** – To find out the extent of carrier state of Hepatitis B Surface Antigen (HbsAg) amongst pregnant women. **METHOD** – The study was conducted on 221 pregnant women. After proper clinical assessment, their blood was screened for HbsAg by the ELISA technique. **RESULTS** – Seventeen women out of 221 were found to be carrying the HbsAg showing an overall carrier rate of 7.69%. All of them were multiparous and belonged to lower economy strata of the society. **CONCLUSION** – There is a need for institution of immunization programme to all potential mothers so that the morbidity and mortality associated with hepatitis B can be avoided.

**Key words** : hepatitis B, HbsAg in pregnancy

### Introduction

The year 1965 witnessed the epoch making discovery of "Australia Antigen" by Blumberg<sup>1</sup>. Subsequently this Antigen was identified to be the surface protein of the hepatitis B virus (HBV) and is now called Hepatitis B Surface Antigen (HBsAg). This antigen is synthesized by the virus lodged in hepatocytes. It circulates in the blood in association with the whole virion, of which it is an integral part. It also circulates freely in two particulate forms independent of the virus. HbsAg alone is noninfectious but is immunogenic and serves as an excellent marker. It appears in blood after 1 to 10 weeks of exposure to HBV and 2 to 8 weeks before the onset of symptoms and abnormal liver functions tests.

There are nearly 215 million carriers worldwide and 78% of these are present in Asian countries<sup>2</sup>. The carrier state in India varies from state to state and ranges from a low of 0.4% to an alarmingly high of 22.1%<sup>3,4</sup> of the screened population. Under these circumstances, since no such work has been done to find out carrier state in this part of the country, the present study was conducted to find out the carrier state of hepatitis B in pregnancy

### Material and Methods

Pregnant women, who were admitted to the obstetric wards and labor room, were picked up at random for

this study over a period of two years. Relevant history was taken, detailed general examination and obstetric examination were carried out and blood samples were collected. ELISA method was employed to detect HbsAg in serum. Estimation of serum bilirubin, AST (GOT), ALT (GPT), alkaline phosphatase and total protein and albumin of all cases was also carried out by an automated analyzer.

### Results

Out of 221 cases taken for the study, 201 (90.96%) were apparently healthy pregnant women. Ten women (4.52%) gave history of hepatitis, two had jaundice in the 2<sup>nd</sup> trimester and eight in the last trimester. The remaining 10 (4.52%) were found to be asymptomatic carriers.

Table – I shows the age distribution of HbsAg positive mothers. The maximum number of women were in the 26-30 year age group.

Table – II categorises the HbsAg positive women in different parity groups. The largest number of women (23.5%) were para 4 in our study group. Para 2 and para 3 contributed equal number of HbsAg positive women (8.1% and 8.8% respectively). There were only 3.2% positive women amongst uniparous ones. Remaining 11.1% women were para 5 and above.

The correlation of socio-economic status with maternal antigenemia is depicted in Table III. Most HbsAg positive women came from the lower and middle income groups.

Table IV shows the relevant predisposing factors in relation to HbsAg positivity. It is significant to note that all patients had history of injections.

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Table I: Age Distribution of HbsAg Positive Women

Age Group (Years)	No. of Cases	No. of HbsAg positive women	Percentage
15 to 20	28	Nil	0
21 to 25	119	9	7.56
26 to 30	52	7	13.46
31 to 35	17	1	5.88
36 and above	5	Nil	0
Total	221	17	7.69

Table II: Parity Distribution of HbsAg Positive Mothers

Parity	No. of cases	No. of HbsAg positive women	Percentage
Para 1	91	3	3.2
Para2	61	5	6.1
Para3	34	3	8.8
Para4	17	4	23.5
Para 5 and more	18	2	11.1
Total	221	17	7.69

Table III: Maternal Antigenemia and Socio-Economic Status

Socioeconomic Class	HbsAg negative women		HbsAg positive women	
	No.	Percentage	No.	Percentage
Upper	15	7.35	0	0
Middle	141	69.12	8	47.1
Lower	48	23.53	9	52.9
Total	204	100	17	100

Table IV: Predisposing Factors

Factors	No. cases	No. HbsAg positive women	Percentage of HbsAg positive women
Injections	221	17	7.69
Surgical operations	19	3	15.79
Blood transfusion	10	3	30.00
Jaundice	10	7	70.0

Table V: Results of Liver Function Tests

Type of Cases	Bilirubin (mg/dl)	AST (u/L)	ALT (u/L)	ALP (u/L)	Protein (gm%)	Albumin (gm%)
HbsAg-Ve women	0.73 ± 0.24	25.95 ± 8.54	22.10 ± 9.60	152.80 ± 22.19	6.87 ± 0.62	3.82 ± 0.59
HbsAg+Ve women	1.32 ± 0.33	59.00 ± 38.94	64.50 ± 79.70	173.20 ± 8.82	6.57 ± 0.51	3.36 ± 0.58
Women with hepatitis	3.93 ± 1.06	87.90 ± 21.75	78.50 ± 19.30	201.00 ± 0.29	6.13 ± 0.63	3.07 ± 0.29

u/L = units per litre

**Table VI: Incidence of Acute Hepatitis in Different Trimesters**

Trimester	No. of cases	Percentage
First	Nil	Nil
Second	2	20
Third	8	80
Total	10	100

The liver function profile of all expectant women is given in Table – V. The values of healthy women are within normal limits and serve as control. The normal values of serum bilirubin, protein and albumin are 0.2 to 0.8 mg/dl, 6.5 to 8.5 gm/dl and 3.5 to 5 gm/dl respectively. The normal limits of enzymes like AST (GOT) ALT (GPT) are 5 to 40 units/L whereas those of ALP are 35 to 125 units/L. During pregnancy however the ALP level goes up which is a normal physiological occurrence. The HbsAg negative women show a normal pattern. However HbsAg positive women as well as women suffering from hepatitis show gross abnormal patterns.

Table – VI describes the women suffering from acute hepatitis during pregnancy. Most of them had it in the last trimester.

### Discussion

In this study, a total of 17 HbsAg positive women were detected out of a population of 221 nonimmunized pregnant women, the overall incidence of carrier state being 7.69%. Seven of the carriers suffered from hepatitis B during the course of pregnancy whereas 10 were free from any symptoms. All the carriers belonged to the middle and lower economic strata of society and multiparity had a significant positive correlation with the carrier state. Almost all the carriers were also in the active reproductive age group of 21 to 30 years<sup>6</sup>. Multiparity was associated with increased rate of carrier state in our study. All the carriers had taken injections previously. This might have contributed to the seropositiveness. The liver function was also somewhat affected in the carriers and this finding is in agreement with earlier reports<sup>7,8</sup>.

This study shows the extent of penetration of the hepatitis B virus into the pregnant population, a problem which needs to be properly identified. It is needless to say that the carrier state is a potentially infective state and can readily transmit the virus. As non-immunised women are predisposed to become a victim of this virus, widespread immunisation of the adolescent girl population will help reduce this menace.

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