



HBSAG, ANTIHBS ANTI-HCV AND ANTI-HIV SEROPREVALENCE IN PREGNANT WOMEN LIVING

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ABSTRACT

In this study, we aimed to investigate the seroprevalence of HBsAg, Anti-HBs, Anti-HCV and Anti-HIV in pregnant women living in Amasya region. HBsAg, Anti-HBs, Anti-HCV and Anti-HIV results of the 5540 pregnant women who were admitted to Amasya University, Sabuncuoglu Serafettin Training and Research Hospital, obstetrics and gynecology clinics between January 2014 and November 2015 were retrospectively investigated. All markers (HBsAg, Anti-HBs, Anti-HCV and Anti-HIV) were tested in the microbiology laboratory of our hospital by using macro ELISA method. Seropositivity of HBs-Ag and Anti-HCV were detected as 0.9%, and 0.12 % and there was no seropositivity with Anti-HIV in any of the pregnant women. HBs-Ag positivity rates were higher in patients between the ages of 30-40 compared to others. The Anti-HBs seroprevalence of 29.6% was determined in 4752 pregnant women. AntiHBs positivity rates were higher in patients under the age of 20. Pregnant women should be tested for HbsAg in their routine controls. Besides, we believe that performing anti-HCV and anti-HIV screening will be beneficial for pregnant women who are under risks.

Key words: Pregnancy, HBsAg, Anti-HBS, Anti-HCV, Anti-HIV.

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INTRODUCTION

Hepatitis B virus (HBV) (an enveloped DNA virus which is derived from the Hepadnaviridae family) and Hepatitis C virus (HCV) (an enveloped RNA virus which is derived from Flavoviridae family) can lead to various pathologies in the host such as acute infections, persistent infections, fulminant hepatitis, cirrhosis and hepatocellular carcinoma [1,2]. Almost half of the population of the world is infected with HBV and approximately 400-500 million people (5-15%) are hepatitis B carrier. In Turkey, the seroprevalence of HBsAg can vary according to regions and this rate changes between 3.9-12.5 % [3]. HBsAg positivity rate in pregnancies in Turkey is between 3.5 % and 9.3 % and the mean is 4.4 % [4]. Having knowledge of the prevalence of HBV infection in pregnant women is important to protect the infants against HBV infection risks. Throughout the world, almost 300 million people are infected with HCV [2]. In seroprevalence studies performed with healthy

individuals or blood donors in our country, it has been detected that the anti-HCV positivity changes between 0.3 % and 1.8 % [5].

HBV, HCV and human immunodeficiency virus (HIV) can be transmitted from mother to the baby via infected body fluids. In our study, we aim to determine the frequencies of hepatitis B surface antigen (HBsAg), antibodies against hepatitis B surface antigen (anti-HBsAg), hepatitis C antibody (anti-HCV), and HIV antibody (anti-HIV) in pregnant women who were admitted to our hospital in Amasya province.

MATERIALS AND METHODS

5540 pregnant women who were admitted to Amasya University, Sabuncuoglu Serafettin Training and Research Hospital, obstetrics and gynecology clinics between January 2014 and November 2015 were included in our study. The HBsAg, Anti-HBs, Anti-HCV and Anti-HIV results of these patients were retrospectively



investigated in the microbiology laboratory of our hospital. All these markers (HBsAg, Anti-HBs, Anti-HCV and Anti-HIV) were tested by Bayer ADVIA Centaur XP-Siemens (Germany) auto analyzer by using the ELISA chemiluminescence method.

RESULTS

The mean age of pregnant women between the ages of 16 and 48 was 27,21± 5,5. The number of specimen who had HBsAg and anti-HCV are 50 (0.9 %) and 7 (0.12 %); respectively and there was no HIV positivity in any of the pregnant women. When we evaluated the HBsAg positivity of mothers according to their ages, we found that there was HBsAg positivity in 0.3 % of the 611 pregnant women who were younger than 20, 0.9 % of the 3437 pregnant women who were between

the ages of 20 and 30, and 1.1 % of the 1337 pregnant women who were between the ages of 30 and 40. There was no HBsAg positivity in 155 pregnant women who were older than 40. In our study, we observed that the group of 30-40 years old pregnant women had the highest HBsAg positivity rate [Table-1]. Out of 4752 pregnant women who were tested for Anti-HBS IgG, 1410 of them (29.6 %) had Anti-HBS IgG positivity. There was Anti-HBS positivity in 80.7 % of the 482 pregnant women who were younger than 20, 25.7 % of the 2950 pregnant women who were between the ages of 20 and 30, 19.8 % of the 1248 pregnant women who were between the ages of 30 and 40 and 19.4 % of the 72 pregnant women who were older than 40. We observed that the group of pregnant women who were younger than 20 had the highest Anti-HBS positivity rate in our study [Table-2].

Table 1. The distribution of HBsAg results according to ages of mothers

	HBsAg(+)	HBsAg(-)	Total
Up to 20	2 (0.3%)	609	611
20-30	32 (0.9%)	3405	3437
30-40	16 (1.19%)	1321	1337
Over 40	-	155	155
Total	50 (0.9%)	5490	5540

Table 2. The distribution of Anti-HBS results according to ages of mothers

	Anti-HBs(+)	Anti-HBsAg(-)	Total
Up to 20	389 (80.7 %)	93	482
20-30	759(25.7%)	2191	2950
30-40	248(19.8%)	1000	1248
Over 40	14 (19.4%)	58	72
Total	1410 (29.6%)	3342	4752

DISCUSSION

There are various transmission ways of HBV and HCV which can cause different pathologies in the liver. One of the most important ways is the vertical transmission from mother to the baby. The transmission from the hepatitis virus carrier mother to the baby occurs generally during the birth or via contact with infected maternal fluids upon birth. The transmission during the birth can happen via skin abrasions, mucous penetration, swallowing the mother's blood in the transition from the vaginal canal, contact with the blood of mother during the caesarean section, and the mixture of the fetal and the maternal blood due to the placental damage. The transmission from the mother to the fetus happens generally during the birth but not during the pregnancy [6-9]. In case of the HBV presence in the mother, the infection risk of the baby is between 40% and 50% during the perinatal period. HBV, which infects the baby in this period, particularly becomes chronic in 90% [10]. The prevalence of Hepatitis B varies according to the geographic regions and regions are divided into three as endemic (>8%), moderate endemic (2-7%) and low

endemic (<2%) [11]. Our country is in the group of moderate endemic and the 10-60% of the population encounters with the virus and the 2.7 % of them become chronic hepatitis [12]. In Brazil which is included in the group of high endemicity, the HBsAg positivity of pregnant women is 18.5%; in Spain which is included in the group of low endemicity, the HBsAg positivity of pregnant women is 1.24 %; and it is 0.44 % in Netherland and it is 1.4 % in Germany [13, 14, 15]. In studies performed in Turkey, Tekay et al. [16] found that the HBsAg positivity is 5.1% in Sanliurfa in 2006. Furthermore, Madendag et al. [17] found that it is 2.11% in Ankara (2007), Kolgeller et al. [18] showed that it is 4.7% in Adiyaman (2009), Cakmak et al. [19] found that it is 2.2 % in Kocaeli (2011), and Balik et al. [20] showed that it is 5.7% in Rize (2013). In our study, the HBsAg positivity was detected as 0.9 % in Amasya and these findings show that Amasya province is included in the low endemic region in terms of Hepatitis B infection. When we examine the findings in Turkey, we can realize that the HBsAg positivity has been decreasing in years.



In this study, the 30-40 age groups have the maximum HBsAg positivity rate and this rate is decreasing as the ages of pregnant women decrease.

In Turkey, all infants have been vaccinated for Hepatitis B since 1998 [21]. Balık et al. [20] detected the Anti-HBs positivity as 29.7 % and Kolgeller et al. [18] as 32.8 %. In our study, we found that the Anti-HBs positivity was 29.6%. We observed a prominent increment in the anti-HBs seroprevalence of pregnant women who were younger than 20 years old in our region compared to other age groups. It is clear that the effective vaccination programs have roles in the increment of these rates.

Maternal HCV infection can also be transmitted to the baby in the perinatal period and the rate is estimated to be lower than the HBV infection [21, 22]. In Turkey, Dag et al. [23] detected the Anti-HCV seropositivity rate as 0.44 % in Kirikkale, Cakmak et al. [19] detected as 0.3 % in Rize, Ozlu et al. [24] found as 0.5 % in Bolu. In our study, Anti-HCV positivity was 0.12 % in pregnant women and this rate is consistent with other findings in the Turkish literature. Since there is no vaccine which can be applied to infants who are born from HCV positive mothers and due to the absence of the antiviral treatment during the pregnancy, it is still under debate whether or not the routine HCV screening should be performed during the pregnancy [25]. It is only recommended to apply these tests to drug addicts during their pregnancy, women who received blood transfusion or the ones who were contacted with blood or blood products [26].

In studies, it has been reported that the vertical perinatal HIV transmission rate is between 13% and 30% [27]. A mother with a HIV infection can transmit the HIV virus to the fetus or the infant via transplacental infection,

contact with maternal blood during the birth or during the lactation. The HIV infection which is transmitted to the baby can be decreased with the help of the cesarean section, antiretroviral prophylaxis and without feeding the baby with the breast milk. Therefore, HIV infection of the mother should be detected in an early period of the pregnancy in order to prevent the transmission of the HIV from the mother [28, 29]. In our study, we did not detect HIV infection in any of the pregnant women.

Conclusively, pregnant women should be screened in terms of HBsAg in their routine controls. Our country is included in the moderate endemic groups; thus, the infant who is born from HbsAg positive mother should receive the hepatitis B hyperimmunoglobuline as well as hepatitis B vaccine in the first 12 hours in order to prevent the infection of the infant. In this way, we can protect the infant from the HBV infection and its complications. Furthermore, we believe that routine Anti-HCV and Anti-HIV screenings will also be beneficial for pregnant women under risk.

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CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

STATEMENT OF HUMAN AND ANIMAL RIGHTS

All procedures performed in human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors.

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