

Prevalence and risk factors of Hepatitis B Virus among Pregnant Women in Jazan Region- Kingdom of Saudi Arabia

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Abstract:

Background: Hepatitis B virus is one of the major etiological agents for parenterally acquired hepatitis. Viral hepatitis during pregnancy is associated with high risk of maternal complications. This study was conducted to determine the prevalence of HBV infection in pregnant women, and to find out its associated risk factors in Jazan region south KSA. **Patients & Methods:** A random sample of 537 pregnant females who attended Jazan general hospital and randomly selected primary health care centers in Jazan region - before 38 weeks of gestation - constituted the target population of the present study. All women were screened for HBsAg by using HBsAg Rapid Test Device (ACON). **Results:** The overall prevalence of HBV virus among the women was found to be 4.1% (95% CI: 2.7 - 6.1). The prevalence of HBV according to age showed that women less than 20 years are free of HBV, whereas for other age groups HBV prevalence is found to increase with increase in age. Regarding the associated risk factors, women with history of hospitalization, and jaundices showed a significant association with anti-HBV seropositive. Dental histories, blood transfusion and history of surgery did not prove significant association with HBV. **Conclusion:** Prevalence of Hepatitis B virus infection in pregnant ladies was 4.1%. Past history of hospitalization and jaundices are important risk factors for transmission of infection. The study suggests expansion of the Hepatitis B vaccination program to reduce the risk of HBV among pregnant women.

Key words: Hepatitis B virus, Pregnancy, Prevalence, Risk factors.

Introduction:

Hepatitis B is caused by hepatitis B virus (HBV) which is an envelope virus with double strand DNA that related to hepadnavirus. HBV is found in highest concentrations in blood and in lower concentrations in other body fluids (e.g., semen, vaginal secretions, and wound exudates). It estimated that about 5% of world populations are chronic carriers and nearly 25% of them develop serious complications as chronic hepatitis, liver cirrhosis and hepatocellular cell carcinoma, which result in more than one million death every year [1].

Hepatitis B virus (HBV) infection is a major public health problem in the Arab Countries. The majority of the countries in the Middle East have intermediate (2 to <5%) or high (>5%) endemicity of HBV infection [2]. Studies in Saudi Arabia indicated that the prevalence of Hepatitis B surface antigen (HBsAg) ranges from 7.4 to 17% denoting high endemicity.[3].

The HBV is a major cause of chronic hepatitis, cirrhosis, and hepatocellular carcinoma. It ranks as an important pathogen throughout the world[4]. Transmission occurs mainly from a mother to child at time of parturition, as well as person-to-person (horizontal) transmission among children < 5 years of age.[5] Even when not infected during the perinatal period, children of HBV-infected mothers remain at a high risk of acquiring HBV infection by horizontal transmission during the first 5 years of life.[6]

Viral hepatitis during pregnancy is associated with high risk of maternal complications, has a high rate of vertical transmission causing fetal and neonatal hepatitis and it has been reported as a leading cause of maternal mortality in developing countries [7-9]. Previous studies showed that the prevalence of HBsAg among Saudi pregnant females ranged from 3.9 to 12.7%.[9-12]

The aim of the present study was to determine the prevalence and risk and its related factors of HBV infection among pregnant women in Jazan region – Saudi Arabia .

Materials and Methods:

This study was part of a large cross-sectional survey conducted on volunteer blood donors, and attendants of GI ,

Premarital screening clinics and Antenatal Clinics (in randomly selected PHCCs and General Hospitals) in Jazan Region, Kingdom of Saudi Arabia (KSA).

All pregnant females who attended the antenatal clinic - before 38 weeks of gestation - constituted the subjects of the present study. Serology screening for HBsAg, Hepatitis B core antigen (HBcAb), and Hepatitis B antibody (HBsAb) is requested in every first booking visit. Random samples of 537 women were tested for HBV serologic markers by using HBsAg Rapid Test Device (*ACON*).

The questionnaire administered to the women consisted of questions related to demography, level of education, marital status, sexual behaviors, and injection risk behaviors. Sexual behavior questions included the kind of relationship the subject has ever had. Injection risk behavior questions determined whether if the study subject used or shared syringe, the duration of injection addiction, type of drug and history of blood transfusion, surgery, dental procedure, cupping and jaundice. Standardized, face-to face interviews were conducted by the physician. The ethical approval for the current study was obtained from the faculty of Medicine, Jazan University and the local health authorities.

The overall prevalence of HBV among pregnant women was calculated with a 95% confidence interval (CI). The chi-square test (or Fisher exact test where applicable) was used to evaluate the prevalence of an HBV infection among different sub-groups. The crude odds ratios (OR) were estimated by univariate analysis to observe the association of each variable with the presence of HBV. All statistical tests were two-sided; and a level of $P < 0.05$ was used to indicate statistical significance. Statistical analyses were performed using the SPSS (Version 17.0) software.

Results:

Table 1 illustrates some background characteristics of the studied women. The table shows that 53.8 % of the women are of age group (20-29) while 22.7% are of (30-39) years, only 5.4% of them are 40 and above years. The table further suggest the majority of them are coming from rural area (56.2%). The educational level of the women showed that 25.7 % of them are of high of secondary educational level, 20.9 % are primary school. Regarding the nationality the majority of them are Saudi (92.2 %). Regarding the employment status of the women, the majority of them (69.3%) are housewives, while 8.8% are government employees.

Table 1 : Demographical Characteristics of Studied Women

Characteristics	No	%
Age group		
< 20 year	46	8.8
20 – 29 year	289	53.8
30 – 39 year	122	22.7
> 40	30	5.6
Missing	50	9.3
Residence type		
Rural	302	56.2
Urban	235	42.8
Education		
Illiterate	75	14.0
Primary	112	20.9
Intermediate	90	16.8
High secondary	138	25.7
University and above	76	14.2
Nationality		
Saudi	496	92.4
Non-Saudi	41	7.6
Employment		
Government	47	8.8
Private work	12	2.3
House wife	372	69.3
Unemployed	38	7.1
Students	14	2.6
Other	54	10.0
Total	537	100 %

The prevalence of HBV infection according to some demographic characteristics of the women is shown in Table 2. The prevalence of HBV according to age showed that women less than 20 years are free of HBV and greater than 40 years were with the highest HBV prevalence 13.8% with confidence interval (95% C.I. 5.5-30.5). The age specific prevalence rate showed a general increase of HBV with age with significant difference between the different age groups. The prevalence of HBV according to the mode of living showed that 4.6 % of the urban women are HBV positive (95% C.I. 2.7-7.6) compared with 3.4 % in Rural areas (95% C.I. 1.7-6.6). According to the nationality, Saudi pregnant with women HBV positive were 4.0% (95% C.I. 2.28-5.70). The overall prevalence of HBV virus among the women was found to be 2.4% (95% CI: 0.10-14.4). The table further suggests there is a no significant difference between HBV infections in women according to different education level, between patients according to nationality and mode of living.

Table 2: Prevalence of HBV Infection among 517 pregnant women- Jazan Region by Age groups, Residence and Nationality

Characteristics	N-positive/ N-tested	HBV %	95% CI	P. Value
Age groups				
Less than 20 years	(0/45)	0	-	0.005*
20 – 29 year	(9/338)	2.7	1.4-4.9	
30 – 39 year	(9/125)	7.2	1.5-7.9	
> 40	(4/29)	13.8	5.5-30.5	
Level of education				
Illiterate	(8/75)	10.6	5.5-19.6	0.096
Primary	(3/112)	2.6	0.40-6.2	
Intermediate	(4/90)	4.4	1.7-10.9	
High secondary	(4/138)	2.9	1.1-7.2	
University and above	(2/76)	2.6	0.70-9.0	
Residence type				
Urban	(14/302)	4.6	2.7-7.6	0.312
Rural	(8/235)	3.4	1.7-6.6	
Nationality				
Saudi	(20/496)	4.0	2.6-6.1	0.502
Non-Saudi	(1/ 41)	2.4	0.10-14.4	
Overall prevalence	(22/537)	4.1	2.7-6.1	

Table 3 illustrates the prevalence of HBV according to some risk related variables. According to the table women with history of hospitalization and jaundices showed a significant association with anti- HBV seropositive. Other risk factors like dental histories, blood transfusion and history of surgery did not prove association with HBV.

Table 3. Prevalence of HBV Infection among pregnant women in Jazan Region According to Risk-Related Variables

Variables (Exposure to Potential Risks)	Yes	No	P. Value	OR 95% CI
Dental procedures	7.2(6/83)	3.4(14/411)	0.107	
Blood transfusion	6.1(2/33)	4.2(19/457)	0.600	
Hemodialysis	50(1/2)	4.3(12/485)	0.088	
History of Surgery	8.1(5/62)	3.7(16/431)	0.110	
Hospitalization	7.2(10/138)	3.3(12/364)	0.050*	2.2 (.96-5.433)
Jaundices	28.6(2/7)	4.0(19/480)	0.001*	9.7 (1.76-53.27)

Discussion:

The present study shows that the sero-prevalence of HB was 4.1 %, which is slightly greater than 2.6% which was reported by Al-Mazrou and colleagues in 2004[13] and far higher from the estimate of Alrowaily et al. Which was 1.6% in 2008[14]. This result generally reflects the high prevalence of hepatitis B virus in Jazan region, which is documented in a number of studies conducted previously in kingdom of Saudi Arabia[15-18]. The findings of this study further suggest that mothers below 20 years are free of HBV, who perhaps were exposed to the mass HBV vaccination for children that took place in 1989 in all parts Kingdom of Saudi Arabia.[15]. This finding suggests the efficiency of the Hepatitis B vaccination program among children.

Regarding the risk factors hospitalization, showed a significant association with anti- HBV seropositive and hence is the most important risk factor for its transmission in the context of this study. Hospitalization association with HBV infection was reported in many other studies [19].

Dental procedures were not associated with HBV infection in Jazan, this finding is similar to the situation in Brazil and some other developing countries [19] and it could be explained by the improvement in sterilization

and hygienic practice in dental clinics. Blood transfusion and history of surgery, although they constitute an important risk factors in many studies in KSA and the Arabian region, they also were not associated with high risk of HBV in this study[20-21]. Finally the results of this study should be interpreted with care, since it involved only small sample size of pregnant women and based on cross sectional study design.

Conclusion and Recommendation:

Prevalence of Hepatitis B virus in healthy pregnant women is 4.1%. Hospitalization, and jaundices showed a significant association with anti- HBV seropositive and hence are important risk factors for its transmission. Finally the study suggests the expansion of the Hepatitis B vaccination program to reduce the risk of HBV among pregnant women.

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