

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/336610603>

Seroprevalence of hepatitis B infection among pregnant women in Southern Odisha

Article in *Indian Journal of Medical Specialities* · January 2019

DOI: 10.4103/0976-2884.269474

CITATIONS

5

READS

105

3 authors, including:



Neha Samal

Berhampur university

3 PUBLICATIONS 9 CITATIONS

SEE PROFILE



Sanghamitra Padhi

Berhampur university

48 PUBLICATIONS 593 CITATIONS

SEE PROFILE

Some of the authors of this publication are also working on these related projects:



First case of Arthrographis kalrae pulmonary infection in a patient with AIDS [View project](#)

Seroprevalence of Hepatitis B Infection among Pregnant Women in Southern Odisha

Neha Samal, Sanghamitra Padhi, Laxmi Burman

Department of Microbiology, MKCG Medical College, Berhampur, Odisha, India

Abstract

Background: Hepatitis B virus (HBV) infection continues to be a life-threatening health problem throughout world, infecting more than two billion people. While blood transfusion and unsafe therapeutic injection continue to be major risk factors, the role of vertical transmission remains under-estimated. Hence, this study was done to find out the prevalence of HBV infection and associated risk factors among healthy pregnant ladies in Southern Odisha. The present study was a prospective, observational study conducted, in the department of Microbiology, with collaboration of department of Obstetrics and Gynecology of MKCG Medical college from 1st March 2017 to 28th Feb 2018. **Methodology:** After collection of three to four millilitre of venous blood from the clients, sera was separated by centrifugation. They were then tested for Hepatitis B surface antigen (HBsAg) by Enzyme linked Immunosorbent assay (ELISA). Serological status of the subjects and correlation with their socio-economic characteristic was noted using a preset proforma. Babies born to HBsAg positive ladies were administered Hepatitis B vaccine and immunoglobulin. **Results:** Total 3,230 in non-duplicating serum samples were screened among which 150 (4.64%) were tested positive for HBsAg. Ladies with multiple sexual partners (57.14%) followed by intravenous drug users (7.88%) were mostly positive for HBsAg. **Conclusion:** Exposure to risky social behavioural pattern, lack of awareness could be suggested as possible means of acquiring the infection. Immunization is the most effective and only way of preventing development of chronic carrier state. Hence all neonates were administered with hepatitis B vaccine and 0.5 ml of hepatitis B immunoglobulin within 12 hours of birth.

Keywords: Hepatitis B, prevalence, pregnancy

INTRODUCTION

Hepatitis B virus (HBV) infection continues to be a life-threatening health problem throughout world, infecting more than two billion people. About 240 million people remain infected chronically and 780,000 deaths from HBV related liver diseases, including end stage cirrhosis and hepatocellular carcinoma occur each year.^[1]

Since, India has one fifth of the world's population it accounts for a large proportion of the worldwide HBV burden. India harbours 10 -15% of the entire pool of HBV carriers of the world.^[2]

HBV is transmitted by multiple routes. In developing countries, the most common mode of transmission is via blood and blood products transfusion and needle prick injuries, surgical and dental procedure or percutaneous inoculation via shared razors and tooth brushes. In developed countries sexual transmission

is found to be the most common route; particularly homosexual male being at higher risk.

Nearly 40 million HBV carriers are there in India and 15-25% of carriers are likely to suffer from chronic liver disease, and may die prematurely. Hence infection occurring during infancy and childhood have the greatest risk of becoming chronic. Out of 26 million infants born every year in India, around 1 million face the life time risk of developing chronic HBV infection.^[3] This progression to chronicity can be prevented by screening of each and every pregnant lady for HBsAg and

Address for correspondence: Dr. Sanghamitra Padhi, Associate Professor, Department of Microbiology, MKCG Medical College, Berhampur, Odisha, India. E-mail: padhisanghamitra@yahoo.in

Received: 25-03-2019

Revised: 22-05-2019

Accepted: 10-07-2019

Published Online: 17-10-2019

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

How to cite this article: Samal N, Padhi S, Burman L. Seroprevalence of hepatitis B infection among pregnant women in Southern Odisha. *Indian J Med Spec* 2019;10:207-9.

Access this article online

Quick Response Code:



Website:
www.ijms.in

DOI:
10.4103/0976-2884.269474

then administration of hepatitis B vaccine and hepatitis B immunoglobulin to the newborns born to HBV positive ladies.

Very few studies have been published regarding the prevalence of HBV infection among pregnant ladies.

METHODOLOGY

The present study was prospective, observational study conducted, in the department of Microbiology, with collaboration of department of Obstetrics and Gynecology Department of MKCG Medical college. This study was approved by IEC (Institutional Ethical Committee) and was performed after obtaining consent from all the study participants.

The study was carried from 1st March 2017 to 28th Feb 2018, in the department of Microbiology, MKCG Medical college. Healthy pregnant ladies in age group 18-45 years, having been registered in this hospital, were included in the study. Pregnant ladies suffering from any systemic disease were not included.

After collection of three to four millilitre of venous blood from the patients, sera was separated by centrifugation. They were then tested for Hepatitis B surface antigen (HBsAg) by Enzyme linked Immunosorbent assay (ELISA).

Serological status of the subjects and correlation with their socio-economic characteristic was noted using a preset proforma. Babies born to HBsAg positive ladies were administered hepatitis B vaccine and immunoglobulin.

RESULTS

A total of 3,230 pregnant patients in non-duplicating serum samples were screened among which 150 (4.64%) tested positive for HBsAg. The most common age group showing Hepatitis B virus antigenemia (HBsAg positivity) was 18-25 years (5.47%), the mean age being 21.5 years [Table 1]. The various risk factors for acquiring Hepatitis B in the study population are highlighted in Table 2. It is evident from Table 3 that ladies with parity 2 showed maximum seropositivity (21.42%). Occupational status of pregnant women included in the study population is shown in Table 4 while Table 5 shows the educational status of the study population. Most of seropositive ladies were farmers (8.54%) followed by daily wage labourers (6.5%). Maximum frequency of HBs Antigenemia was noted among ladies who have completed primary education (14.12%) followed by ladies having completed secondary education.

DISCUSSION

Pregnant ladies (considered as having unprotected sex) may be taken as a proxy of the general population, and the prevalence of HBsAg among them roughly represents endemicity of HBV of that area.

Moreover, transmission of HBV from carrier mothers to babies can occur during, prenatal and perinatal period and is an important factor in determining the prevalence of infection in highly endemic areas.^[4]

Table 1: Age distribution of HBsAg positive women in the study group

Age group (years)	Total number of cases	Number of HBsAg positive ladies	Percentage
18-25	2084	114	5.47
26-33	982	30	3.05
>33	164	6	3.65
Total	3230	150	4.64

Table 2: Prevalence of Risk factors for Hepatitis B virus acquisition in the study population

Risk factor	Number	HBsAg positive	Percentage
Blood transfusion	482	16	3.31
Surgical operations	784	44	5.61
Multiple sexual partner	14	8	57.14
Non immunisation with HBV vaccine	3118	150	4.81
Intravenous drug abuse	203	16	7.88
Spouse of migrant labourers	1950	82	4.20

Table 3: Parity distribution of HBsAg positive women

Parity	Total number	Number of HBsAg positive cases	Percentage
G1P0	1914	80	4.17
G2P1	1284	32	2.49
G3P2	28	6	21.42
G4P3	02	0	0

N.B. - G – Gravidity, *P-Parity

Table 4: Occupation status of HBsAg positive women

Occupation	Total number	Number of HBsAg positive cases	Percentage
House wife	656	28	4.26
Farming	234	20	8.54
Daily wage labourer	1322	86	6.50
Shopkeeper	366	6	1.63
Business	284	6	2.11
Fisherwomen	368	4	1.08

Table 5: Educational status of HBsAg positive women

Education	Total number	Number of HBsAg positive cases	Percentage
Illiterate	1288	24	1.86
Primary School education	694	98	14.12
Secondary School education	880	28	3.18
Post-Secondary	368	Nil	Nil

Prevalence of HBsAg among pregnant ladies of Southern Odisha was found to be 4.64%. This rate is higher in comparison to the prevalence rate of 1.11% of a study conducted in North India.^[5] But this is much lower in contrast to 7.69% of Eastern

Odisha.^[6] Different international studies have reported various prevalence rates among pregnant women from different parts of the world; in Turkey, a prevalence rate of 2.1%, Saudi Arabia 2.44%, Brazil 1.64%, Italy 1.1%, Pakistan 4.6% and South Nigeria 6.6%.^[6]

Based on prevalence of HBsAg, different areas of the world are classified as high ($\geq 8\%$), intermediate (2 -7%), and low ($< 2\%$) HBV endemicity. South – East Asia, China, most of Africa, most of Pacific Islands, the Amazon basin and parts of Middle East are having high endemicity. Countries with intermediate endemicity include South Asia, Eastern and Southern Europe, Russia and central and Southern America. On the other hand, the United States, Western Europe and Australia are having low endemicity.^[7]

Majority of seropositive ladies belonged to 18 -25 years age. Early age at sexual debut below 19 years might be a significant contributor for this condition. Infection of hepatitis B virus among teenage ladies increases the risk of acquisition of infection by more babies born to these young women who are just initiating their reproductive carrier. Ladies with multiple sexual partners were HBsAg positive in 57.14% cases contributing to the most important risk factor followed by intravenous drug administration (7.88%). The antigenemia was detected in 4.2% cases of spouses of migrant labourers. The number of migrant labourers are very high in this part of the state and staying away from home and family might be one of the few factors indulging them to get involved in some activities which lead to acquisition of the virus.^[8] Most of the affected women were farmers followed by daily wage labourers. Remaining outside away from home, getting engaged in works along with male coworkers, lack of awareness regarding sexual transmitted disease might be some of the factors responsible for this. The rate was minimum in service holders which might be due to their awareness regarding transmission of the disease and immunisation. Regarding education, majority of HBsAg positive ladies had hardly finished primary education. This is concordant with the study by Utoo BT where infection was found to be more among women having low level of formal education and mostly were involved in agricultural activities.^[9] Illiterate women might be getting married at an early age and not exposed to risky behavioural pattern. This might be the reason of low positivity.

CONCLUSION

Transmission of HBV from carrier mothers to babies can occur during prenatal, intrapartum and postnatal period. The age of acquisition of HBV is an important determinant of outcome; the earlier the age, the higher the likelihood of chronicity. Hence, neonates with vertically acquired HBV infection have a higher chance of chronicity and also, serve as a reservoir of infection. Thus, routine screening of all pregnant women should be carried out based on the recommendation of WHO and CDC. Further, more health education, aiming at social life style, immunization of those at risk and mass vaccination of infants irrespective of maternal HBV status should be recommended, in order to decrease the incidence of Hepatitis B viral infection as well as mother to child transmission.

Financial support and sponsorship

None.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Hepatitis B. World Health Organization. Available from: <https://www.who.int/news-room/fact-sheets/detail/hepatitis-b>. [Last updated on 2018 Jul 18, Last accessed on 2019 Jun 09].
2. Datta S. An overview of molecular epidemiology of hepatitis B virus (HBV) in India. *Virology* 2008;5:156.
3. Operational guidelines for Hepatitis B vaccine introduction in the universal immunization programme. Ministry of Health and Family Welfare, Govt of India 2011. Available from: http://www.searo.who.int/india/topics/routine_immunization/Operational_Guidelines_for_HepatitisB_vaccine_introduction_in_UIP_2011.pdf?ua=1. [Last accessed on 2019 Jun 09].
4. Dwivedi M, Misra SP, Misra V, Pandey A, Pant S, Singh R, *et al.* Seroprevalence of hepatitis B infection during pregnancy and risk of perinatal transmission. *Indian J Gastroenterol* 2011;30:66-71.
5. Sibia P, Mohi MK, Kumar A. Seroprevalence of Hepatitis B infection among pregnant women in one of the institute of northern India. *J Clin Diagn Res* 2016;10:QC08-QC09.
6. Guru L, Mohapatra PC, Mohapatra PC, Senapati S, Nanda U. Incidence of HBsAg carrier state in pregnancy in eastern Orissa. *J Obstet Gynecol Ind.* 2004;54:136-8.
7. Te HS, Jensen DM. Epidemiology of hepatitis B and C viruses: A global overview. *Clin Liver Dis.* 2010;14:1-21.
8. Panigrahi R, Biswas A, Datta S, Banerjee A, Chandra PK, Mahapatra PK, *et al.* Anti-hepatitis B core antigen testing with detection and characterization of occult hepatitis B virus by an in-house nucleic acid testing among blood donors in Behrampur, Ganjam, Orissa in southeastern India: Implications for transfusion. *Virology* 2010;7:204.
9. Utoo BT. Hepatitis B surface antigenemia (HBsAg) among pregnant women in southern Nigeria. *Afr Health Sci* 2013;13:1139-43.