ASYMPTOMATIC HBV INFECTION IN PREGNANT WOMEN

By

K. DAS, M. S. RAJAGOPALAN, P. JAIRAJ, N. BALASUBRAMANIAUM AND T. J. JOHN

SUMMARY

Three hundred and five antenatal women were screened for the presence of HBsAg in their sera by the RPHA technique, and 33 of them (10.85%) were found to be assymptomatic carriers of HBV infection. There were a significantly greater number of carrier mothers following previous LSCS as compared to those following normal delivery 33.3% to 9.4% $p < 0.01$. Pregnancy complications like the development of acute hepatitis 13%, incidence of low birth weights infants 30%, and the birth of one congenitally abnormal foetus were other significant findings. The importance of routine screening of antenatal mothers for HBsAg has been emphasized.

Introduction

Acute hepatitis in 3rd trimester of pregnancy in developing countries is well known to be associated with a high maternal and perinatal morbidity and mortality (Lahiri 1976). Not much is known about asymptomatic hepatitis B virus (HBV) infection in pregnant women. Though there is no corroborating evidence, the prevalence of asymptomatic HBV infection in pregnant women is likely to be high, as they have a higher risk of exposure to nosocomial infection especially HBV via injections and surgical procedures at places with inadequate sterilization practices. It was our aim to determine the frequency of asymptomatic HBV infection in pregnant women, the factors associated with this infection, the course, and complications in pregnancy.

From: Christian Medical College Hospital, Vellore.

Accepted for publication on 9-1-89.

Material and Methods

Three hundred and five antenatal women attending the outpatient clinic in Christian Medical College, Vellore, were screened for the presence of Hepatitis B surface antigen (HBsAg) in their sera by the Reversed Passive Haemagglutination (RPHA) and Passive Bacterial Agglutination (PBA) method (Rajagopalan 1981). All these patients were clinically healthy and chosen randomly. These women were interviewed in detail about past blood transfusion, contact with and history of jaundice, injections, and obstetric history. Those found to be HBsAg positive were followed up till term and delivery for evidence of clinical hepatitis and other pregnancy complications. After delivery, the mode of delivery and weight of these infants were recorded, to determine any association of these factors with asymptomatic HBV infection.

All samples were doubly checked for HBsAg by the RPHA and PBA methods,

to rule out false positive tests. Both tests are very sensitive 3rd generation tests done using a commercial kit available in India.

Results and Discussion

Thirty three of 305 women screened were found to be HBsAg positive giving an incidence of 10.85%. There have been reports of a 13.8% prevalence in Kerala pregnant population (Shanmugam 1982) and 12% from Delhi (Sachdeva 1986). All these studies show a higher rate than that found even in blood donors of 9.6% (Thyagarajan 1980). This can be explained by the fact that reproductive women are exposed to more procedures like MTP, episiotomy, and caesarean section. Also in India methods like branding, tatooing, acupuncture, used for the treatment of many pregnancy complications, may predispose them to developing HBV infection. This is further emphasised by our finding that 33.3% of mothers with previous caesarean section were HBsAg positive, compared to 9.4% of mothers after previous vaginal delivery ($p < 0.01$) (Table I).

TABLE I
Previous Caesarean Sections in HBsAg Positive and Negative Mothers

Previous Caesarean	Total Number	No. HBsAg positive	% HBsAg positive
Yes	18	6	33.3
No	260	27	9.4

This distribution according to age of these positive mother is shown in Fig. I. Ninety-four per cent of the mothers being in 20 to 30 year age group, in correlation with the maximum susceptible age for acquiring HBV infection (Skinhoj 1972).

Eighty per cent of the positive mothers had no significant history of contact or exposure to HBV infection, indicating that they must be asymptomatic HBsAg carriers (Shanmugam 1982).

Of the 33 HBsAg positive mothers 23 subsequently delivered in this hospital, and were included in the follow up group. Three of these mothers developed acute hepatitis later on in pregnancy.

Acute HBV infection in pregnancy

The complications observed in this group are given in Table 2. Preterm labour was seen in 2 of the 3 patients, this is in consonance with the findings of Smithswick 1972.

The liver function tests of the 3 mothers with acute exacerbation of hepatitis is given in Table III. Two of the mothers showed no enzyme elevation, indicating that they may have chronic liver disease.

TABLE II
Pregnancy Complications in 3 mothers with Acute (HBsAg +ve) Hepatitis in the third trimester

Preterm Labour	2
Low Apgar Scores	Nil
Low birth weight	2 (due to prematurity)
Fulminant Hepatitis	Nil
Chronic Hepatitis	1 (Hepatoma and death)

All three mothers recovered in the postnatal period and were discharged. One of them was admitted 6 months later with terminal malignancy. A post mortem liver biopsy showed hepatoma. The chronic HBsAg carrier state has been known to be associated with cirrhosis of the liver, chronic active hepatitis and hepatoma (Okada 1977).

Asymptomatic HBV infection

The pregnancy complications in this group is given in Table IV.

TABLE III

Liver Function Tests in 3 Mothers with Acute Exacerbation of Hepatitis in Pregnancy

Name	Bilirubin		Enzymes		HBsAg Status	Course of Disease
	Total	Direct	SGOT	SGPT		
Shanta Kumari	7.3 mg	5.5 mg	310	200	+ve	Improved
Vimla	4.2 mg	3.8 mg	12	8	+ve	Chronic liver disease, death, Hepatoma
Valarmathy	2.5 mg	2.1 mg	27	11	+ve	Improved

TABLE IV

Pregnancy Complications in Mothers with Asymptomatic HBV Infection

Onset of acute hepatitis	3
Preterm Labour	Nil
Small for dates babies	6
Low Apgar score <5	1 (in the congenital malformed infant)
No. of Caesarean sections	6
Congenital abnormalities	1 (hydrocephalus with exomphalus)

There was a significant increase in the incidence of SFD infants in this group (6 out of 20), compared to 25 out of 227 in the HBsAg negative group (30% to 11%) ($p < 0.05$). Our findings definitely point towards an association between the HBsAg carrier state and placental insufficiency, but it requires a larger series of patients to clarify the significance of this finding.

There was no congenitally malformed infant born with hydrocephalus, dextrocardia, and exomphalos. This infant was also found to be HBsAg positive. There has been only one more report by Marshall (1972) of a similar finding. The occurrence of congenital abnormality in this case may or may not be coincidental.

Of the 20 mothers, 6 were delivered by caesarean section, all done for obstetric indications. None was related to the HBsAg positive status.

The incidence of transmission of HBV infection from mother to infant has been found to be very high in tropical countries (Clodd 1975 and Derso 1978). A very large percentage of these infants become chronic carriers of HBsAg. Thus in parts of the world, like India, where the HBsAg carrier rates in pregnant women is high, vertical transmission of HBV infection from mother to infants accounts for a constant source of carrier infants. These infants are more prone to chronic liver disease, cirrhosis, and hepatocellular carcinoma in later years (Akina 1972).

Conclusions

The high carrier rate of 10.85% in Indian pregnant women, the development of acute hepatitis in 10%, hepatoma and death in 3.3%, and the danger of transmission to the infant, indicates that asymptomatic HBV infection is a major health hazard in our country.

Policies on prophylactic measures, and follow up should be taken to decrease the incidence of morbidity and mortality, caused by this infection.

Based on the findings of our study we recommend:

(1) Routine screening of all antenatal

mothers for the presence of HBsAg.

(2) Careful follow up of HBsAg positive women in pregnancy for the development of acute hepatitis and development of placental insufficiency.

(3) Careful sterile techniques during delivery, care with maternal blood, lochia and disinfection of sitz baths is mandatory to prevent horizontal transmission of infection.

(4) Careful long term follow up of mother and infant, for early detection of chronic liver disease, hepatoma, and the chronic carrier state.

References

1. Akina Ohbayash Gastroenterol. 62: 618. 1972
2. Clodd, E., Stephen, M. D., Palmer, Beasley, M. D. N.: Engl. J. Med. 292: 771 1975.
3. Derso, A., Boxal, E. H. and Tarlow: Brit. Med. J. I: 949, 1978.
4. Lahiri, B. C. J.: Obstet, Gynec. India 26: 363, 1976.
5. Marshall, W. C., and Dudgeon, J. H.: Am. Dis. Child. 123: 378, 1972.
6. Okada, K., Nakashima, T.: Virus and the Liver. Ch. 23: 209, 1977.
7. Rajagopalan, M. S., and John, T. J.: J. Clin. Microbiol. 16: 549, 1981.
8. Sachdeva, S. K. and Khurana S. R.: J. Obstet. Gynec. India, 304: 3, 445, 1986
9. Shanmugam, J. and Nair, V. R.: Ind J. Pathol. Microbiol. 25: 273, 1982.
10. Skinhoj, P., Olson, H. and Cohn, J.: Acta. Pathol. Microbiol. Scand. 131: 80: 362, 1972.
11. Smithswick, E. M., and Pascuoi, E.: J. Pediat. 81: 537, 1972.
12. Thyagarajan, S. P., Subramaniam, S. Sunil Solomon: Ind. J. Med. Res. 71: 309-305, 1980.