

Original Research Article

<https://doi.org/10.20546/ijcmas.2018.710.228>

## Prevalence of HBV in Patients Suffering from Various Malignant Disorder in Tertiary Cancer Care Center in Malwa Region of Punjab

Deepak Arora<sup>1\*</sup>, M.K. Mahajan<sup>2</sup>, Parvinder Sandhu<sup>3</sup>, Karuna Singh<sup>4</sup> and Anju<sup>4</sup>

<sup>1</sup>Department of Microbiology, BFUHS, FDK, India

<sup>2</sup>Radiation Oncology, ACI, Bathinda, India

<sup>3</sup>Surgical Oncology, BFUHS, FDK, India

<sup>4</sup>Radiation Oncology, BFUHS, FDK, India

*\*Corresponding author*

### ABSTRACT

Hepatitis B virus (HBV) is a DNA virus belonging to the Hepadnaviridae family that infect humans causing a disease infecting liver cells displaying a substantial hepatic tissue tropism, and inducing chronic liver damage and subsequent Hepato carcinogenesis. In Oncology patients receive packed red blood cell suspensions and other blood products regularly and they are in the high-risk group for infections due to these viruses. In addition to Hepatocellular carcinoma several studies have proved the existence of HBV in some extra hepatic organs and tissues, such as the kidneys, skin, lymph nodes, bone marrow, vessel walls, colon, pancreas as well as stomach. Chemotherapy, which is one of the main modality of treatment for cancer not only suppresses the immune system which cause an increment in HBV DNA (viral load) and damage the liver. In clinical practice, the oncologists deal with a large number of patients undergoing anticancer treatments and both patients and clinicians are unaware about patient infection with HBV thus posing a serious threat to health care professionals and society at large and HBV infection in these cancer patients can results in life-threatening events and poor outcome due to early discontinuation of Chemotherapy. Aims of the study are to study the geographical and demographic profile like age groups and gender, urban or rural in patients coming in tertiary care cancer hospital in Bathinda; To study the prevalence of HBsAg in cancer patients. To study the screening of HBV infection in cancer patients; To examine sex specific factors associated with being unaware of one's HBsAg Seropositivity status. This descriptive study was carried out in a teaching cancer hospital in Bathinda (Punjab), India. Demographic and geographical data of the hepatitis B patients admitted to our hospital was collected for a period of 2 year from 1.5.16 to 31.8.18. Patients of all age groups with positive anti-HBV by enzyme immune assay for the detection of anti-HBV antibodies by using fourth generation kits were included. In total, 1096 patients had undergone hepatitis B serology test. Hepatitis B infection was positive in 31 patients (2.8%). HBsAg frequency reported was 8.2% in rural areas and 6.2% in urban areas. No significant association was observed between types of cancers and HBsAg positivity. Our study could be used an early opportunity to direct efforts towards creating awareness among different sections of the community regarding all aspects of the disease in order to keep further transmission of this infection at check and also screening for HBV is must be made mandatory before administration of chemotherapy and prophylactic antiviral therapy. Stringent policies and strategies should be implemented to increase the public's awareness of their HBV infection status, particularly to be targeted are females with a low socioeconomic status this will not only reduce the incidence of HBV reactivation but also HBV-related morbidity and mortality.

#### Keywords

Hepatitis B virus (HBV), HBsAg, Malignant disorder

#### Article Info

##### Accepted:

15 September 2018

##### Available Online:

10 October 2018

## Introduction

Hepatitis B virus (HBV) is a DNA virus belonging to the Hepadnaviridae family that infect humans causing a disease infecting liver cells displaying a substantial hepatic tissue tropism, and inducing chronic liver damage and subsequent Hepato carcinogenesis (Hassan *et al.*, 2002; Yu *et al.*, 1990).

HBV infection is a serious global health problem affecting up to 2 billion people worldwide (Ahmad, 2013) and Indian sub-continent too is known to have high rates of chronic HBV infection (Sibnarayan Datta, 2008). HBV can cause serious infections in patients infected and has a carriage rate of 20% (Kose Sukran *et al.*, 2011) almost 50% of them have cirrhosis or hepatocellular carcinoma.

In Oncology patients receive packed red blood cell suspensions and other blood products regularly and they are in the high-risk group for infections due to these viruses. In addition to Hepatocellular carcinoma several studies have proved the existence of HBV in some extra hepatic organs and tissues, such as the kidneys, skin, lymph nodes, bone marrow, vessel walls, colon, pancreas as well as stomach (Dejean *et al.*, 1984), Reports have suggested that chronic HBV infection also increases the risk of extra-hepatic malignancies such as non-hodgkin lymphoma (NHL), pancreatic cancer, and gastric cancer (Engels *et al.*, 2010; Wei *et al.*, 2015). Chemotherapy, which is one of the main modality of treatment for cancer not only suppresses the immune system which cause an increment in HBV DNA (viral load) and damage the liver, as the immune system cannot keep it under control also these drugs are directly Hepatotoxic thus damaging the liver causing fulminant hepatitis and liver insufficiency. In clinical practice, the oncologists deal with a large number of

patients undergoing anticancer treatments and both patients and clinicians are unaware about patient infection with HBV thus posing a serious threat to health care professionals and society at large and HBV infection in these cancer patients can results in life-threatening events and poor outcome due to early discontinuation of Chemotherapy.

This study was planned to helps us in knowing the prevalence of HBV in cancer patients reported in our Hospital and also helps us in knowing sex specific factors associated with awareness of one's HBsAg seropositivity status and also to evaluate the correlation with the type of malignancy.

The present study aim and objectives includes, to study the geographical and demographic profile like age groups and gender, urban or rural in patients coming in tertiary care cancer hospital in Bathinda.

To study the prevalence of HBsAg in cancer patients.

To study the screening of HBV infection in cancer patients.

To examine sex specific factors associated with being unaware of one's HBsAg Seropositivity status

## Materials and Methods

Study design: Descriptive cross sectional study

Study Population: Cancer patients coming to tertiary care cancer hospital in Bathinda.

Study Period: 2 year from 1.5.16 to 31.8.18.

Sample Size: All the patients who were confirmed Histo-Pathologically for Cancer

## Inclusion criteria

Confirmed Histo-Pathologically for Cancer were tested for HBsAg and other marker

### **Exclusion criteria**

Patients who came in OPD but did not took intervention from our Hospital

This descriptive study was carried out in a teaching cancer hospital in Bathinda (Punjab), India. Demographic and geographical data of the hepatitis B patients admitted to our hospital was collected for a period of 2 year from 1.5.16 to 31.8.18. Patients of all age groups with positive anti-HBV by enzyme immune assay for the detection of anti-HBV antibodies by using fourth generation kits were included. Those patients who were admitted with complaints other than known Hepatitis B infection and were incidentally detected with Hepatitis B on routine testing were also included. Patients with positive anti-HBV antibodies but residing outside Punjab were included. All the specimens were screened using rapid Immunochromatographic assays for HBV for detecting antibodies against HBV.

Analysis: Analysis was done on Microsoft Excel.

### **Results and Discussion**

In total, 1096 patients had undergone hepatitis B serology test. Hepatitis B infection was positive in 31 patients (2.8%).

In our study of the total of 31 patients which were positive for HBV serology 15 (48.38%) were reported males and 16 (51.61%) were females

In total, 1096 patients had undergone hepatitis B serology test. Hepatitis B infection was positive in 31 patients (2.8%) (CHART 1).

The HBsAg Seroprevalence in studies conducted by others vary between 3.9% and 12.5% (Curry and Chopra, 2005), in a study done on 83 cancer patients, HBsAg positivity was reported in 11 patients (13.2%) (Topeli *et al.*, 1994) another study to done on oncology patients HBsAg positivity reported was 4.8% (Utkan *et al.*, 2006).

In our study of the total of 31 patients which were positive for HBV serology 15(48.38%) were reported males and 16(51.61%) were females (CHART 2) and that to 100% who were reported positive was from rural background. This variation can be due low level of education and socio-economic standard in rural area more patients getting themselves examined in government setups.

In urban areas more of patients getting themselves examined in private hospital. In studies conducted by others involving cases from both urban and rural areas it was found that HBsAg seropositivity was lower in rural areas, while others reported that HBsAg seropositivity was higher in rural areas while some reported no significant difference regarding seropositivity.

In a study conducted on HBV infection seroprevalence and their risk factors associated HBsAg frequency reported was 8.2% in rural areas and 6.2% in urban areas reason correlated was with the level of education (Dursun *et al.*, 2005).

In another study, HBsAg carrier was found to be 2.85% in urban areas and 2.6% in rural areas (Karabay *et al.*, 2004).

Despite the importance of HBV infections in public health and its known risk factor for the development of Hepatocellular Carcinoma among patients infected with chronic HBV infections (Donato *et al.*, 1998).

**Table.1**

TOTAL NO. OF PATIENTS	HBV NEGATIVE	%AGE	HBV POSITIVE	%AGE
1096	1065	97.17	31	2.8

**Table.2** Sex distribution in HBV positive patients

TOTAL NO. OF POSITIVE = 31	YES
MALE	15(48.38%)
FEMALE	16(51.61%)
	31

**Table.3** Age distribution in HBV positive patients

AGE	NO.=33	%age
1-10	0	0
11-20	0	0
21-30	0	0
31-40	2	6.06
41-50	8	24.24
51-60	12	36.36
61-70	8	24.24
71-80	2	6.06
81-90	0	0
91-100	1	3.03

In our present study, even though Male to female ratio was almost same in our study but comparison of sex specific factors associated with level of unawareness of one's HBsAg seropositivity status, prevalence of females who were unaware of their HBsAg seropositivity was more. Only 60% were aware about the disease whereas the level of awareness was high 90% in males. The low level of awareness about HBV infections in females was due to illiteracy and low socioeconomic standards as most of them was from rural background and were housewife's or working in farms.

No significant association was observed between types of cancers and HBsAg positivity and no patient reported were

addicted to IV drugs as maximum number of patients were in age group of 50-60 years (CHART 3), indicates that as these patients have undergo invasive procedures and blood product transfusions during the course of treatment because of this, Hepatitis seropositivity must have developed in them.

As in our study, HBsAg Seropositivity reported was (2.8%) and according to study done by others the world can be divided into low, medium and high endemic zones (World Health Organization, 2004; Centers for Disease Control and Prevention, 2008). In low endemic zones the prevalence of HBV carrier is <2%; in medium endemicity zones it is between 2%-10%, this is while it is >10% in areas of high endemicity. We (2.8%) are in,

medium endemicity zones (2% and 10%), Even though our study is a Hospital based study still despite the importance of HBV infections in public health, these data suggest that only a small proportion of HBV-infected individuals are aware of their seropositivity status.

Stringent policies and strategies should be implemented to increase the public's awareness of their HBV infection status, particularly to be targeted are females with a low socioeconomic status, this will not only reduce the incidence of HBV reactivation but also HBV-related morbidity and mortality. There are limitations in our study: (1) Not a community based study and targeting only that population that have reported to our hospital only (2) not being able to verify negative card test results by ELISA.

Even though our study might not be reflecting the real community situation. This area of study is of importance as it highlights the importance of socio-cultural factors in community and also the importance to educational activities to increase the awareness in the public about the infection routes and risk factors for hepatitis B infections.

Therefore, our study could be used an early opportunity to direct efforts towards creating awareness among different sections of the community regarding all aspects of the disease in order to keep further transmission of this infection at check and also screening for HBV is must be made mandatory before administration of chemotherapy and prophylactic antiviral therapy.

## References

Ahmad N. Aljarbou; The Emergent Concern of Hepatitis B globally with special

attention to Kingdom of Saudi Arabia. 2013 Nov; 7(3): 333–340.

- Centers for Disease Control and Prevention. Hepatitis B. In: Atkinson W, Hamborsky J, McIntyre L, Wolfe S, editors. Epidemiology and prevention of vaccine-preventable diseases. 10th ed. Washington: Public Health Foundation; 2008. p. 211–34. Sep 28; 3(3): 182–188.
- Curry MP, and Chopra S. Acute viral hepatitis. In: Mandell GI, Bennett JE, Dolin R, Principles and practice of infectious diseases. 6th ed. Philadelphia: Churchill Livingstone; 2005. p. 1426–41.
- Dejean A, Lugassy C, Zafrani S, Tiollais P, Brechot C (1984) Detection of hepatitis B virus DNA in pancreas, kidney and skin of two human carriers of the virus. *J Gen Virol* 65(Pt 3): 651–655.
- Donato F, Boffetta P, Puoti M. A meta-analysis of epidemiological studies on the combined effect of hepatitis B and C virus infections in causing hepatocellular carcinoma. *Int J Cancer*. 1998; 75(3): 347–354.
- Dursun M, Erten M, Yilmaz S, Saka G, Ozekinci T, Simsek Z. Prevalence of hepatitis B infection in the southeastern region of Turkey: comparison of risk factors for HBV infection in rural and urban areas. *Jpn J Infect Dis* 2005; 58: 15–9.
- Engels EA, Cho ER, Jee SH. Hepatitis B virus infection and risk of non-Hodgkin lymphoma in South Korea: a cohort study. *Lancet Oncol*. 2010; 11: 827±834.
- Hassan MM, Hwang LY, Hatten CJ, Swaim M, Li D, Abbruzzese JL, *et al.*, Risk factors for hepatocellular carcinoma: synergism of alcohol with viral hepatitis and diabetes mellitus. *Hepatology*. 2002; 36: 1206±1213.
- Karabay O, Serin E, Tamer A, Gokdogan F, Alpteker H, Ozcan A, *et al.*, Hepatitis B

- carriage and *Brucella* seroprevalence in urban and rural areas of Bolu Province of Turkey: a prospective epidemiologic study. *Turkish J Gastroenterol* 2004; 15: 11–3.
- Kose Sukran; Olmezoglu, Ali; Gozaydin, Ayhan; Ece, Gulfem; Nutrition: Seroprevalence of Hepatitis B and C among Oncology Patients in Turkey; *Journal of Health, Population and Nutrition* Vol 29, No 6 (2011)
- Sibnarayan Datta; An overview of molecular epidemiology of hepatitis B virus (HBV) in India *Virology* 2008; 5: 156.
- Topeli A, Ozyilkan E, Ozyilkan O, Kars A, Firat D. Hepatitis markers in cancer patients. *Microbiol Bull.* 1994; 27: 107–12.
- Utkan G, Azap A, Muallaoglu S, Tokluoglu S, Durnali AG, Arslan AY, *et al.*, Hepatitis B and C in cancer patients: case-control study. *Int J Hematol Oncol.* 2006; 16: 103–7.
- Wei XL, Qiu MZ, Jin Y, Huang YX, Wang RY, Chen WW, *et al.*, Hepatitis B virus infection is associated with gastric cancer in China: an endemic area of both diseases. *Br J Cancer.* 2015; 112: 1283±1290.
- World Health Organization. Hepatitis B vaccines. *Weekly Epidemiological Record.* 2004; 79: 255–63.
- Yu MC, Tong MJ, Coursaget P, Ross RK, Govindarajan S, Henderson BE; Prevalence of hepatitis B and C viral markers in black and white patients with hepatocellular carcinoma in the United States. *J Natl Cancer Inst.* 1990; 82: 1038±1041.

**How to cite this article:**

Deepak Arora, M.K. Mahajan, Parvinder Sandhu, Karuna Singh and Anju. 2018. Prevalence of HBV in Patients Suffering from Various Malignant Disorder in Tertiary Cancer Care Center in Malwa Region of Punjab. *Int.J.Curr.Microbiol.App.Sci.* 7(10): 1978-1983.  
doi: <https://doi.org/10.20546/ijemas.2018.710.228>