Original Article

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Seroprevalence of Hepatitis B Infection among Pregnant Women in One of the Institute of Northern India

Obstetrics and Gynaecology Section

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ABSTRACT

Introduction: Hepatitis B Virus (HBV) occurs worldwide with more than 2 billion people being infected with HBV at some time in their lives. Transmission of HBV from carrier mothers to babies can occur during perinatal period and is important factor in determining the prevalence of infection in highly endemic areas.

Aim: To assess the prevalence of hepatitis B infection, among otherwise healthy pregnant females.

Materials and Methods: This retrospective study analysed records of antenatal care registry from 1st April 2013 to 30th March 2014 at our institution. Details of a total of 3686 pregnant women subjected to screening of Hepatitis B surface antigen (HBsAg) using Enzyme Linked Immunosorbent Assay (ELISA) was recorded into a preset proforma. Data thus obtained has been analysed using SPSS version 13 and presented.

Results: Seroprevalence of HBsAg positive antenatal females was 1.11%. The mean age of HBsAg positive pregnant women was 24.98±4.16 years. Thirty one (75.61%) subjects hailed form a rural area. 4 (09.75%) and 3 (07.31%) subjects had HBV-HCV co-infection and HBV-HIV co-infection respectively. Mean parity of women with HBV infection was 1.83±0.87. Most common age group with HBV infection was 25–30 years.

Conclusion: Around 130 countries in the world are currently covered by routine hepatitis B immunization. High prevalence of seropositivity of HBsAg among antenatal female calls for routine vaccination against HBV infection. Universal free screening for HBV infection needs to be offered to all antenatal females on an opt-out basis to prevent the next generation from being grappled by chronic hepatitis, cirrhosis and hepatocellular carcinoma.

Keywords: Liver cirrhosis, Mothers, Seroepidemiology, Infection, Carcinoma

INTRODUCTION

Hepatitis B Virus (HBV) has been turning out to be a global epidemic, with a global estimate of more than two billion people being infected with HBV and 350 million people remaining infected chronically and 1.5 million deaths occurring from HBV related liver diseases, including end stage cirrhosis and hepatocellular carcinoma each year [1].

Prevalence of HBV infection shows great variability in different parts of the world. The World Health Organization (WHO) has classified HBV prevalence into high endemicity (>8%), intermediate (2-7%) and low endemicity (<2%). HBV prevalence in India is in intermediate range. Every year 100,000 Indians die due to HBV infection related illnesses [2].

It has been estimated that up to 10% of the 350 million Hepatitis B chronic carriers are in India. The carrier rate of Hepatitis B in India may vary in the different regions and is often quoted as being 4.7% [3,4]. Transmission of HBV from carrier mothers to babies can occur during perinatal period and is important factor in determining the prevalence of infection in highly endemic areas [5].

Before HBV vaccine was integrated into the routine immunization programme, about 10% to 30% babies were becoming HBV carriers amongst mothers who were HBsAg positive but HBeAg negative. However, perinatal infection was higher (70% to 90%), when mothers were also HBeAg positive [6,7]. Three possible routes of transmission for HBV from infected mothers to infants are; transplacental, natal or postnatal (i.e. in utero, during delivery or during infants care or through breast milk) [8–10].

It is generally agreed that risk of chronic infection with HBV is inversely related to age of onset of infection. The probability of developing the carrier state following HBV infection is greatest in early life and decreases with increasing age. Up to 90% of babies born to carrier mothers become carriers and they are at a very high risk of developing chronic liver disease at a younger age and represent the most important reservoir of infection in the community [11,12]. Thus prevention of transmission of infection in this group would be helpful to decrease overall carrier rate. Prevention of perinatal transmission is possible with immunoprophylaxis of risk babies shortly after birth [13].

The present study was designed to assess the prevalence of hepatitis B infection, among otherwise healthy pregnant females. To the best of our knowledge this is the first study in Punjab, planned to assess the seroprevalence of HBsAg among antenatal females.

MATERIALS AND METHODS

This retrospective study analysed records of antenatal care registry from 1st April 2013 to 30th March 2014 at our institution. Details of a total of 3686 pregnant women subjected to screening of Hepatitis B surface antigen (HBsAg) using enzyme linked immunosorbent assay (ELISA) was recorded into a preset proforma. Data thus obtained has been analysed using SPSS version 13 and presented.

RESULTS

A total of 41 cases were found to have HBsAg positive out of 3686 who underwent testing, indicating a prevalence rate of 1.11%. The mean age of HBsAg positive pregnant women was 24.98±4.16 years. Thirty one (75.61%) subjects hailed form a rural area whereas 10 (24.39%) were from urban area. Mean parity of women with HBV infection was 1.83±0.87. 04 (09.75%) and 03 (07.31%) had HBV-HCV co-infection and HBV-HIV co-infection respectively.

Most common age group with HBV infection was 25 – 30 years, with 20 subjects indicating a prevalence rate of 1.10%. Illiterate predominated with 24 subjects with a prevalence rate of 1.05%

Age Group	Total	Frequency (n)	Prevalence %
18 – 25 years	1322	12	0.90%
25 – 30 years	1817	20	1.10%
30 – 35 years	547	9	1.64%

[Table/Fig-1]: Frequency and seroprevalence based on age distribution among HBV infected subjects.

Domicile	Total	Frequency (n)	Prevalence %
Rural	2876	31	1.07%
Urban	810	10	1.23%

[Table/Fig-2]: Frequency and seroprevalence based on domicile among HBV infected subjects.

Literacy	Total	Frequency (n)	Prevalence %
Illiterate	2287	24	1.05%
Primary school education	1026	12	1.17%
Secondary school education	311	4	1.28%
Graduation and above	62	1	1.61%

[Table/Fig-3]: Frequency and seroprevalence based on literacy among HBV infected subjects.

Occupation	Total	Frequency (n)	Prevalence %
Housewife	2678	30	1.12%
Labourer	878	9	1.02%
Service	130	2	1.53%

[Table/Fig-4]: Frequency and seroprevalence based on occupation among HBV infected subjects.

followed by 12 subjects with primary school education with a prevalence rate of 1.17%, 30 subjects were housewives with a prevalence rate of 1.12% [Table/Fig-1-4].

DISCUSSION

The present study reports a prevalence rate of HBs Ag in pregnant women as 1.11%. This rate was relatively low, compared to previous studies which showed the prevalence ranging between 4.1-8.4 percent [14–18] [Table/Fig-5].

The difference in prevalence rate may be due to geographical variation or detection methods. Similar Indian studies reports a prevalence rates of 0.9% to 7.8% [5,19–21].

Study	Year	Location	Sample Size	Prevalence Rate
Bakthavatchalu et al., [19]	2012	Bangalore	500	7.8 %
Khakhkhar et al., [20]	2012	Jamnagar	2050	3.07%
Paranjothi et al., [21]	2009	Krishnagiri	762	5.1%
Dwivedi et al., [5]	2011	Allahabad	4000	0.9%
Oladimeji et al., [22]	2013	Nigeria	1627	3.9%
Murad et al., [23]	2013	Yemen	400	10.8%
Zenebe et al., [24]	2014	Ethiopia	318	3.8%
El-Magrahe et al., [25]	2010	Libya	1500	1.5%

[Table/Fig-5]: Review of literature – seroprevalence of HBsAg positivity among antenatal female.

CONCLUSION

High prevalence of seropositivity of HBsAg among antenatal female calls for routine vaccination against HBV infection. Up to 90% of babies born to HBV carrier mothers develop chronic liver disease at a younger age and represent the most important reservoir of infection in the community. Thus prevention of transmission of infection in this group would be helpful to decrease overall carrier rate. Prevention of perinatal transmission is possible with immunoprophylaxis of risk babies shortly after birth.

Universal free screening for HBV infection should be offered to all antenatal females on an opt-out basis to prevent the next generation from being grappled by chronic hepatitis, cirrhosis and hepatocellular carcinoma.

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