
Evaluation of Hepatitis B virus infection in pregnant women

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Abstract

Background: Hepatitis B virus infection is a major public health problem around the globe in spite of the availability of a highly effective vaccine and improvements in antiviral therapy. This disease causes a chronic hepatitis, liver cirrhosis and hepatocellular carcinoma.

Patients and methods: The cross sectional study consisted from 40 healthy pregnant females referred to privet clinic for primary health care for pregnant women in Baghdad from September 2010- to May 2011. Their bloods were analyzed for hepatitis B surface antigen, anti hepatitis core antibodies, anti hepatitis B envelope antibodies and anti hepatitis C antibodies by Immunochromatographic test (Acon-USA) . The results were compared to twenty non pregnant healthy control groups.

Results: There was no significance difference between two groups regarding different parameters of HBV and HCV.

Conclusions: Pregnancy had no effect on the frequencies of hepatitis B and C. The majority of healthy individuals either pregnant or not pregnant were positive for anti HBc antibodies that denote a past history of transient of HBV infection in episomal form.

Keywords: Hepatitis, Immunochromatography, pregnant.

1.Introduction

Hepatitis B virus infection (HBV) is an important public health problem around the globe in spite of effective vaccine. This disease leads to chronic hepatitis, liver cirrhosis and hepatocellular carcinoma[1]. Frequencies of HBV vary from 0.2% to 20% according to prevalence in that area[2]. It is transmitted vertically from mother to child at birth and horizontally through sexual intercourse[3]. Exposure to HBV infection ends in asymptomatic infection, acute hepatitis, carrier of the virus, chronic active hepatitis, cirrhosis and liver cancer[4]. Many studies demonstrated the prevalence of HBV in blood donors, health care workers, hemodialysis, elderly, pregnant women, healthy individuals and other. The infection rates in these groups differ according to geographical region.

Hepatitis B surface antigen (HBsAg) is one of the serological markers that detect HBV infection. Other marker is anti-hepatitis B core antibody (anti

HBc IgG) that detected in combination with HBsAg or HBsAb. Positivity for anti HBcIgG Ab alone may indicate past infection with HBV. Patients with these markers are almost always positive for HBsAg or anti HBs Ab. Anti HBc IgG positivity alone can signal occult HBV infection and this finding demands special consideration[5].

In Iraq, the national survey between 2005-2006 showed that the prevalence rate of HBsAg was 1.6% and correlated positively with age while anti HBsAb was 17% and in children less than ten years is 32.2% which indicate incomplete coverage of HBV vaccine. Regarding antiHBcAb was 9.7%. On the other hand, the prevalence of antiHCV was 0.4%. These findings revealed that Iraq is a low prevalence with HBsAg and HCV. AntiHBc IgG was found to increase with age which indicated a marker of exposure to HBV[6].

In this study, we evaluate seroprevalance rates of HBV in healthy pregnant women who visited a primary health care clinic in Baghdad for routine health care checks for pregnancies.

2.1. Patients and methods

The study consisted from 40 healthy pregnant females referred to privet clinic for primary health care at Baghdad from September 2010 to May 2011.

The exclusion criteria were patients previously had a prior or recent history of jaundice and other hepatic diseases. Patients how had history of autoimmune diseases or tacking drugs that affect the liver were also excluded from the study.

The second control group consisted from twenty healthy non pregnant women; their ages were matched with first group from staff employees.

The ethical committee of Al-Kindy College of Medicine, Baghdad University was approved the study and all samples were obtained with informed consent in accordance with Al-Kindy Teaching Hospital Declaration.

Serologic tests done by obtaining five milliners of venous blood and serum were separated and stored at -20⁰C until analyzed for Hepatitis B surface Ag, antiHBcABs, HBeAgs, antiHBeAbs and AHCV Abs using an Immunologic test (Immunochromatography test- ACON-USA).

2.2. Statistical analysis

Descriptive statistics used for frequencies, tables, mean and standard deviation. Inferential statistics used by Student's t-test and Fisher Exact test. P –value < 0.05 considered statistically significant. Calculations were done using MiniTab Software programe 13.2.

3. Results

A total 40 healthy pregnant women, their ages were ranged from 17-39 years (mean 28.775 --+ 5.526 SD). The age of the control group was ranged from 18-40 years (mean 28.150-+ 5.51SD). There was no significance difference regarding the frequencies of different parameters of HBV and HCV between pregnant women and control group as shown in Table 2.

Table 1: Age distribution in pregnant females compared to control group.

Age in years	Pregnant group No.=40	Control group No.=20	P -value
Mean	28.775	28.15	0.63
SD	5.526	5.51	
Minimum	17	18	
Maximum	39	40	

Table 2: Frequencies of hepatitis B markers in pregnant and control group

Markers		Pregnant women No.=40	Control group No.=20	P-value
HBsAg +	No.	2	1	0.455
	%	5	5	
HBsAg -	No.	38	19	
	%	95	95	
AntiHBcAb+	No.	38	19	0.455
	%	95	95	
AntiHBcAb-	No.	2	1	
	%	5	5	
HBeAg+	No.	2	2	0.303
	%	5	10	
HBeAg-	No.	38	18	
	%	95	90	
Anti HBeAg+	No.	38	19	0.455
	%	95	95	
Anti HBeAg-	No.	2	1	
	%	5	5	
AntiHCV +	No.	6	2	0.294
	%	15	10	
Anti HCV-	No.	34	18	
	%	85	90	

4. Discussion

Hepatitis B and C virus infections are important community health problems in Iraq. Each country had its own seroprevalence. In our study, we use immunochromatography test as a screening simple easy test in primary care health center in antenatal period while ELIZA is more sophisticated technique and finding showed that there was no significance differences in different parameters regarding hepatitis B and C virus between pregnant and control group. This indicates that pregnancy could not be considered as risk factor to develop hepatitis. These positive groups were either had previous blood transfusion during pregnancy or previous caesarian section from history. Other studies demonstrate that percentages of HBsAgs were 0.9%, 16% and 84% due to tattooing in 78.4%[7]. Other study showed that 1.1% of healthy non pregnant women were positive for HBsAgs and ALT level were elevated in 54% of those women and HBV DNA levels were above 2000 IU/ml in 71% of women and had a higher risk of transmission infection to their newborn[8]. HBsAgs traced in 0.5% of pregnant women in other study[9]. The differences with other studies may be due to sample size, methods used and prevalence of HBV in that region. The world was divided into three separate groups regarding the prevalence of HBV[10] and our study showed HBsAg + was 5% which is in the moderate prevalence.

HBcAb IgG did not show any protection against HBV and our study demonstrated that 95% were positive in both groups.

This marker could be positive for life and HBsAb did not present in this test. The pregnant women who had positive both HBsAg and antiHBc IgG were 38, this may be recovered from this mild infection with HBV due to good immunity.

Other studies reported that HBV could be transmitted to recipients from donors who have antiHBcAbs through liver transplantation because HBV genome present covalently closed circular DNA and pregenomic RNA (replication intermediate Of HBV). These individuals were latently infected with the episomal form of HBV[11].

Other parameter is HBeAg that indicates viral replication with high infectivity appears early in infection[12][13]. Our study showed 5% of pregnant women and 10% of control had positivity of this Ag while other studies reporting different frequencies in different parts of the world as South and South –East Asia was 14% and 24% in Southern Sub-saharan Africa[14]. Antibodies to this Ag showed 95% of study group were positive, indicating the start of resolution and disappear after six months.

There was same result in patients who had anti HBcAbs and antiHBeAbs (19%), this indicated past infection.

Last parameter was anti HCV Abs that was not significantly detected in 15% of pregnant women and 10% in control group in our study. In other Iraqi study showed 0.4% in non pregnant women 6, this may be due to sample size, type of sample and method used. Other study detected Anti HCV Abs in 65-75% of asymptomatic cases[15]. Other study reported prevalence of HCV in pregnant women was 1.03%[16]. Other study showed different frequency in rural and urban areas[17]. These discrepancies in results due to sample size, type, selection, region and method used for detection this parameter. Therefore detection of HBV in early pregnancy is important because of transfer of this virus to offspring, so screening of HBV should be made routinely in antenatal clinic[18].

5. Conclusions

Pregnancy had no effect on the frequencies of hepatitis B and C. The majority of healthy individuals either pregnant or not pregnant were positive for anti HBc antibodies that denote a past history of transient of HBV infection in episomal form.

Competing and conflict of Interests

The authors have declared that no competing and conflicting of interest exists.

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