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Hepatitis B Virus in Pregnant Women and Their offsprings in Minia

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Abstract

This study was carried out on 60 women in labour and their offsprings and 45 pregnant women, chosen randomly from those admitted to the labour ward and outpatient antenatal care unit of El-Minia University Hospital. Ten percent of the 60 maternal samples and also their offsprings, 5 cases (11%) of pregnant women were positive for HBsAg using ELISA technique. The total incidence of HBsAg carrier status in women of study group was 10.4%. HBeAg was detected in 2 women in labour (3.3%), one of their offsprings was also positive for it. In pregnant group only one was positive (2.2%). The anti-HBe, was found in B women in labour (13.3%), 6 (10%) of their offsprings and 6 (13.3%) pregnant women were positive for it. We found that past history of C.S. and hepatitis were contributing factors for the presence of Hepatitis Markers while the parity is not.

Introduction

THE Mediterranean area, Europe, Africa, Asia, South and Central America were defined as high-endemic regions for HBV. Struve [1] found 5% of pregnant sweeden women were exposed to HBV, it may increase up to 11% in the country with a high HBV endemicity. Many carriers of HBV progress to chronic liver diseases of varying severity, including chronic active hepatitis, cirrhosis and hepatocellular carcinoma [2].

Perinatal transmission is one of the most efficient and important modes of HBV transmission. Infants born to HBeAg-positive carrier mothers have an 80-90% chance of being infected perinatally mostly during labour [3].

Tmnsmission of HBV from mother to child may be during labour and close contact. However, the precise mechanism of transmission of HBV from mothers to their offsprings remains a point of much controversy [4].

Lee [5] found relation between increased incidence of congenital malformation and Down's syndrome and maternal hepatitis B infection.

The aim of this work is to study the incidence of some HBV markers in pregnant women and their offsprings. Also the relation between parity, method of labour, previous history of HBV infection and the carrier status of HBsAg frequency.

Material and Methods

The present study included 60 women in labour and their offsprings and 45 pregnant women chosen randomally from those admitted to the labour ward and outpatient antenatal care unit of El-Minia University Hospital.

In the study 14 women had previous C.S. (5 women of them had blood transfusion once) and 85 women had normal vaginal labour while 6 women are primgravida.

Both maternal and cord blood specimens were obtained under complete aseptic condition, part of separated serum used for liver function tests and the other part kept at -20°C till the time of assay of:

1- HBsAg
2- HBeAg
3- HBeAb

These markers were tested by Enzyme Linked Immunosorbent assay (ELISA).

The Kits used for determination of HBsAg, HBeAg and HBeAb were supplied from Hoechst Orient S.A.A.

The apparatus which was used is BEHRING ELISA PROCESSOR II.

Results

The results are represented in Tables I,II and III. Figures 1 and 2 demonstrate the incidence of HBsAg and HBeAb respectively in different groups. While table IV shows that 25 from studied women defined as exposed group, 11 (44%) women had HBsAg and 14 (56%) women had HBeAb, 3 (12%) cases from HBsAg positive women were also positive for HBeAg.

Table (1): Results of Liver Function Tests in Different Groups.

	Total bil. mg/dL	Direct bil. mg/dL	AST U/L	ALT U/L	ALP KU/DL	Prot. gm/dL	Album. gm/dL
Women in labour No. = 60							
Mean	0.67	0.26	41.7	20.1	16.6	6.8	3.4
S.D.	±0.26	±0.12	±27.2	±11.4	±7.9	±0.92	±0.6
Their offspring No. = 60							
Mean	0.91	0.33	47.6	19.7	18.5	6.8	3.4
S.D.	±0.43	±0.22	±35.6	±12.5	±10.2	±0.78	±0.55
p value	1.32	0.02	0.44	0.16	0.13	0.34	0.39
Significance	not	not	not	not	not	not	not
Pregnant women No. = 45							
Mean	0.56	0.23	13.2	5.7	10.6	7.5	4.1
S.D.	±0.55	±0.34	±31.9	±2.2	±3.9	±0.89	±0.59
p value	0.91	0.23	1.9	1.9	4.3	8.89	2.34
Significance	not	not	not	not	not	not	not

Table (2): Comparison of Hepatitis Markers in Women in Labour, their Offspring and Pregnant Women.

	HBsAg		HBeAg		HBeAb	
	+ve	%	+ve	%	+ve	%
Women in labour (No. = 60)	6	10	2	3.3	8	13.3
Offsprings (No. = 60)	6	10	1	1.6	6	10
Pregnant women (No. = 45)	5	11.1	1	2.2	6	13.3

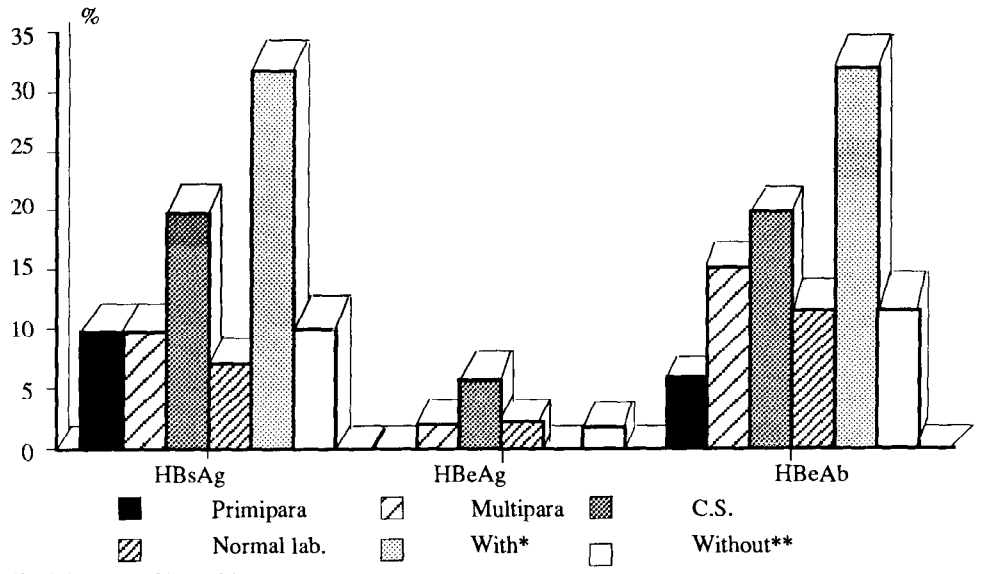
Table (3): Comparison of Hepatitis Markers.

	HBsAg		HBeAg		HBeAb	
	+ve	%	+ve	%	+ve	%
Primipara (No. = 29)	3	10.3	0	0	2	6.9
Multipara (No. = 76)	8	10.5	3	3.9	12	16.4
Normal vaginal labour (No. = 85)	7	8.2	3	3.5	11	12.9
Previous C.S. (No. = 14)	3	21.4	1	7.1	3	21
* With (No. = 3)	1	33.3	0	0	1	33.3
** Without (No. = 102)	10	9.8	3	2.9	13	12.7

* With past history of hepatitis ** Without past history of hepatitis

Table (4): Results of Hepatitis Markers in Exposed Cases to HBV.

	25 Women	
	+ve	%
HBsAg	11	44
HBeAb	14	56



* With history of hepatitis
** Without history of hepatitis

Fig. (1): Hepatitis markers in different groups.

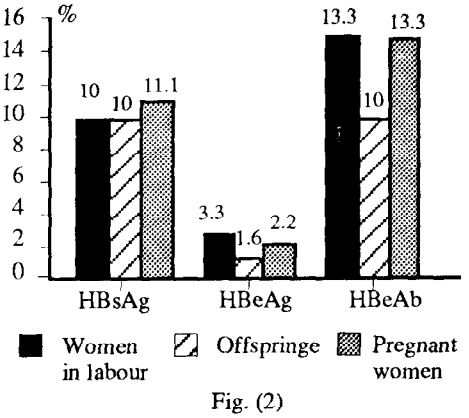


Fig. (2)

Discussion

Viral hepatitis is considered as a major world wide public health problem. Approximately, over one million persons die each year as a consequence of hepatitis B virus infection [6].

Transmission of hepatitis B from carrier mothers to their babies may occur during the perinatal period and seems to be the single most important factor in determining the prevalence of infection in some endemic regions [7]. In these areas infection at the time of birth and infection in early life are extremely important, leading to the carrier state [8].

The study included 105 pregnant women 60 were admitted to the department of Obstetrics and Gynaecology for delivery and 45 had come for antenatal care. The data collected from the history, examination and investigation of these pregnant women was a trial to determine the incidence of the exposure as well as the carrier state of hepatitis B in pregnant women. All pregnancies ended with a healthy viable infants who were examined and their sera, tested for liver function tests, HBsAg, HBeAg and anti HBe.

In our study the carrier rates of HBsAg were 10% in women in labour and 11% in

pregnant women group (Table II and Figure I) which represented 10.4% of total studied groups. These figures are in agreement with the recent reports in Egypt which revealed a carrier rate of 7.7-10% in the general population, 8% in the non-pregnant female population [9] and 10% among the pregnant women [10].

Abdel Raheem [11] reported a prevalence of HBsAg of 15.4% among pregnant women in Yemen, also, Struve [1] found that 5% of pregnant women of young Sweedens had been exposed to HBV. This percent reaches to 11% in the country with a high HBV endemicity, also he found that the prevalence of HBsAg carriers among those of high endemic regions was higher in pregnant women than in men, 9 of 130 (6.9%) versus zero of 67.

The cord blood samples gave 10% positivity for HBsAg. This transmission rate is in accordance with previous studies in Africa and South East Asia [12].

Although the positivity of HBsAg in the cord blood is denied by some authors [13] as an indication of transmission of HbsAg from the mother to her infant during pregnancy, many others believe that transplacental transmission may occur and may result in acute cases of hepatitis in the newborn [14,15,16].

The prevalence of (e) antigen as a marker of infectivity varies considerably in different geographical areas and different ethnic groups [17]. In this study the prevalence of NBeAg was present in 3 cases of pregnant women (2.8%), all of them were positive for HbsAg this is in agreement with Wolf et al. [18] who reported a significant association between HBsAg and HbsAg positivity also Struve [1] found that HbeAg positive chronic hepatitis B is associated with a variable degree of liver damage followed by anti-HBe seroconversion with termination of virus replication and remission of liver inflammation.

In the present study, 100% transplacental transmission rate of HBV was found in cases with positive HBaAg and HBeAg. While Nayak [19] found the risk of perinatal transmission of HBV to their offspring about 80-90% in HBeAg positive cases.

In most series reported the transmission rate was 85-90% in HBeAg positive carriers, these figures explain the role of HBeAg in the transmission of HBV from mother to their offsprings [20,21].

The HbeAb was present in 8 cases of women in labour (13.3%), in whom there were no any other seromarkers of HBV in their sera or transmitted to the offsprings, these results are in agreement with those of Stevens [22] who although reported that anti-HBe positive carrier mothers protect their offsprings against transmission of HBV, some authors detected that anti-HBe was 6-30% in patients with chronic type B hepatitis [23,24].

In this study the carrier rate of HbsAg in women with history of C.S. was 21.4%, while in women with history of normal vaginal labour was 8.2%. This may indicate that the routine sterilization of equipment and surgical instruments is not yet efficient in our country especially in the smaller hospitals and rural areas with diminished resources and facilities, 5 women who had C.S. received blood transfusion once during the C.S. or after it. The blood transfusion may be the cause of the presence of HBV seromarkers in women with previous history of C.S. but it is well known that the risk of hepatitis in recipients of blood increases with the number of

transfusions [25] Scott [26] in Yemen also attributed the significant association of a history of blood transfusion with hepatitis B infection.

It has been recently shown that most cases of hepatitis transmitted by blood transfusion in the U.S.A. are not caused by HBV. In 90% of cases of post-transfusion hepatitis, the causative agent was found to be non-A, non- B hepatitis [27], Struve [1] found 46% of the patients with an acute HBV infection transmitted by percutanous inoculation or blood transfusion.

In this study, 3 women had a previous history of hepatitis, one woman was positive for HBsAg and another for HbeAb while the third one was negative for any HBV markers. This result indicates that there was a positive relation between the presence of HBV markers in the serum and past history of hepatitis.

From our study it can be concluded that during pregnancy previous HBV infection does not affect the course of pregnancy or labour and its outcome. This is in agreement with most authors who have stated that, apart from the risk of transmission to newborns and to the medical staff, the carrier state would not affect the pregnancy or its outcome [82].

Also in this study there was no relationship between gravidity and the presence of HBV seromarkers as well as the carrier rate in these women.

Greenspoon et al. [29], found that screening of all pregnant women is necessary to identify those HBaAg-positive women capable of transmitting the hepatitis B virus to their infants. All the other obstetric surveys reviewed support the need to screen obstetric patients and to provide immunoprophylaxis to the infants at risk of perinatal infection.

Routine screening and immunization would result in a decrease in the carrier pool and thereby reduce the danger of serious infection with the delta hepatitis agent, in addition, women who are identified as chronic carriers could be candidates for routine serological monitoring, using such markers as α-fetoprotein to detect early hepato-cellular carcinoma (H.C.C.). Preliminary results in Korea, China and Alaska show an increasing of H.C.C. in chronic carrier cases [30].

It has been suggested that infants born to all HBaAg positive mothers, including those with anti-HBe, should be immunized, although it is well known that the risk of transmission in the group with anti-HBe is very small. It should be noted, however, that unless these children are actively immunized, they are at a continuing risk of infection by transmission later in their lives [31].

We conclude that:

1- A national screening program for HBV seromarkers should be established in all hospitals in Egypt.

2- Careful antenatal care for a pregnant women and a routine preventive program for the neonates of the carriers should be established using one of the available hepatitis B vaccine and Hepatitis B Immunoglobulin.

3- A long term follow up study of the infants born to HbsAg positive mothers should be done.

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