

SEROLOGICAL PROFILE OF HEPATITIS B, HEPATITIS C AND HUMAN IMMUNODEFICIENCY VIRUSES AMONG PREGNANT WOMEN

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ABSTRACT

Purpose: The incidence of infections with hepatitis B (HBV), hepatitis C (HCV) and human immunodeficiency (HIV) viruses that can be transmitted from mother to fetus has been increasing in the general population. **Methods:** We evaluated up the serological test results of 644 pregnant women (mean age±SD: 27.92±5.2 years) during a period of 18 months. **Results:** We found out that the seropositivity for HBsAg and anti-HBs was 3.2% and 37.8% respectively. No pregnant woman was anti-HCV(+) and anti-HIV(+) in our study group. **Conclusion:** The "at risk" babies can only be identified through screening of all mothers during pregnancy or even before pregnancy for candidates.

Key Words: Serology, HBV, HCV, HIV, Pregnant Women.

INTRODUCTION

The main infectious agents screened in the follow-up of pregnancy are usually the TORCH group (1); However, some blood-borne viral infections such as hepatitis B (HBV) (2), hepatitis C (HCV) (3) and human immunodeficiency (HIV) (4) viruses also can be transmitted from mother to fetus both vertically and/or horizontally. Screening for these viruses among pregnant women has gained more importance in parallel to their increasing incidence in the general population. In this study, we aimed to determine the seroprevalence of HBV, HCV and HIV infections in all pregnant women evaluated in our laboratory in a period of 18 months and to evaluate serological screening for HBV, HCV and HIV during routine follow-up in pregnancy by means of the tests demanded by obstetricians.

To the limit of our knowledge, this is the first study in Turkey covering screening of three of these viruses together among the same group of pregnant women.

MATERIALS AND METHODS

Patients: 644 sera samples from pregnant women received by the Immunology Laboratory for serologic evaluation for HBV and/or HCV and/or HIV during a period of 18 months were enrolled in this study. The mean age ± SD was 27.9±5.2 years (minimum 16, maximum 54 years).

Serological tests: The serum samples were obtained by centrifugation of peripheral venous blood at 1600xg for 10 minutes. According to the demands of their obstetricians, HBV surface antigen (HBsAg), anti-HBs antibody, antibody

against HCV (anti-HCV) and antibodies HIV -1 and HIV-2 (anti-HIV-1/2) were screened. For all serological tests, we used a very sensitive paramagnetic chemiluminescent immunoassay system and commercial kits designed for the system (Access®, Sanofi Diagnostics-Pasteur, Marnes-La-Couquette, France).

RESULTS

The serological test results for HBV, HCV and HIV of the sera samples collected from pregnant women in last 18 months are given in table 1.

Among the 644 women, HBsAg and anti-HBs were requested, and so performed for 228. The results are given in table 2.

HBsAg was requested, and so tested for 632 (98.1%) of 644 pregnant women included in this study and HBsAg was the only marker requested for 404 (63.9%) of 632. The second most frequently requested marker was anti-HBs. It was requested, and so tested for 246 (38.2%) pregnant women. Anti-HBs was the only requested marker for 20 (8.1%) of 246. Among 644 pregnant women followed-up in 18 months period, anti-HIV and anti-HCV markers were requested and tested for 213 (33.1%) and 168 (26.1%) women

respectively.

DISCUSSION

In a meta analysis, 20 studies were tested together and among pregnant women in our country; the seropositivity for HBsAg is 4.6% in 17037 pregnant women and seropositivity for anti HBs 19.3% in 5062 pregnant women in Turkey (5). In our study group of 644 pregnant women, the seropositivities for HBsAg and anti-HBs were found to be 3.2% and 37.8% respectively using automatic paramagnetic chemiluminescent immunoassay system. Vertical HBV transmission can be in utero transplacental, perinatal or postnatal but it is especially perinatal and related to aspiration of infected blood, amniotic fluid or maternofetal transfusion. If the mother is infected by HBV in the first trimester of pregnancy but seroconversion has occurred there is no risk for vertical transmission. If the mother is a chronic carrier of HBV and HBeAg is negative, there is a low transmission risk. If she has an acute HBV infection in the third trimester, there is a high vertical transmission risk. For this reason the virologic tests should be done during each trimester. The detection of anti-HBs in a single serum sample should not be considered as evidence of elimination of infection. HBsAg and

Table 1: HBV, HCV and HIV serology among pregnant women in our laboratory.

Serological marker	Screened ^a (n _s)	Positive (%)	Negative (%)	n _S / n _T (%)
HBsAg	632	20 (3.2%)	612 (96.9%)	98.1%
Anti-HBs	246	93 (37.8%) ^b	153 (62.2%)	38.2%
Anti-HCV	168	0 (0%)	168 (100%)	26.1%
Anti-HIV	213	0 (0%)	213 (100%)	33.1%
TOTAL (n_T)		644		

^a The number of women screened for the specific serological marker

^b Their mean anti-HBs titer was 235.10±212.13 mIU/ml (minimum 12, maximum 650 mIU/ml).

Table 2: HBsAg and anti-HBs results of 228 pregnant women in our laboratory.

Serology	Number	Percentage (%)
HBsAg(-), anti-HBs(+)	84	36.8%
HBsAg(+), anti-HBs(-)	5	2.2%
HBsAg(-), anti-HBs(-)	135	59.2%
HBsAg(+), anti-HBs(+)	4	1.8%
TOTAL	228	100%

anti-HBs can be positive simultaneously in some part of recovery period or in mutant HBV infections (6). Similarly, in our study group, 4 of 228 HBsAg(+) women tested for both HBsAg and anti-HBs were also anti-HBs(+) (1.8%).

The seroprevalance of HCV infection varies from 0.14 to 6% in the world (2) while it is reported as 1.8% by Gurbuz, et al (7) and 0.54% by Aydin, et al (8) in Turkey. Since HCV can be

transmitted to new-born vertically from mother with high titre (greater than 1 million copies per millilitre) HCV-RNA in her circulation (9); the vertical transmission of HCV is much rarer compared to HBV (3). Perinatal transmission of HCV infection was documented to be 5-6% by the Centres for Disease Control and Prevention in USA (10). Chang reported that vertical HCV transmission affects 0-15% (mean 4.7%) of infants of the mothers with HCV infection (3). If anti-HCV is found to be positive, it is recommended that HCV-RNA should be tested by reverse transcriptase polymerase chain reaction (RT-PCR) analysis (11). There has been no universally accepted recommendation of prophylaxis aid for the babies born of anti-HCV(+) mothers yet; therefore, screening of the pregnant woman is very important. The babies whose mothers were anti-HCV positive and HCV RNA positive should be born by C/S and after birth, immunoglobulins should be administered (12,13). In our study group, only 168 out of 644 were tested for HCV, and we did not find any anti-HCV positivity (0%).

The "at risk" babies can only be identified through screening all mothers during pregnancy (or even before pregnancy for candidates). Prevention of infection in this group is a key element in any nation's strategy to reduce the incidence of and eventually eliminate HBV, HCV and HIV infections in its population as the persistently infected infants are a reservoir of infection throughout their lives.

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