

HEPATITIS B INFECTION IN PREGNANT WOMEN OF A CHINESE POPULATION

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Hepatitis B virus (HBV) is a highly infectious pathogen and 90% of those infected become chronic carriers with life long treats of developing chronic hepatitis, cirrhosis and hepatocellular carcinoma. Neonatal infection of HBV can occur in as much as 85% of infants born by a HBV surface antigen-positive mother. Hence, further studies are necessary to evaluate the prevalence of hepatitis B infection among pregnant women and to establish preventive strategies.

In order to understand the prevalence of hepatitis B infection among pregnant women in Hu Peh Province, China, pregnant women of the high-risk group there were subjects of this study. The purpose for this research is to establish a prevention program for those women with high risk of infection in this region and to prevent the disease from spreading to their offsprings.

A total of 617 healthy women in Wu Han, Hu Peh Province, in their third to sixth month of

pregnancy at ages from 20 to 30 were included in this study. Venous bloods from these women were collected and sera were prepared. Screening for the HBV serological markers including HBsAg, HBeAg, Anti-HBs, Anti-HBe and Anti-HBc was performed using Enzyme-Linked Immunosorbent Assay (ELISA).

Among 617 healthy pregnant women, 47 were HBsAg positive (7.62%), 5 were Anti-HBs positive (0.81%), 17 were HBeAg positive (2.76%), 3 were Anti-HBe positive (0.49%), 34 were identified as Anti-HBc positive (5.51%) and 17 were positive for both HBsAg and HBeAg (2.76%)

Pregnant women from the present studied population showed a higher rate of HBsAg positive and more of them were HBeAg carriers than others even reported. However, the prevalence rates of Anti-HBs positive and Anti-HBc positive were lower than previously reported studies.

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Introduction

Hepatitis B is a serious public health problem worldwide (1-4) and its high prevalence gives deadly threats to most population (5). Lin, et al. (6) revealed that HBsAg carrier rate correlated significantly with age, level of education, type of insurance and religious belief.

Perinatal transmission is one of the most efficient modes of Hepatitis B virus infection leading to long-term health consequences. Infants from women positive in hepatitis B surface antigen (HBsAg) and Hepatitis B "e" antigen (HBeAg) have a 70-90 percent of chance to be infected, and 85-90 percent of infected infants become chronic carriers (7). Hawkins et al. (8) thought that perinatal transmission of HBV infection is strongly associated with its HBeAg positive mother.

Moreover, Roingeard et al. (9) have indicated that postnatal transmission from HBsAg positive mothers can further spread the disease to their offsprings. Therefore, there are three potential modes for HBV transmission from mothers to their infants, in utero, during delivery, and after birth.

Hepatitis B virus is highly infectious and human are the only nature host for the virus (10). HBV could be transmitted via different modes such as contact with infectious blood or serum. Transmission of hepatitis B also includes the sharing of needles and syringes among drug addicts, dental equipments and tattooing needles wet completely sterilized the shaving of razors and toothbrushes, and sexual contact (11). Beside, there is also a possible vertical transmission from mothers to their fetus or newborns during perinatal periods (11-14). Most infections in newborns or children are asymptomatic, however 90% of patients become chronic carriers of chronic hepatitis, cirrhosis and hepatocellular carcinoma (15-20).

Petermann and Ernest (21) indicated that vertical transmission is an effective route for

neonatal infection of hepatitis B virus, and approximately 10% to 85% of infants born by hepatitis B surface antigen (HBsAg) positive mothers will become infected, especially mothers with HBeAg. Subsequently, up to 90 percent of infants infeted by their mothers at birth develop chronic HBV infection (22).

In order to understand the prevalence of hepatitis B infection among pregnant women, a study was conducted to screen 617 pregnant women from the Wu Han, Hu Peh Province China.

Samples and Methods

From October, 1989 to June, 1990, a total of 617 healthy women aging from 20 to 30 in their third to sixth month of pregnancy from Wu Han region in Hu Peh Province, China, were included in the screening program. Five ml of venous blood sample was collected from each women and sera were prepared by centrifugation of clotted blood sample. Those sera were stored at -70°C until use. HBV serological markers, including HBsAg, HBeAg, Anti-HBs, Anti-HBe, Anti-HBc were screened by Enzyme-Linked Immunosorbent Assay (ELISA) (Abbott Laboratories North Chicago IL).

Result

The result of the HBV serological marker screening of the 617 pregnant women in Wu Han region showed that 47(7.62%) of them were HBsAg positive. Five (0.81%) of them were found to be Anti-HBs positive, seventeen (2.76%) HBeAg positive, three (0.49%) positive for Anti-HBe, 34(5.51%) positive for Anti-HBc, and 17(2.76%) positive for both HBsAg and HBeAg (Table-1).

Discussion

Most HBV infected newborns or infants are asymptomatic, but, they become chronic carriers and possibly developing chronic hepatitis, cirrhosis and hepatocellular carcinoma later in their lives. (1,2,10). One route of such infection is via the HBV infected mother. Therefore, HBV infection in fetus as well as their mothers is worthy of being investigated.

A total of 617 healthy pregnant women aging from 20 to 30 at their first trimester to second trimester of pregnancy in Wu Han region of China, were selected for the screenings for possible HBV infections. The blood screenings for HBV serological markers found that 47 (7.62%) women were HBsAg positive. This positive rate was lower than that reported in Wu et al. (23), Roingear et al. (9) and Liu et al. (15) in which 16.23%, 13.7% and 17.91% positive rate was reported respectively.

However, the HBsAg positive rate was higher than 3.96% (416/10519) and 4.33% (53/1224) reported by Sangfelt et al. (17) and Erdem et al. (19) respectively. Present study showed the rate of HBeAg-positive was 2.76% (17/617) and HBsAg/HBeAg-positive was 2.76% (17/617), lower than 6.88% (73/1061) observed by Liu et al. (15) but higher than 0.55% (58/10519) described by Sangfelt et al. (17), 0.33% (4/1224) by Erdem et al. (19) and 1.41% (4/284) by Roingear et al. (9). As for the existence of antibodies, it was found that an Anti-HBs positive rate was 0.81% (5/617) lower than 59.83% (70/117) and 68.8% (730/1061) reported by Wu et al. (23) and Liu et al. (15) respectively, Anti-HBe positive was found to be 0.49% (3/617) in this study, which were lower than 31.67% (336/1061), 3.15% (331/10519) and 2.29% (28/1224) reported by Liu et al. (15), Sangfelt et al. (17) and Erdem et al. (19) respectively. The Anti-HBc positive rate of 5.51% (34/617), found in this study, was also lower than 86.32% (101/117), 76.53% (812/1061) and 79.9% (227/284) observed

by Wu et al. (23), Liu et al. (15), and Roingear et al. (9) respectively.

The results indicated the low titers of Anti-HBs, Anti-HBe and Anti-HBc antibodies among pregnant women in Wu Han region susceptible to HBV. Ikeda et al. (7) indicated that perinatal transmission of HBV is largely preventable. Perinatal screening can identify women who are HBsAg positive and therefore allows treatment of their infants with hepatitis B immune-globulin and hepatitis B vaccine, a regimen that is 85-95 percent effective in preventing the carrier state. Lin et al. (6) also suggested that the best way to prevent HBV infection is vaccination. Petermann and Ernest (21) and others (14,19,22) also believed that 90% of infections can be prevented if HBsAg-positive mothers can be identified and their offsprings can be treated promptly after delivery with hepatitis B immune globulin and the HBV vaccine.

Reece (14) pointed out that the prenatal screening of all pregnant women and follow-up vaccination of all infants in the first priority to eliminate HBV infection. The immunization of at-risk adolescents and adults are also equally important. It is expected that the incidence of hepatitis B virus infection will decline if all these procedures are taken. In the preventive steps, health education concerned with hepatitis B virus should be enhanced and promoted. Couples and pregnant women should be recommended to take HBV test before marriage and at early pregnancy. It has been suggested that further examinations by various tests should be performed on suspicious carrier to receive proper treatments (5). Since the nature course of hepatitis B virus appears to be dynamic, possibility of intrauterine infection should not be ruled out by a single negative-test (5). Pao et al. (16) also indicated that HBsAg-negative pregnant women are still potentially of transmitting HBV DNA to their infants. Therefore we must be aware of the infection, understand the cause, and

take preventive steps to limit the spreading of HBV.

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Table-1: Number of Infected Carriers and Positive Rate in Blood Screening of 617 Pregnant Women from Wu Han Region in Hu Pehn Province

Item	HBsAg	Anti-HBs	HBeAg	Anti-HBe	Anti-HBc	HBsAg HBeAg
Number of Carriers	47	5	17	3	34	17
Positive rate (%)	7.62%	0.81%	2.76%	0.49%	5.51%	2.76%

懷孕的中國婦女與 B 型 肝炎病毒感染之調查研究

劉桂霞

B 型肝炎病毒的感染率，不但高而且百分之九十之感染者成為慢性帶原者，終身受到慢性肝炎、肝硬化及肝癌的威脅。將近85%被 B 型肝炎病毒感染的新生兒，是來自有 B 型肝炎表面抗原陽性的母親。因此，引起我作研究評估 B 型肝炎在孕婦中感染情況，以便建立預防措施。

為瞭解中國湖北省孕婦，受 B 型肝炎病毒感染的情形，經研究、評估後對這類高危險人群以及未懷孕婦女採取有效的預防措施，阻斷 B 型肝炎病毒之感染，以免危害到下一代。

我們以湖北省武漢地區孕婦保健站，領有生育卡的二十歲至三十歲，已懷孕三個月至六個月的617位健康孕婦為對象，空腹抽取靜脈血，以酵素免疫分析法(ELISA)測定血清中之乙型肝炎病毒感染標誌(Markers): HBsAg, HBeAg, Anti-HBs, Anti-HBe, Anti-HBc。

617位已懷孕的健康孕婦，抽血檢驗結果，發現HBsAg陽性者有47位佔7.62%，Anti-HBs陽性者有5位佔0.81%，HBeAg陽性者有17位佔2.76%，Anti-HBe陽性者有3位佔0.49%，Anti-HBc陽性者有34位佔5.51%，HBsAg及HBeAg均陽性者有17位佔2.76%。

從這研究中顯示出，懷孕的中國婦女，HBsAg陽性者以及HBeAg帶原者都比其他研究報告高。然而Anti-HBs陽性者以及Anti-HBc陽性者都比以前研究報告低。

關鍵字：B 型肝炎