Original Article

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The Association of Pregnancy Outcomes and HBsAg Positive

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ABSTRACT

Background: Hepatitis B is a common cause of liver disease in South East Asia. The major route of the transmission is perinatal. It is controversial whether or not an adverse pregnancy outcome is related to the hepatitis B antigenemic status (HBsAg positivity).

Objective: To determine relationship between maternal HBsAg positivity and pregnancy outcomes

Patients and Method: A retrospective case control study was conducted. Patient's data were collected from the medical records of the antenatal clinics of both the out-patients and in-patient departments. Data of 164 HBsAg positive and HBsAg negative pregnant women (age and date of delivery matched) were compared.

Results: The overall incidence of HBsAg positivity was 1.93% at the Thai Army Hospital between 1 January 2003 and 31 December 2005. HBeAg was decremented in 103 persons, 40 being HBeAg positive and 63 HBeAg negative. The data of healthy HBsAg positive pregnant women, 20-39 years of age, were compared with those of HBsAg negative pregnancy cases. There were no significant differences in the general demographic data, pregnancy outcomes (e.g., preterm labor, gestational hypertension, gestational diabetes mellitus, postpartum hemorrhage) and perinatal outcomes (e.g.,intrauterine growth retardation, oligohydramnios, preterm birth, fetal distress, chorioamniitis).

Conclusions: There was no relationship between HBsAg positivity and pregnancy outcomes. The presence of HBsAg in pregnant women does not pose an additional risk for the pregnancy and perinatal complications.

Key words : HBsAg, Pregnancy outcomes, Perinatal outcomes

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INTRODUCTION

Hepatitis B virus is a systemic infection predominantly affecting the liver. This virus is a major public health problem worldwide, especially in the Asia-Pacific region where the prevalence rates of hepatitis B virus infection range from 8 to 15%.[1,2] The important routes of transmission are blood or blood products[3-5], sexual, and vertical transmission[6]. Previous studies in Thailand have shown the prevalence of hepatitis B surface antigen (HBsAg) to be approximately 8-10%[7,8]. In a recent study, the average prevalence of HBsAg in Thai pregnant women over a 10-year period was 3.4%[9]. Nowadays, HBsAg testing is a part of routine antenatal screening for all pregnant women. There is as yet little data and also conflicting evidence on the risk of HBsAg positivity on the pregnancy and fetal outcomes. Previous studies showed no relationship between HBsAg and pregnancy outcomes[10-13]. A recent study from Hong Kong reported that HBsAg carriers had increased risks of gestational diabetes, antepartum hemorrhage, and threatened preterm labor[14]. The present study was conducted to re-examine any potential risk of HBsAg on pregnancy and perinatal outcomes.

METHODOLOGY

A retrospective case control study was conducted at Phramongkutklao College of Medicine in Bangkok, Thailand. Study cases were patients delivered over a three-year period between January 2003 and December 2005, who had a positive HBsAg screening. Only healthy singleton pregnancies were selected. For each case, a HBsAg- nagative control without HBsAg match for age and date of delivery was included.

Exclusions were mode of the pregnancies associated with the followings:

- chronic illness such as diabetes, thyroid disease, hypertension, hematologic disease , autoimmune disease, etc.
- multiple pregnancy (twins, triplets, quadrupets, etc.)
- anti HIV positive cases
- age ≤19 years or ≥40 years
- smoking, alcohol drinking

The patient's data were collected from the medical record of the out-patients and in-patient antenatal clinics. All pregnant women attending the antenatal clinic were routinely screened for HBsAg by ELISA technique. Liver biochemical tests, HBeAg and HBV DNA were not routinely performed.

Demographic data included age, gravidity, parity, past health, history of previous pregnancy, contraception, base weight, weight gain, antenatal complication and mode of delivery.

Routine maternal laboratory data were collected, such as anti HIV, VDRL, HBsAg, (HBeAg was not routinely assessed, hematocrit at ANC and before delivery, hemoglobin typing (when hematocrit was less than 30%) and urine protein.

Perinatal information including gestational age, birth weight, apgar score, placenta weight and perinatal complications were collected from the in-patient record.

Statistic analysis

The patient's characteristics were analyzed by descriptive statistics and reported as mean, range and percent. For the results, the differences were analyzed by t-test in continuous variables and Chi-square test or Fisher's exact test in categorical variables. The SPSS (Statistical Package for the Social Sciences, for Windows, Chicago) (version 11.5) was used for statistic analysis. P value of less than 0.05 is considered as significant.

RESULTS

Among the 8,515 pregnancies delivered during this period, 164 HBsAg positive pregnancies (1.93%) and 162 HBsAg negative controls were identified. The mean age was 27.9 ± 5.10 years.

The data of healthy HBsAg positive pregnant women, 20-39 years of age, were compared with those of HBsAg negative controls. There were no significant differences of the general demographic data, such as age, weight at booking, weight gain, hematocrit at booking (%), history of contraception, history of parity and past health (Table 1). Pregnancy outcomes (e.g. preterm labor, gestational hypertension, gestational diabetes, postpartum hemorrhage) and perinatal outcomes (e.g. intrauterine growth retardation, oligohydramnios, preterm birth, fetal distress, chorioamniitis) were also compared between HBsAg positive patients and controls (Table 2, 3). There were no significant differences.

In HBsAg positive pregnancies, HBeAg was

Table 1 General demographic parameters.

	HBsAg positive	HBsAg negative	P-value
Age	28.07 ± 5.31	27.82 ± 4.90	0.648
Weight at booking (kg)	52.72 ± 9.79	51.59 ± 8.53	0.267
Hct at booking (%)	35.41 ± 3.34	35.84 ± 3.20	0.241
History of contraception (%)			
Oral contraceptive pill	92 (56.1)	78 (48.4)	0.183
IM contraception	15 (9.1)	10 (6.2)	0.406
Norplant	1 (0.6)	2 (1.2)	0.620
Condom	3 (1.8)	2 (1.2)	1.000
IUD	1 (0.6)	4 (2.5)	0.212
History of parity			
Gestation	2 (1-8)	0 (0-4)	0.455
Abortion	0 (0-6)	2 (1-5)	0.721
Past health (%)			
Thalasemia trait	28 (17.0)	38 (23.17)	0.152
Anemia	0 (0.0)	2 (1.2)	

Table 2 Antenatal course and complications

	HBsAg positive	HBsAg negative	P-value
Pregnancy weight gain (kg)	15.20 ± 4.92	15.52 ± 4.99	0.57
Hematocrit before delivery(%)	38.18 ± 3.48	38.23 ± 3.99	0.895
Severe preeclampsia	1 (0.6%)	0 (0%)	1.000
Intrauterine growth retardation	1 (0.6%)	1 (0.6%)	1.000
Oligohydramnios	2 (1.2%)	1 (0.6%)	1.000
Gestational diabetes	6 (3.7%)	2 (1.2%)	0.283
Gestational hypertension	3 (1.8%)	0 (0%)	0.248
Prelabour rupture of membrane	8 (4.9%)	4 (2.5%)	0.379
Preterm			
<32	1 (2.63%)	4 (12.90%)	0.166
<34	7 (18.42%)	6 (19.35%)	1.000
<37	30 (78.95%)	21 (67.74%)	0.409
Placenta previa	1 (0.6%)	2 (1.2%)	0.620
Placenta accreta	0 (0%)	1 (0.6%)	0.495

documented only in 103 persons, 40 HBeAg positive and 63 HBeAg negative. Data of HBeAg positive and negative cases were compared, there being no differences among demographic data, pregnancy outcomes and perinatal outcomes (not shown in the Table).

DISCUSSION

Routine HBsAg screening for all pregnancies has been implemented. The major nation wide in Thailand proven advantage is interruption of vertical transmission of the hepatitis B virus by the administration of immune serum globulin and vaccine to all newborn.

There have been many studies to explore the effects of hepatitis B infection on pregnancy outcomes, beyond the vertical transmission.

Previous studies on HBsAg positive pregnant women have led to controversy about the HBsAg status and pregnancy outcomes.

Pastorek, *et al.*[11] in a retrospective comparison between maternal. HBsAg positive cases and controls found no relationship between HBsAg positive mothers and pregnancy outcomes. That small study was conducted in nonendemic area, and might not be able to address the adverse outcomes. In a study in Hong Kong where hepatitis B viral endemic; Wong

Table 3 Pregnancy outcomes and neonatal complications.

	HBsAg positive	HBsAg negative	P-value
Gestational age (wk)	38.55 ± 2.42	38.52 ± 2.56	0.930
Mode of delivery			
Normal labour	134 (81.7%)	122 (75.8%)	0.223
Cesarean section	27 (16.5%)	32 (19.9%)	0.473
Instrumental delivery	2 (1.2%)	7 (4.3%)	0.102
Birth weight (gm)	2981.03 ± 509.63	3052.08 ± 442.06	0.181
Placenta Weight (gm)	579.93 ± 120.70	600.37 ± 117.55	0.123
Retained placenta	3 (1.8%)	2 (1.2%)	1.000
Postpartum hemorrhage	2 (1.2%)	2 (1.2%)	1.000
Apgar score at 1 min	8.20 ± 1.55	8.42 ± 1.11	0.142
Apgar score at 5 min	9.48 ± 1.01	9.54 ± 0.61	0.574
Fetal distress	2 (1.2%)	1 (0.6%)	1.000
Chorioamniitis	3 (1.8%)	0 (0%)	0.248
Thick meconium	1 (0.6%)	1 (0.6%)	1.000

SF, *et al*.[12] collected an effective sample size, and reported no additional risks factors of HBsAg positivity in pregnant women.

Another recent study from Hong Kong by Tse KY, *et al*.[14], reported an opposite observation to previous studies, that HBsAg carriage was associated with increased risk of gestational diabetes, antepartum hemorrhage, and threatened preterm. It was noted, however, that all HBsAg positive patients were included, regardless of previous underlying diseases.

Our study was conducted in an endemic area for hepatitis B virus. Our result is concordant to previous major studies, after adjusting the confounding factors, and having collected sufficient accumulated enough sample size.

We found no relationship between HBsAg status and pregnancy outcomes. Additionally, we compared the HBeAg positive group with high viral replication and the HBeAg negative group. No differences in the characteristics of patients and pregnancy outcomes were shown. It was concluded, therefore, that (1) HBsAg carriage did not pose additional risk for the pregnancy, and (2) it not was necessary to check serum transaminases or HBV DNA level if there was are clinical indication.

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