PREVALENCE OF HEPATITIS ß SURFACE ANTIGEN (HBsAg) IN ASYMPTOMATIC PREGNANT WOMEN AND IN THE CORD BLOOD OF THEIR NEWBORNS*

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SUMMARY

Two hundred cases of asymptomatic pregnant women and cord blood of their newborns were screened for HBsAg by RPH Method. The prevalence of HBsAg in asymptomatic women was in 4% and in the cord blood of their newborn was in 2 per cent. An increased antigenemia ot 4.59% was found in the age group of 21-25 years. The blood group O women showed highest incidence (4.93%) ol antigenemia. Four cord sera of newborn of the 8 positive mothers showed the presence of HBsAg accounting an incidence of 50% transplacental transmission. The babies showing cord blood positively foi HBsAg should be carefully followed up for development of infection or persistence of carrier state as they later become a reservoir of infection posing a threat to society.

Introduction

Schweitzer and Spear (1970) reported HBsAg antigenemia in 3 infants born to mothers who suffered from hepatitis B infection and thus recognised the importance of HBsAg transmission from mother to infant. In the same year Smithwick and Go Suat (1970) reported HBsAg antigenemia in infants borns to asymptomatic mothers. Subsequently, such newborns were found to be chronic carriers. Stevens *et al* (1975) suggested the HBsAg positive cord blood as an indication of transplacental transmission. However, exact mode of transmission of HBsAg from mother to infant is uncertain. Therefore the present study was aimed at:

(1) To find out the prevalence of HBsAg in asymptomatic pregnant women and in the cord blood of their newborns.

(2) And to find out the rate of transplacental transmission of HBsAg from the HBsAg positive mothers to their newborns.

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Material and Methods

This study was carried out in the Department of Obstetrics and Gynaecology, MGIMS, Sevagram from 1984 to 1985. The detailed clinical evaluation of 200 pregnant women admitted to this hospital for delivery was done. These patients were carefully examined and pertinent findings were noted down. Their newborns were also thoroughly examined. Blood samples were collected from pregnant women as well from umbilical cord of their newborns for detection of HBsAg. This detection was done by reversed passive Haemagglutination technique using the anti Hebscell Kit of the Green Cross Corporation (Japan), Code No. 11032 Lot No. 135A. Interpretation of results was done as follows.

If the agglutination erythrocytes spread out to cover the bottom of the wall, with partial centripetal slidings it was interpreted as positive. But if there was definite complete button in the centre of the cup it was interpreted as negative.

Observations

The present study has shown the prevalence of HBsAg in asymptomatic pregnant women in 4 per cent and in the cord blood of their newborns in 2 per cent (Table I). The maximum incidence (4.59%) of antigenemia was found in the age group of 21-25 years (Table II). Similarly maximum incidence (7.14%) of HBsAg was found in 3rd gravida. The highest incidence (4.93%) of HBsAg was seen in blood group 'O' followed by 4.08% in blood group A (Table III).

TABLE I

Prevalence of HBsAg in Asymptomatic Mothers and Cord Blood of their Newborns

	No. of cases	Positive cases	Percentage
Mother	200	4	4.0
Cord Blood	200	4	2.0

TABLE III

Prevalence rate of HBgAg among Different Blood Group of Pregnant Women

Blood group	Total cases	Number of positive cases	Percentage
A	49	2	4.08
B	58	2	3.04
O	81	4	4.93
AB	12	—	0

It was interesting to mention that HBsAg was positive in cord blood of 4 newborns born to 8 positive mothers accounting an incidence of 50% transplacental transmission.

Discussion

In the present study the prevalence of HBsAg in pregnant women was found in 4 per cent and in the cord blood of their newborn in 2 per cent (Table I). A wide

TABLE II

Age Incidence

Age group	Number of sera tested	Number of sera positive	Percentage
15-20	71	3 (1.5%)	4.23
21-25	4	4 (2.0%)	4.59
26-30	32	1 (0.5%)	3.13
31-40	10	—	—
All age groups	200	8 (4.0%)	—

variation ranging from 0.5 to 3.0 per cent of HBsAg carrier rate in healthy pregnant women have been reported from different centres (Table IV). The findings of the present study was found to be higher than the reports from the other centres. Similarly, an attempt was made to compare the findings of the present study with the reports from various centres of the world. Okada *et al* (1976) from Japan reported the carrier rate of HBsAg in asymptomatic mothers in 2.3 per cent. Derso *et al* (1978) from U.K. reported the carrier rate in 0.1 per cent. Thus the findings of the present study is higher than that of Okada *et al* (loc cit) and Derso *et al* (loc cit). The higher prevalence in the present study could probably be due to geographical region status.

An increased antigenemia (4.59%) was found in the age group of 21-25 years (Table II). Vyas *et al* (1983) and Shanmugam *et al* (1982) have reported similar findings. It is believed that high prevalence of HBsAg among younger age group may be due to more frequent contact with the diseased and carrier population.

In the present study maximum of 4.93% of cases were positive for HBsAg in blood group 0 (Table III) which is in agreement with Lewknoie and Finn (1969) and Vyas *et al* (1983). This high prevalence of antigenemia in blood group 0 individuals might be due to an increased propensity of antigens to various blood group specific proteins.

Four newborns of the 8 HBsAg positive mothers showed the presence of HBsAg in their cord blood accounting incidence of 50% transplacental transmission. A comparison of transplacental transmission from various centres of the world (Table V) has shown that the present findings is

TABLE IV

A Comparison of the Incidence of HBsAg Carrier state as Reported by Various Workers

Sr. No.	Author	Year	Place	No. of sera tested	No. of sera +ve	Method	%
1.	Pal *et al*	1973	Chandigarh	288	2	IEOP	0.51
2.	Shanmugam *et al*	1978	S. Kerala	400	12	CIEF, AGD	3.00
3.	Khatri *et al*	1980	Bombay	1276	8	CIEF, RIA	0.64
4.	Vyas *et al*	1983	Jodhpur	500	4	AGD	0.8
5.	Day *et al*	1984	Cuttack	200	1	CIEF	0.5
6.	Gupta *et al*	1985	Jaipur	1000	22	CIEF	2.2
7.	Present study	1985	Sevagram	200	8	RPHA	4.0

TABLE V

Comparison of Transplacental Transmission From Different Centres of the World

Name of Author	Year	State	Percentage
Derso *et al*	1978	U.K.	50.16
Gerety & Schwaltzer	1977	U.S.A.	61.64
Dupuy *et al*	1978	France	5.88
Papse-Vangaloue	1974	Greece	40.28
Khatri *et al*	1978	Bombay	25.0
Gupta *et al*	1985	Jaipur	0

much higher than the reports of many centres.

This high rate of HBsAg positivity in cord blood in our series could be due to application of a more sensitive technique like reversed passive haemagglutination. Presence of HBsAg in cord blood increases the baby's chance to becoming a chronic carrier (Stevens *et al* 1975). The babies showing cord blood positivity for HBsAg should be carefully followed up for development of infection or persistence of carrier state as they later become a reservoir of infection posing a threat to society.

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