



A Study of the Hepatitis B Frequency and Its Possible Adverse Outcomes on Pregnancy at a University Hospital

Bir Üniversite Hastanesinde Gebe Hastalarda Hepatit B Sıklığı ve Gebelik Üzerine Etkilerinin Araştırılması

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ABSTRACT

Objectives: Hepatitis B virus (HBV) is a major global public health problem. Maternal-fetal transmission of viral hepatitis may contribute to pregnancy-related complications. This study aimed to evaluate the frequency of HBV and its possible adverse pregnancy outcomes.

Materials and Methods: The study group consisted of patients followed up in the obstetrics service. Pregnancy-related discharge codes were queried approximately 2017-2019. Hepatitis B surface antigen (HBsAg) levels in serum samples were studied by chemiluminescence enzyme immunoassay method (Architect, Abbott Laboratories, USA). The HBsAg-positive group and HBsAg-negative group data were analyzed using SPSS version 22 (SPSS Inc.; Chicago, IL, USA).

Results: HBsAg was positive in 255 (2.1%) patients. Two groups compared in terms of age and there was no significant difference ($p=0.45$). Two groups compared in terms of pregnancy outcomes and there was no significant difference ($p=0.1$).

Conclusion: The study group consisted of patients with pregnancy complications and HBsAg positivity was found to be 2.1%. A lower rate was found compared to other regions. Studies to be conducted in different endemic regions of Hepatitis B in our country will illuminate the effect of hepatitis B on pregnancy better.

Keywords: Hepatitis B, pregnancy complications, HBsAg seropositivity

ÖZ

Amaç: Hepatit B virüsü (HBV) global halk sağlığı sorunları arasında yer alır. Gebelikte viral hepatitlerin anneden bebeğe transplental geçişi çeşitli komplikasyonlara neden olabilir. Çalışmamızda gebe hasta grubunda HBV sıklığının belirlenmesi ve gebelik üzerine olan olası etkilerinin araştırılması amaçlandı.

Gereç ve Yöntemler: Çalışma grubu kadın hastalıkları ve doğum kliniğine başvuran hastalardan oluşmaktadır. 2017-2019 yılları arasında takip edilen hastaların gebelik ilişkili komplikasyonları incelendi. Hepatit B yüzey antijen (HBsAg) düzeyi kemiluminesans enzim immünassay yöntemiyle (Architect, Abbott Laboratories, USA) belirlendi. HBsAg pozitif hasta ve HBsAg negatif hasta verilerini karşılaştırmak için SPSS versiyon 22 (SPSS Inc.; Chicago, IL, USA) kullanıldı.

Bulgular: HBsAg pozitifliği 255 (%2,1) hastada saptandı. İki grubun yaş ortalaması karşılaştırıldı, anlamlı fark saptanmadı ($p=0,45$). İki grup gebelik komplikasyonları yönünden karşılaştırıldı, anlamlı fark saptanmadı ($p=0,1$).

Sonuç: Çalışmamızdaki hasta popülasyonu gebelik ilişkili komplikasyonlar nedeniyle kadın hastalıkları ve doğum kliniğine başvuran hastalardan oluşmaktaydı ve HBsAg pozitifliği %2,1 bulundu. Diğer bölgelerden bildirilen çalışmalara göre daha düşük bir oran saptandı. Ülkemizde farklı endemik bölgelerde yapılacak çalışmalarla hepatit B'nin gebelik üzerine etkisi daha iyi aydınlatılacaktır.

Anahtar Kelimeler: Hepatit B, gebelik komplikasyonları, HBsAg seropozitifliği

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Introduction

Hepatitis B virus (HBV) is major global public health problem worldwide that lead to chronic hepatitis, cirrhosis and hepatocellular carcinoma (1). More than 2 billion people live with HBV and 248 million of these are chronically infected (2). Turkey is on the whole considered to have a intermediate HBV endemicity. Between the years 2008-2011 comprehensive study was done by Liver Research Association of Turkey. Seropositivity rate for hepatitis B surface antigen (HBsAg) determined 4% (3).

There are three possible HBV transmission ways from infected mother to infant: First transplacental transmission, the second is perinatal transmission during childbirth, the third is postnatal transmission during care and breastfeeding (4). To prevent transmission, HBV screening is part of routine prenatal care in Turkey. Hepatitis B immunoglobulin prophylaxis is given to infant born to mothers with HBsAg positive (5). HBsAg screening is recommended for all pregnant woman in local guideline (6).

In addition, maternal-fetal transmission of viral hepatitis may contribute to pregnancy-related complications such as gestational diabetes mellitus (GDM), preterm birth (PTB), intrauterine growth restriction, pre-eclampsia, antepartum haemorrhage (7). The aim of this study was to evaluate the frequency of HBV and its possible adverse pregnancy outcomes.

Materials and Methods

This retrospective study was conducted at a Necmettin Erbakan University Hospital Ethics Committee (approval number: 2021-126; date: 19.02.2021). The present study did not require informed consent owing to its retrospective nature. The study population comprised pregnant women who attended the Meram Faculty of Medicine, Gynecology and Obstetrics Inpatient Clinic. Pregnancy-related discharge codes was queried between 2017-2019. HBsAg status of the patients examined. HBsAg positive patients identified. The medical records of the patients involved in the study were reviewed by gynecologist. Inclusion criteria consisted of absence of medical or surgical disease such as liver disease, pre-GDM and hypertension. HBsAg status was routinely screened. HBsAg levels in serum samples were tested by the chemiluminescence enzyme immunoassay method (Architect, Abbott Laboratories, USA). The HBsAg positive patients constituted case group. They were divided into four groups according to pregnancy complications. Abortion, pre-eclampsia, PTB/premature of membranes, abortion imminens, postpartum hemorrhage and GDM were included in the obstetric complication group; intrauterin growth restriction, fetal anomaly and macrosomia were included in fetal complication group, oligohidramnios, hyperemesis gravidarum, polyhydramnios and ectopic pregnancy were included in other, the last group consisted of normal patients with no complications or clinical findings. HBsAg negative patients who applied in the same period and had similar demographic characteristics with case group constituted control group.

Statistical Analysis

To compare HBsAg-negative patient (control group) data and HBsAg-positive patient (case group) data were analyzed using SPSS version 22 (SPSS Inc.; Chicago, IL, USA). Categorical variables were

compared using the χ^2 test. Continuous variables were expressed as means \pm standard deviation and compared using the t-test. $P < 0.05$ was considered to be statistically significant.

Results

In total, 11,941 pregnant patients data reviewed. HBsAg positivity was detected in 255 (2,1%) patients. Among these 115 women were excluded from the study because of medical complications or incomplete records. The case group included 140 patients (Figure 1). The control group included 287 patients. Two groups compared in terms of age and there was no significant difference ($p=0.45$). Two groups compared in terms of pregnancy outcomes and there was no significant difference ($p=0.1$). Obstetric complication constituted a significant part of pregnancy outcomes (42.1%) in the case group. In the control group, the majority of the patients (40.8%) were normal patients (Table 1).

Discussion

It is recommended to screen routinely pregnant patients for HBV infection by various international guidelines (8,9,10). Perinatal transmission from mother to infant is the most important cause of HBV infection, especially in regions with high prevalence, with a risk of chronicity over 90% (11). Since our country is located in the middle endemic region in terms of HBV infection, HBsAg screening is recommended in the antenatal care guidelines prepared by the Ministry of Health. Hepatitis B vaccine administration for all newborns started in 1998 and was included in the routine vaccination calendar in Turkey.

Although HBsAg seropositivity rates vary from region to region in our country, the average HBsAg positivity was found to be 4.4% (12). When the studies reported from different provinces are examined; similar rates were reported as 4.8% in Şanlıurfa (13), 5.7% in Rize (14), 4.7% in İstanbul (15) and 3.47% in Kırıkkale (16). Also, Çınar Tanrıverdi et al. (17) from Erzurum found the HBsAg positivity in their study was 1.2%, which is lower than other studies, while Kaleli et al. (18) from Denizli found a high rate of 7.6%. The population of our study consisted of patients who were followed up with a pregnancy-related diagnosis in the

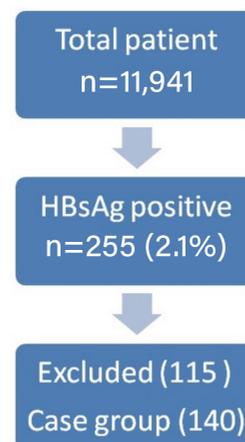


Figure 1. Setting case group
HBsAg: Hepatitis B surface antigen

obstetrics and gynecology service and HBsAg positivity was found to be 2.1%. The study of Tüzüner et al. (19) from our university reported this rate as 2.81% in blood donors between 2013 and 2016.

HBV infection does not affect fertility unless there is advanced liver disease. However, it has not been clearly revealed how chronic hepatitis B infection affects pregnancy and the fetus. There are studies (20,21) suggesting that it increases the risk of GDM, abortion imminens, PTB, antepartum and postpartum hemorrhage, as well as studies suggesting the opposite (22). In a large cohort study conducted by Bajema et al. (23) in the United States of America in a low endemic region, they did not find a statistically significant relationship between hepatitis B infection and adverse pregnancy outcomes. Similarly in our study, when the case group and the control group were compared, no significant difference was found in terms of pregnancy outcomes.

In a cohort study conducted by Liu et al. (24) from China, it has been shown that the risk of PTB (odds ratio: 1.18) increases at a very low rate in HBsAg positive pregnant women. In the study conducted by Sirilert et al. (25) in Thailand the rate of premature birth was found to be statistically significantly higher in HBsAg and hepatitis B e antigen-positive patients. It was suggested that HBV-DNA triggers placental inflammation in relation to the amount of viral load, leading to premature birth (25). In our study, the abortion

rate was 15.7% in the case group and 8.7% in the control group. While the rate of cases with the threat of PTB or premature rupture of membranes was 11.1% in the control group, this rate was 7.8% in the case group. Since our hospital is a tertiary unit, most of the patients consist of complicated patients. Therefore, the rate of patients diagnosed with PTB or premature rupture of membranes is high in the control group. In our study, no significant difference was found between the case group and the control group in terms of pregnancy outcomes.

In a study conducted in the USA, it was emphasized that depending on the conditions such as the chronicity of the infection, the degree of damage to the liver, comorbid conditions and access to health care, whether or not women are infected with HBV may change. It has been suggested that the findings revealed in the highly endemic region may not be valid for a country such as America where HBV infection is much less common (26). This may be due to the fact that our region is a low endemic region for hepatitis B. Studies to be conducted in different endemic regions of hepatitis B in our country will illuminate the effect of hepatitis B on pregnancy better.

Study Limitations

Retrospective nature of the present study and the inability to eliminate sub-standard prenatal care conditions that might have affected pregnancy outcomes were limitations.

Conclusion

In this study, no significant difference was found between the case group and the control group in terms of pregnancy outcomes. HBsAg positivity was found 2.1% in our study group. This rate is lower than other studies. Studies to be carried out in the high endemic region will better illuminate the effect of hepatitis B on pregnancy.

Ethics

Ethics Committee Approval: The study was approved by Ethics Committee Necmettin Erbakan University Meram Faculty of Medicine (approval number: 2021-126; date: 19.02.2021).

Informed Consent: Retrospective study.

Peer-review: Externally and internally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: FK., Concept: Y.D.G., FK., Design: Y.D.G., FK., Data Collection or Processing: Y.D.G., FK., Analysis or Interpretation: Y.D.G., FE.T., Literature Search: Y.D.G., FE.T., Writing: Y.D.G., FE.T.

Conflict of Interest: No conflict of interest was declared by the authors.

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	HBsAg positive (n=140)	HBsAg negative (n=287)	p-value
Maternal age	31.2±5.9	30.8±6.07	0.45
Older pregnant woman (≥35 y)	43	88	0.9
Pregnancy outcomes	-	-	0.1
Obstetric complications	59 (42.1%)	114 (39.7%)	-
Abortion	22 (15.7%)	25 (8.7%)	-
Pre-eclampsia	11 (7.8%)	11 (3.8%)	-
Preterm birth/premature rupture of membranes	11 (7.8%)	32 (11.1%)	-
Abortion imminens	6 (4.3%)	11 (7.3%)	-
Postpartum hemorrhage	7 (5%)	5 (1.7%)	-
Gestational diabetes mellitus	2 (1.4%)	20 (7%)	-
Fetal complications	15 (10.7%)	21 (7.3 %)	-
IUGR	7 (5%)	7 (2.4%)	-
Fetal anomaly	6 (4.3%)	11 (3.8%)	-
Macrosomia	2 (1.4%)	3 (1%)	-
Other	24 (17.1%)	35 (12.2 %)	-
Oligohydramnios	17 (12.1%)	27 (9.4%)	-
Hyperemesis gravidarum	4 (2.9%)	2 (0.7%)	-
Polyhydramnios	2 (1.4%)	6 (2.1%)	-
Ectopic pregnancy	1 (0.7%)	0 (0%)	-
Normal	42 (30%)	117 (40.8%)	-

HBsAg: Hepatitis B surface antigen, IUGR: Intrauterine growth restriction

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