

Prevalence of Hepatitis B, Hepatitis C and Human Immunodeficiency Viruses During Pregnancy

GEBELERDE HEPATİT B, HEPATİT C VE HIV VİRÜSLERİNİN GÖRÜLME SIKLIĞI

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Summary

Objective: The incidence of infections with hepatitis C virus (HCV), hepatitis B virus (HBV) and Human Immunodeficiency virus (HIV) that can be transmitted from mother to fetus has been increasing in general population. Aim of this study is to evaluate the results of screening tests of these blood borne viral infections in pregnant women followed by Obstetric and Gynaecology Department in TCDD Hospital.

Methods: We evaluated the hepatitis B virus, hepatitis C virus and human immunodeficiency virus serological test results in 451 pregnant women (mean age \pm SD: 28 \pm 5 years) done between 1996 and 2000.

Results: The seropositivity for HBs Ag and anti-HCV were 7% (31 out of 451) and 0.7% (3 out of 451), respectively. Anti-HIV of one woman was found to be low titre-positive in three separate immune-assays (tested twice in each session) in our laboratory which was not confirmed by western blot analysis, in reference laboratory.

Conclusion: Routine screening for blood borne viruses; HBV HCV and HIV seems to be necessary in all pregnant women for prevention of newborn virus infection.

Key Words: Prevalance, HCV, HBV, HIV, Pregnancy

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The main infectious agents screened in the follow-up of pregnancy are usually the TORCHE group; however, some viral infections that can be transmitted by blood such as hepatitis B (HBV),

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Özet

Amaç: Genel popülasyonda HCV, HBV ve HIV gibi anneden fetusa geçiş gösteren virusların bulaşma insidansı artmıştır. Bu çalışmanın amacı TCDD hastanesi Obstetrik ve Jinekoloji Ünitesine başvuran gebe kadınlarda, kan yoluyla bulaşma gösteren bu enfeksiyonları tarama testi olarak değerlendirmektir.

Materyal ve Metod: Çalışmada 1996-2000 yılları arasında başvuran ve yaş ortalaması 28.5 olan 451 gebe kadında HCV, HBV ve HIV serolojik testleri tarama testi olarak kullanıldı.

Sonuçlar: HBs Ag, hastaların %7'sinde (31/451) ve anti HCV %0.7'sinde (3/451) pozitif olarak saptandı. Anti HIV ise bir hastada, üç ayrı çift çalışmada düşük titrede pozitif bulundu. Fakat bu sonuç referans laboratuvarında "Western blotting" tekniği ile doğrulanamadı.

Tartışma: Gebelerde HBV, HCV, HIV gibi kan yoluyla bulaşan virusların, rutin taramasının yapılmasının yeni doğanlara viral bulaşın önlenmesinde önemli bir basamak olduğunu düşünmekteyiz.

Anahtar Kelimeler: Prevalans, HCV, HBV, HIV, Gebelik

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hepatitis C (HCV) and human immunodeficiency virus (HIV) can be transmitted also from mother to fetus both vertically and/or horizontally (1,2,3,4). The screening for these viruses among pregnant women have gained much more importance parallel to their increasing incidence in the general population.

The aetiological agent responsible for most cases of post transfusion non-A, non-B (NANB) hepatitis has been cloned and characterised (5).

This virus, now termed hepatitis C (HCV), is a positive-strand RNA virus distantly related to the Flaviviridae. Hepatitis C infection causes an indolent and slowly progressive liver disease that is asymptomatic until the development of decompensated liver disease and, often, liver cancer (6).

In this study, we aimed to determine seroprevalence of blood borne viral infections: HBV, HCV and HIV infections in the pregnant women followed by Obstetrics and Gynaecology Department in TCDD Hospital.

Materials and Methods

Patients : 451 pregnant women who were followed-up by the Department of Obstetrics and Gynecology of TCDD and sent to the Central Diagnostic Microbiology Laboratory of the same hospital for serologic evaluation for HCV, HBV, HIV between 1996-2000 were enrolled in this study. The mean age \pm SD was 28 ± 5 years (18-44 years). The data for each woman were accumulated only during pregnancy period.

Serology : The serum samples were obtained by centrifugation of peripheral venous blood at 1600xg for 10 minutes. HBsAg, anti-HCV and antibody to HIV -1 and HIV-2 (anti-HIV-1/2) were tested by a very sensitive paramagnetic chemiluminescent immunoassay system (Access[®], Sanofi Diagnostics-Pasteur, Marnes-La-Couquette, France).

Results

The results of serological test for HBV, HCV and HIV in the pregnant women between years 1996 and 2000 is given in Table I. One patient is seen as anti-HIV(+) in Table 1. Three different serum samples of this patient were tested (twice for each sample) for anti-HIV antibody in our labora-

Table 1. The results of serological tests for HBV, HCV and HIV in the pregnant women between years 1996 and 2000

	HBsAg		Anti HCV		Anti HIV	
	n	%	n	%	n	%
Pregnant women n:451	31	7	3	0.7	1	0.2

tory and all results were low titer-positive. This result was not confirmed by western blot analysis done in Reference laboratory and accepted as false positive result.

HBsAg and anti-HCV were found to be positive in 31(7%) and 3 (0.7%) out of 451 pregnant women.

Discussion

Since the risk of HCV infection for pregnant women and transmission to fetus have been increasing parallel to incidence of these infections in general population, the screening for them during pregnancy has gained much more importance in recent years.

Transmission routes of HCV is mostly similar to that of hepatitis B. Predominant risk factors include parenteral drug use, exposure to blood and/or its products, tattoo, having multiple sexual partners, being health care provider. HCV nucleotide sequences have been demonstrated in viral isolates from sexual partners of HCV positive patients (7). Even there couldn't be found any risk factor in as high as 50% of patients known to be infected by HCV, and in 25-50% of patients, the most encountered risk factor is i.v. drug use in pregnant women (8).

The seroprevalence of HCV infection varies from 0.14 to 6% in the world (2) while it has been reported as 0% by Şahin et al (9), 1.1% by Ayyildiz et al (10) and 0% by Yücel et al (unpublished data) in Turkey. 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; the vertical transmission of HCV is much rarer compared to HBV (3,11). Perinatal transmission for HCV infection was documented to be 5-6% by the Centres for Disease Control and Prevention in USA (12). Chang reported that vertical HCV transmission affects 0-15% (mean 4.7%) of infants of the mothers with HCV infection (8) while Hunt et al showed that vertical transmission of HCV complicated up to 18% of pregnancies in HCV(+), HIV(-) women and 6-36% in HCV(+), HIV(+) women; highest rate being in women with high HCV-RNA or concurrent HIV infection. There has been no universally accepted recommendation of prophylaxis aid for the babies born of an-

ti-HCV(+) mothers yet; therefore, screening of the pregnant woman is very important. In our study group, we found anti H C V positivity as 0.7%.

The main route of transmission of HB V infection from mother to fetus delivery: baby may swallow infected maternal blood or the virus may invade baby through dermal or mucosal scratches from maternal vaginal secretions. In case of caesarean section contact with maternal blood or mixture of fetal and maternal circulations via traumatised placenta may play a role in transmission. Intrauterine transmission is much rarer (5-10%) in first two trimesters while it raises up to 76% in the 3rd trimester. The newborns of HBsAg(+) women are recommended to be immunised against the virus within 24 hours after birth and followed by three doses of vaccine (13,14). This can prevent hepatitis B in 85-95% of infants (13). Instead, some authors recommend hyperimmunoglobulin B administration to baby in first 72 hours and vaccination (again together with immunoglobulin) in the first week of life (14).

Different seropositivity rates for HBsAg have been reported for pregnant women in Turkey so far (15). Yilmaz et al reported that HBsAg seropositivity was 17% among the children of HBsAg(+) mothers while the ratio was 9% in the group with HBsAg(-) mothers in Adana, and concluded that perinatal transmission was much more important than horizontal transmission in Turkey (15). We found that HBsAg positivity as 7% which was a little bit more than the prevalence of normal population.

HIV-1 is the predominant agent of AIDS world-wide. Intrapartum/perinatal transmission from mother to fetus or infant is a major source of infection in developing countries and is increasing in also developed countries as rate of heterosexual spread rise (16). HIV screening is mandatory in blood donation since 1987 in Turkey, anti-HIV-1/2 seropositivity among blood donors was determined to be 0.16 and 0.04% in two different time intervals by using ELISA (17,18). 731 HIV(+) cases were reported between 1985 and December 1997 in our country. HIV-2 is documented to be transmitted more frequently from mother to child than HIV-1. Among 451 pregnant women tested for anti-HIV by this procedure, one (0.2%) was determined to be

positive in our laboratory, so she was transferred to governmental confirmatory laboratory and was found to be negative indicating that the serology results yielded a false positive result.

The screening of blood borne infections, HBV, HCV and HIV during pregnancy seems to be one of the precautions for the spread of the infections in our country having such high prevalences for HBV and HCV. Especially, screening of HBV may reduce the vertical transmission rate of HBV and this seems to be cost effective when prognosis and high chronicity rate of HBV infection and expensive treatment options including transplantation are taken into account.

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