



Original Research Article

Seroprevalence of hepatitis b surface antigen infection among outpatients attending a tertiary care centre

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ABSTRACT

Introduction: Hepatitis B virus (HBV) infection is a chronic lifelong infection. Hepatitis B virus (HBV) infects more than 400 million people worldwide and is common cause of liver disease and liver cancer. In India, it is estimated that there are 40 million people chronically infected with HBV infection. The current study was conducted to estimate the burden of HBV infection in Bidar district of North Karnataka.

Materials and Methods: The present study was conducted in the Department of Microbiology, Bidar Institute of Medical Sciences, Bidar. A Total 12,142 samples were tested by one step Immunochromatographic method for rapid detection of HBsAg to diagnose the infection.

Results: Among 12,142 samples tested, 284 samples were positive for HBsAg with prevalence rate of 2.34%. Age, gender and month wise distribution of infection was studied.

Conclusion: This study highlights the prevalence and burden of HBV infection in Bidar district of North Karnataka. Which provide reference to future studies on the epidemiology of HBV infection in this region.

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1. Introduction

Hepatitis B virus (HBV) infection is a chronic lifelong infection. Hepatitis B virus (HBV) infects more than 400 million people worldwide and is common cause of liver disease and liver cancer. HBV, a member of the Hepadnaviridae family, is a small DNA virus with unusual features similar to retroviruses. HBV replicates through an RNA intermediate and can integrate into the host genome. The unique features of the HBV replication cycle confer a distinct ability of the virus to persist in infected cells.¹

In India, it is estimated that there are 40 million people chronically infected with HBV infection. HBV causes a spectrum of disease from self-limiting hepatitis to acute fulminant and chronic hepatitis which may result in liver cirrhosis and hepatocellular carcinoma.^{2,3} World Health Organization (WHO) has classified HBV prevalence in to high endemicity (>8%), intermediate (2-7%) and low endemicity (<2%). HBV prevalence in India is in

intermediate range. 100,000 Indians die due to HBV infection related illness every year.³ HBV infection can occur parenterally, sexually and perinatally. Hepatitis B spreads most commonly from mother to child at birth. The development of chronic infection is very common in infants infected from their mother or before the age of 5 years.¹ It also spread through saliva, vaginal, and seminal fluid. Infection in adulthood leads to chronic hepatitis in less than 5% of cases. HBV is also one of the transfusion transmissible infection. Singh et al studied the low seroprevalence of hepatitis B virus infection among blood donors of coastal Karnataka, India.^{4,5} Many studies have also shown the hepatitis B infection among pregnant women in India. The current study was conducted to estimate the burden of HBV infection in Bidar district of North Karnataka.

2. Objective of the Study

This current study was designed to find out the HBsAg Seropositivity among rural & urban population attending

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outpatients at tertiary care center with special consideration to childbearing age women.

3. Materials and Methods

This retrospective study was conducted in the Department of Microbiology, Bidar Institute of Medical Sciences, Bidar. Samples included from admitted patients, outpatients, and patients attending ART centres and pregnant women attending ANC clinic and patients for whom HBsAg test and detection was sought as the basis of clinical findings and socio economic risk factor and for preoperative evaluation of HBsAg status of teaching hospital, Bidar Institute of Medical Sciences, Bidar. Institutional ethical committee clearance was taken before the study. Blood sample was collected by vene-puncture and serum was separated as per standard procedure. All samples were tested by rapid one step immune-chromatographic assay (IMA) kit for the qualitative detection of hepatitis B surface antigen (HEPACARD - J. Mitra & Co Pvt. Ltd). Immunochromatographic assay are rapid and sensitive for detection of HBsAg. They are economical and easy to perform and give fast results within 20 min and have been recommended for routine use in clinical microbiology laboratories.⁶

3.1. Statistical analysis

Statistical software package SPSS version 22 was used to analyse the data. Chi-square test was applied wherever necessary and P-value of < 0.05 was considered statistically significant.

4. Results

A total of 12,142 (serum samples) patients were tested for HBsAg for a period of one year from February 2016 to February 2017. 284 patients tested positive with prevalence of 2.34%. In the Whole study tenure, an average of 2- 3% prevalence rate was showed, except in the month of October 2014 which was 10.96% (Table 1). The infection is more in female (59. 90%) as compared to male (40.05%) and among age group between 21-30 which is 47.53% out of 284 positives (Table 2). 30.91% of the positivity found among pregnant women attending ANC clinic and 4.83% among HIV AIDS patients attending ART centre.

5. Discussion

Our study is hospital based comprised of large number of samples and the prevalence of HBsAg was 2.34%. The study was conducted for only one year duration and exposes the prevalence rate of HBsAg among Bidar population and every year wise study also can be done to check the prevalence rate retrospectively. Many studies have done in India and Karnataka on HBsAg prevalence. Patil et al

Table 1: Prevalence of HBsAg month wise

Month	Number of Serum tested	HBsAgpositive Serum	Percentage
February 2016	1295	39	3.01
March 2016	594	17	2.86
April 2016	595	16	2.68
May 2016	1395	29	2.07
June 2016	1312	17	1.29
July 2016	310	7	2.25
August 2016	1388	20	1.87
September 2016	774	11	1.42
October 2016	301	33	10.96
November 2016	299	9	3.01
December 2016	275	6	2.18
January 2017	1706	39	2.28
February 2017	1898	41	2.16
Total	12,142	284	2.34

Table 2: Age distribution of HBsAg positive patients

Age	HbsAg positive Serum	Percentage
0-10	9	3.38
11-20	42	14.78
21-30	135	47.53
31-40	47	16.54
41-50	21	7.39
51-60	17	5.98
61 & above	13	4.57

studied prevalence of HBsAg in Sholapur of Maharashtra district which is nearer to our study place (150 km) and found to be 2.99% and was below intermediate endemicity.⁷ Quadri SA et al studied the prevalence of HBsAg in Bijapur of North Karnataka and the prevalence rate was 1.63% indicating low endemicity.⁸

Singh et al found out the Seroprevalence of HbsAg among blood donors of costal Karnataka India and the prevalence was 0.62% which comes under low prevalence zone (<2%).⁴ One more study was conducted by Preeti B. Mindolli and Manjunath P. Salmani in Bijapur of North Karnataka which was also a hospital based study to check prevalence in the year 2012 and 2013. The study results shown a slight increase hepatitis infection from 1.54% in 2012 to 1.65% in 2013.⁹

Our study results are bit higher (2.34) than the low endemicity range which is <2% but almost equal to intermediate zone as per the WHO guidelines.⁵ These all studies states that there is slight to intermediate endemicity

of HBsAg in Bidar and North Karnataka. Our study also showed the highest infection rate in the month of October 2016 and it was high infectivity among females as compared to other studies where it has been shown high among males i.e 35.3% and 19.3% in female in the study conducted by Datta S et al.¹⁰ The prevalence of HBV is 4% amongst the general population in India. As the infection is asymptomatic, most people are unaware of their infection but untreated chronic HBV can result in liver cirrhosis and liver cancer.

6. Conclusion

India has documented low awareness about viral hepatitis in community and amongst population with high risk behaviour. Policies and strategies for prevention and control needs to be tailored to the specific national or sub national context. Bidar, a district in North Karnataka is one of the backward district in the state with population of 17.03 lacks and occupies a low position in economic as well as human development. Our study highlights the HBV infection rate in this district of North Karnataka which provides reference to the future studies on the epidemiology of HBV infection.

7. Source of Funding

None.

8. Conflict of Interest

None.

References

1. Liang TJ. Hepatitis B: The virus and disease. *Hepatol.* 2009;49:S13–21.

2. Narayan A, Paniker. Text Book of Microbiology. 8th ed. India: Universities Press; 2009.
3. Gitlin N. Hepatitis B: diagnosis, prevention, and treatment. *Clin Chem.* 1997;43(8):1500–6.
4. Puri P. Tackling Hepatitis B disease burden in India. *J Clin Exp Hepatol.* 2014;4(4):312–9.
5. World health organisation (Internet) Place (Unknown). [Cited on August 24, 2015]. . Available from: <http://www.who.int/mediacentre/factsheets/fs204/en/>.
6. Sato K, Ichiyama S, Iinuma Y, Nada T, Shimokata K, Nakashima N. Evaluation of immunochromatographic assay systems for rapid detection of hepatitis B surface antigen and antibody, Dainascreen HBsAg and Dainascreen Ausab. *J Clin Microbiol.* 1996;34(6):1420–2.
7. Thyagarajan SP, Jayaram S, Mohanavalli B. Prevalence of HBV in general population of India. In: Sarin SK, Singal AK, editors. Hepatitis B in India: Problems and Prevention. New Delhi: CBS Publishers and Distributors; 1996. p. 5–16.
8. Quadri SA, Dadapeer HJ, Arifulla KM, Khan N. Prevalence of Hepatitis B Surface Antigen in hospital based population in. *Al Ameen J Med Sci.* 2013;6:180–2.
9. Mindolli PB, Salmani MP. Seroprevalence of hepatitis B in a tertiary care centre in Bijapur, Karnataka: A two years prospective study. *Int J Med Res Health Sci.* 2015;4(3):483.
10. Dutta S, Shivananda PG, Chatterjee A. Prevalence of hepatitis B surface antigen and antibody among hospital admitted patients in Manipal. *Indian J Public Health.* 1993;38:108–12.

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