

# Clinical Profile of Hepatitis B Positive Cases Presenting at a Tertiary Care Hospital in Kumaon Region of Uttarakhand.

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## ABSTRACT

**Background:** HBV is one of the main causes of end stage liver disease and hepatocellular carcinoma (HCC). The clinical presentation ranges from asymptomatic or inapparent infection to acute liver failure. Chronic liver disease with cirrhosis and hepato-cellular carcinoma are the other spectrum of the disease. **Method:** All the patients diagnosed with hepatitis B surface antigen (HBs Ag Positive) presenting with or without symptoms and signs of hepatitis B infection were included in study. **Result:** The age of the patients varied from 15-75 years. 60% patients are male, majority (55.5%) are married, 40% are secondary educated, 47% are labour class, 69% of patients having unknown sources of infection. Majority of patients were presented with symptoms and only 27% were asymptomatic on presentation. Major symptom were abdominal discomfort, fever and fatigue. 65% patients having icterus, 55.5% hepatomegaly and 35% patients having no any clinical signs. Serum bilirubin and alanine transaminase (ALT) level were significantly higher in symptomatic patients (60%). 13% patients shows portal hypertension and 22% shows ascites on ultrasonography. **Conclusion:** The majority (65.45%) of patients were in younger age group 15-45 years, majority are male(60%), married (55.5%), labour class (47.3%). The risk factor as related to HBsAg positivity was because of unknown source 76 (69.09%) cases followed by history of previous surgery 14 (12.7%) cases.

**Keywords:** Hepatitis B Virus (HBV), Cirrhosis, HBs Ag.

## INTRODUCTION

Hepatitis B Virus (HBV) is a member of the family hepadnaviridae viruses spreads principally by exposure to blood.<sup>[1]</sup> It was first discovered in 1963 by Dr. Baruch Blumberg and colleagues, who identified a protein, the "Australia antigen" that reacted to antibodies from patients with hemophilia and leukemia.<sup>[2]</sup>

HBV is one of the main causes of end stage liver disease and hepatocellular carcinoma (HCC).<sup>[3]</sup> It is spread worldwide, but presents high prevalence in some regions, such as Southeast Asia, sub-Saharan Africa, and the Amazon Basin.<sup>[4]</sup> There are approximately 2 billion people infected by HBV and about 400 million carriers worldwide.<sup>[5]</sup> Majority of these reside in Asia and West Pacific.<sup>[6]</sup> This disease is important candidates for public health measures aimed at prevention, early diagnosis and treatment.<sup>[7]</sup>

In India, HBV infection is of intermediate endemicity, with nearly 4% of the population being chronic carriers.<sup>[8]</sup> Most cases of acute hepatitis due to HBV are subclinical and less than 1% of symptomatic diseases are fulminant.<sup>[9]</sup> According to WHO, the prevalence of Hepatitis B in general population in India ranges from 0.1% to 11%,<sup>[10]</sup> whereas various studies about epidemiology of hepatitis B in India report HBsAg seropositivity range from 2%-4.7%.<sup>[11]</sup> The reason for this heterogeneity is variation in social, economic and health factors in different regions of India.<sup>[12]</sup> Most of these studies are carried in blood donors or antenatal mothers, but there is limited data of epidemiology of hepatitis B in community more so in rural population.

HBV is spread predominantly by percutaneous or mucosal exposure to infected blood and other body fluids with numerous forms of human transmission. The sequelae of HBV infection include acute and chronic infection, cirrhosis of the liver and primary liver cancer. The likelihood of progression to chronic infection is inversely related to age at the time of infection. Around 90% of infants infected perinatally become chronic carriers, unless vaccinated at birth.

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The clinical presentation ranges from asymptomatic or inapparent infection to acute liver failure. Chronic liver disease with cirrhosis and hepato-cellular carcinoma is the other spectrum of the disease.<sup>[13]</sup> This study was to know the clinical profile of Hepatitis B positive cases at tertiary care hospital of kumaon region, as there is paucity of data from this region.

## MATERIALS AND METHODS

This prospective observational study was carried out in the Department of Medicine at Government Medical College and associated Dr Susheela Tiwari Govt. Hospital, Haldwani. This hospital caters to a large area from the Kumaon region of Uttarakhand and the adjacent area of Uttar Pradesh.

**Study Design:** Prospective Observational Study

**Study Location:** Tertiary care teaching hospital based study done in Department of Medicine at Government Medical College and associated Dr Susheela Tiwari Govt. Hospital, Haldwani, Uttarakhand, India.

**Study Duration:** 18 months (August 2015 to February 2017)

**Sample size:** 110 patients.

**Sample size calculation:** The sample size was estimated on the basis of a single proportion design. The target population from which we randomly selected our sample was considered 20,000. We assumed that the confidence interval of 9.3% and confidence level of 95%. The sample size actually obtained for this study was 110 patients.

**Subjects & selection method:** The study population was drawn from patients who presented with hepatitis B surface antigen positive to Department of Medicine at Government Medical College and associated Dr Susheela Tiwari Govt. Hospital, Haldwani. There were 110 patients, who were diagnosed positive for hepatitis B who reported in the department of medicine GMC haldwani. The research procedure followed was in accordance with the approved ethical standards of Government Medical College Haldwani, Ethics Committee (Human).

### **Inclusion criteria:**

All the patients diagnosed with hepatitis B surface antigen (HBs Ag Positive) presenting with or without symptoms and signs of hepatitis B infection.

### **Exclusion criteria:**

These Patients were excluded who had a - History of chronic liver disease or history of jaundice other than Hepatitis B. Chronic liver disease- related with Alcoholic habit, Hepatitis C virus. Cryptogenic causes. Not consenting to participate in the study

Procedure methodology

### **Method of collection of data:**

A written consent was taken from all potentially eligible subjects. Detailed history and physical examination was performed and recorded on predesigned proforma for each patient. The patients were subjected to the routine laboratory tests like complete blood count, blood sugar, liver function tests, renal function tests, urine routine and microscopy and peripheral smear of blood, ultrasound examination of abdomen to study radiological features of viral hepatitis. Proforma was prepared in English and local language was used during interview to make it convenient for the population.

### **Statistical analysis**

Data was analyzed using Statistical Package for Social Sciences, version 23 (SPSS Inc., Chicago, IL). Results for continuous variables are presented as mean  $\pm$  standard deviation, whereas results for categorical variables are presented as number (percentage). The level  $P < 0.05$  was considered as the cutoff value or significance.

## RESULTS

**Table 1: Demographic parameters of patients.**

Demographic parameters		Number of patients N=110)	Percentage (%)
Age (Mean age= 40.5 $\pm$ 16.1)	15-45	72	65.45
	46-65	32	29.09
	>65	06	5.5
sex	Male	66	60.0
	Female	44	40.0
Marital status	Unmarried	29	26.4
	Married	61	55.5
	Separated/divorced	12	10.9
	Widowed	8	7.3
Education	Illiterate	23	20.9
	Primary	14	12.7
	Secondary	44	40.0
	Post-secondary	20	18.2
	Graduate & above	9	8.2
Occupation	Unemployed	40	36.4
	Students	6	5.5
	Labour	52	47.3
Risk factors	Skilled employment	12	10.9
	History of blood transfusion	2	1.81
	History of previous surgery	14	12.7
	History of unprotected sexual exposures	8	7.3
History of use of percutaneous sharp instruments for various purposes	10	9.1	
	Unknown source	76	69.09

### **Demographic profile of patients**

In our study maximum number of patients (65.45%) were of younger age group (15- 45 yrs). Only 6 patients (5.5%) were of age more than >65 years. Mean age was 40.5±16.1 years and total no. of patients enrolled for study were 110 only. 66 patients (60%) were male and 44 (40%) were female. Maximum number of patients 61 (55.5%) were married followed by 29 (26.4%) were unmarried, 12 (10.9%) Separated or divorced , 23 (20.9%) patients were illiterate, 14 (12.7%) had acquired only primary education,44 (40.0%) had completed their secondary education, 20 (18.2%) others had acquired Post-secondary education and only 9 (8.2%) patients were Graduate & above,40 (36.4%) patients were unemployed, 6 patients (5.5%) were students , 52 (47.3%) were working as laborers and 12 (10.9%) were in skilled employment. In this study 2(1.81%) patients had undergone blood transfusion in the past, 14 (12.7%) had a History of previous surgery, 8 (7.3%) had unprotected sexual exposures, and 10 (9.1%) patient were subjected to percutaneous sharp instruments for various purposes in the past. In case of 76 (69.09%) patients however, the source of infection were unknown.

**Nature of Symptoms**

Abdominal discomfort was reported by majority of patients (69.1%) followed by fever 71 (64.5%), fatigue 68 (61.8%), jaundice 40 (36.4%), loss of appetite 20 (18.2%), and abdominal distention 16 (14.5%).

**Table 2: Nature of Symptoms of HBsAg positive patients.**

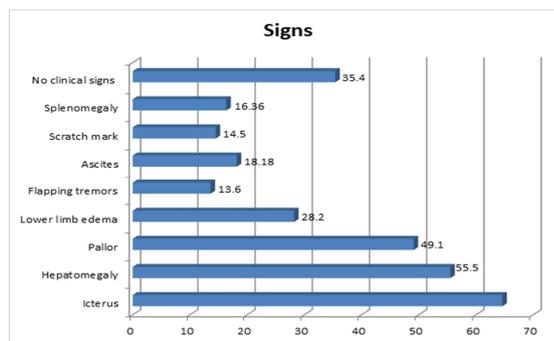
Symptoms	Number of patients (N=110)	Percentage (%)
Abdominal discomfort	76	69.1
Abdominal distension	16	14.5
Nausea	12	10.9
Blood mix vomiting	14	12.7
Black tarry stool	20	18.2
Jaundice	40	36.4
Diarrhea	2	1.8
Convulsion	6	5.5
Altered sensorium	6	5.5
Fever	71	64.5
Fatigue	68	61.8
Loss of appetite	20	18.2
Joint pain	9	8.2
Itching	16	14.5
Rashes	8	7.3
Dark urine	35	31.8
Asymptomatic	30	27.3

\*some patients had multiple symptoms

**Hematological profile of patients**

A total of 17 patients (15.5%) had severe anemia (Hb <7 gm %) The mean Hemoglobin (gm%) was 11.7±1.5. A total of 11 patients (10%) had thrombocytopenia, the mean Platelet count (x104/cmm) was 309.7±79 , bilirubin >2 mg% in 66(60%) patients and Alkaline phosphatase (U/L) was raised in 32(29.1%), raised transaminases was seen in 66 patients (60%), low albumin

(<3.5gm%) was seen in 21 patients(19.1%), raised PT was seen in 32 patients(29.1%), and deranged creatinine was seen in 8 patients (7.3%).



**Figure 1: Distribution of clinical signs of patients (in percentage).**

**Table 3: Distribution of hematological profile of patients.**

Hematological parameter	Range	Number of patients N=110	Percentage (%)
Hemoglobin (gm%)	<7	17	15.5
	>7	93	84.5
Platelet count (x104/cmm)	<1.5 lakhs	11	10.0
	>1.5 lakhs	99	90.0
Total bilirubin (mg/dl)	<2	44	40.0
	>2	66	60.0
Alkaline phosphatase(U/L)	>180	32	29.1
SGPT (IU/L)	<40	44	40.0
	>40	66	60.0
Serum albumin (gm%)	<3.5	21	19.1
	>3.5	89	80.9
Prothrombin time (sec)	<18	78	70.9
	>18	32	29.1
Serum creatinine (mg%)	<1.4	102	92.7
	>1.4	8	7.3

**Distribution of Ultrasound abdomen findings**

Hepatomegaly was present in 34(30.9%) patients, altered echotexture of liver reported in 17(15.5%) patients, shrunken liver with irregular surface contour suggestive of cirrhosis of liver was seen in 8(7.3%), ascites in 24(21.81%), Splenomegaly 20 (18.18%) and dilatation of portal vein >13 mm in 14 (12.7%) and 37 (33.6%) patients.

**DISCUSSION**

Hepatitis B virus is a blood borne virus. Infection frequently results in a chronic asymptomatic carrier state for many years before the development of symptomatic liver disease. HBV infected healthcare workers may therefore be unaware of their condition and their potential to infect patients. Healthcare workers, who perform exposure prone procedures, where injury to the worker may result in exposure of the patient's open tissues to the blood of the worker, are at increased risk of infection with blood borne viruses.

**Table 4: Distribution of USG abdomen findings of patients.**

USG findings	No of patients (n=110)	Percentage (%)
Hepatomegaly	34	30.9
Altered echotexture of liver	17	15.5
Shrunken liver with irregular surface contour	8	7.3
Ascites	24	21.81
Splenomegaly	20	18.18
Dilatation of portal vein (diameter more than 13mm)	14	12.7
Normal	37	33.6

\*some patients had multiple findings

This prospective observational study was carried out at Government Medical College (GMC) and Dr. Susheela Tiwari Govt. Hospital, Haldwani., Uttarakhand. The study population was drawn from patients who presented with hepatitis B surface antigen positive to the hospital. There were 110 patients, who were diagnosed positive for hepatitis B who reported in Dr. Susheela Tiwari Govt. Hospital, Haldwani.

The aim of the study was to determine a clinical profile of Hepatitis B positive cases presenting at Dr. Susheela Tiwari Govt. Hospital, Haldwani, which being a tertiary care centre of Kumaon region of Uttarakhand and adjacent belt of UP with the objectives to study the socio-demographic profile of the patients, to identify the risk factors (Etiology) and to assess their clinical presentation.

In our study majority (65.45%) of patients' were in younger age group 15-45 years and only (5.5%) patients in >65 years. This was consistent with that recorded by WHO and with a study done in Canada (WHO, 2008).<sup>[14,15]</sup> Large number of patients were in younger age group because they were physically active and were more prone to accidental injury, sexual transmission exposure and exposure to blood/blood product.

Jabbar A and Pathan M<sup>15</sup> had reported in their study that from the total of 100 cases, 67 were males and 33 were females with a male: female ratio of 1.7:1. This had been attributed to males being more involved in outdoor activities and assignments especially in rural areas. Vij & Tandon,<sup>[16]</sup> AK Malhotra also had made similar observations.<sup>[17]</sup> Similarly in our study of 110 cases, 66 were males and 44 were females with a male: female ratio of 3:2.

In our study, majority of HBsAg positive patients were married (55.5) followed by unmarried patients (26.4%), separated/divorced (10.9%) and widowed (7.3%). In the study done by Iloh GUP et al,<sup>[18]</sup> had also reported a similar result that of 71 patients were studied 54.9% patients were married, followed by 25.4% single patients while separated/divorced (12.7%) and widowed (7.0%). Married persons were at a greater risk of development of hepatitis B

because large number of patients in study were married and infection by their spouse.

In our study, majority of patients' were educated to secondary level (40.0%) followed by illiterate (20.0%) and only 8.2 % patients were had graduation or above. Iloh GUP et al,<sup>[18]</sup> also reported majority (57.7%) of patients were secondary level educated followed by primary (29.6%) education while only 12.7% patients were post-secondary. Education imparts awareness regarding health related issue. Hence determine rate was better in those who are educated.

In our study occupation status was recorded, majority of patients were of Labourer class (47.3%) followed by unemployed (36.4%) while only 6 (5.5%) were students. In study done by Wasfi O.A.S. et al,<sup>[19]</sup> had recorded occupational status of studied patients that of 47 cases majority 22(46.8%) were manual workers followed by 11(23.4%) were students and 10(21.3%) were professionals. It was the more in the labourer class because of ignorance, poor access to medical facility and treatment from quacks who uses unsterile syringes and needles. In our study risk factor as related to HBsAg positivity; no source of infection could be identified in 76 (69.09%) patients but possible source of infection of hepatitis B was previous surgery 14 (12.7%), History of blood transfusion 2 (1.81%) and 8 (7.3%) of history of unprotected sexual exposures. Iloh GUP et al,<sup>[18]</sup> also reported 58 (81.7%) of History of blood transfusion, 18 (25.4%) history of previous surgery, 53 (74.7%) history of unprotected sexual exposures and only 1 (1.4%) of History of hepatitis B vaccination. This study has shown that transfusion of infected blood play a role in the transmission mechanism of HBV infection among the study population. Hospital-based cross sectional studies in Nigeria and other parts of the world have demonstrated that HBV infection can be transmitted through blood transfusion.<sup>[20,21]</sup> Blood/ blood product transmission in our study is only 2 (1.81%) cases because universal protocol of screening of hepatitis B is started after establishment of blood bank in 1994.

In the study done by Sudhamshu KC,<sup>[22]</sup> it was reported that symptoms were present in almost all cases of acute hepatitis. Anorexia (100%), nausea (67%), jaundice (67%), dark urine (67%), myalgia (67%) and pain abdomen were the commonest symptoms in patients. Another study by Jabbar A and Pathan M had reported that the commonest presenting symptom was yellowish discoloration of eyes and urine seen in 100% cases followed by fever seen in 87% cases.<sup>[15]</sup> Toshniwal HK et al in their study had also reported similar observations.<sup>[23]</sup>

In our study symptoms was reported that the abdominal discomfort symptoms were in majority of patients (69.1%) followed by fever (64.5%), fatigue (61.8%), Jaundice (36.4%), dark urine (31.8%) etc i.e 72.7% (n=80) cases were symptomatic and

27.3% (n=30) were asymptomatic. Joint pain, arthritis, pruritus are extrahepatic complication of hepatitis B.

In the study by Jabbar A and Pathan M icterus was the most common presenting sign seen in 100% cases followed by hepatic tenderness seen in 83% cases and but in our study,<sup>[15]</sup> icterus was found in 64.6% of patients followed by Hepatomegaly (55.5%) and Pallor (49.1%), Ascites (18.18%), Splenomegaly (16.36%) i.e clinical signs were present in 64.6%(n=71) cases only and 35.4%(n=39) had no any clinical signs. Icterus/jaundice were comparatively low in our study because they were managed by local nearest hospital or by traditional treatment. If they did not respond then they came to our hospital; not only with icterus but with another associated complication of hepatitis like high grade fever, upper GI bleeding, Ascites, hepaticencephalopathy, renal failure and shock. These were prominent in young age group (15-45 years) and male had a higher preponderance. In our study, 27.3% (n=30) cases were asymptomatic and 35.4% (n=39) cases had no clinical signs because they may have been chronic healthy carrier. The majority of the patients of age group 15-45 yrs were male. So clinical signs were more prominent in this group. The haematological profile of patients in our study shows severe anemia(Hb% <7gm%) in 16% cases (n=17) (may be due to recurrent blood loss by upper GI bleeding or Chronic liver disease), thrombocytopenia (platelet count < 1.5 lakhs) 10%(n=11), Total bilirubin >2 mg% 66(60%), SGPT >40 IU/L in 60%(n=66).(i.e acute viral hepatitis or chronic hepatitis B infection with active viral replication are seen only in 60%(n=66) of cases in our study. Serum albumin <3.5gm% in 19%(n=21); indicating chronic liver disease or hypoalbuminemia of another causes. Prothrombin time >18sec / coagulopathy in 29% (n=32), Serum creatinine >1.4mg% in 7.3% (n=8) (may be due to hepatorenal syndrome or renal failure due to shock.). severity of the liver disease was access by Child- Pugh classification, which is based on serum bilirubin, serum albumin, Prothrombin time, Ascites and Encephalopathy grade. If score >10 then greater severity of disease. Another model for severity assessment is MELD score (Model Of End Stage Liver Disease) in which only objective parameter serum bilirubin, serum creatinine and INR measure. If score >40 then mortality is > 70%. In study of Sudhamshu KC USG findings were present in most of the acute viral hepatitis.<sup>[22]</sup> Gall bladder findings of increased wall thickness and pericholecysticoedema were very common . In our study ultrasound abdomen findings showed hepatomegaly 30.9% (n=34), altered echotexture 15.5%(n=17),Ascites 22%(n=14), Splenomegaly 18%(n=20),dilatation of portal vein >13mm in 12.7%(n=14) and in 33.6%(n=37) having normal ultrasound of abdomen. Ultrasound finding

indicating total 14 cases (12.7%) having portal hypertention; causing upper GI bleeding.

Since hepatitis B is a vaccine preventable disease and can be prevented by vaccination. Hepatitis B vaccines provide long-term protection against HBV infection. The primary goal of hepatitis B prevention programs is reduction of chronic HBV infection and HBV related chronic liver disease. A secondary goal is prevention of acute hepatitis B. Routine hepatitis B immunization programs launched in India as a pilot project in 10 states in the years 2002, and in 2011, scaled up this operation countrywide. National immunization programme against HBV have resulted in significant reductions in the prevalence of HBV infection particularly in children. Recently a pentavalent vaccine (DPT-HepB-Hib) launched in some states, which provide protection against five disease including HBV.<sup>[24]</sup>

## CONCLUSION

The current study shows the clinical and biochemical features that a hepatitis B patient may present with. The majority (65.45%) of patients were in younger age group 15-45 years, majority are male (60%), married (55.5%), labour class (47.3%) infected from unknown sources (69%). Majority of patients are symptomatic and 27.3 % patients are asymptomatic. The abdominal discomfort (69%), fever (64.5%) and fatigue (61.8%) were main symptoms. 33.6% patients shows normal ultrasound and 12.7% cases shows feature of portal hypertention on ultrasonography. To our knowledge, this is the first paper reported in kumaon region of Uttarakhand which has focus on hepatitis B related clinical profile.

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