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Research Article

HBV And HCV Related HCC- Experience At Model Treatment Centre.

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Abstract

Introduction: Hepatocellular Carcinoma (HCC) is one of the most common malignant tumours in the world. The various risk factors include hepatitis B &C viruses, alcohol, metabolic syndrome including diabetes mellitus, chemicals, and inborn and acquired metabolic disease. HCC is closely associated with hepatitis B and C virus because liver injury caused by viral factor affects many cellular processes such as cell signaling, apoptosis, transcription, DNA repair which in turn induce important effects on cell survival, growth, transformation and maintenance.

Material and Methods: This was a prospective study done at Medical Gastroenterology Department, PGIMS,Rohtak conducted over a period of five years i.e. 01.08.2020 to 31.07.2025, during which patients diagnosed to be having HCC due to HBV and HCV were enrolled into study, after written consent for the same. The data pertaining to eighty HCC patients, fourty each of HBV and HCV was analyzed.

Observations and Results: HBV and HCV related H.C.C is commonly seen in males and older age group. In Hepatitis B group, out of 40 patients, 32 patients (80%) were above 50 yrs of age. The two patients who belonged to third decade were non cirrhotic and were having chronic hepatitis B with high viral load and directly developed multifocal H.C.C without going into cirrhotic stage. Rest all 38 patients of HBV were cirrhotic. In Hepatitis C group, out of 40 patients, 23 patients (90%) were above 50 yrs of age. Out of 40 HCV patients, 39 were cirrhotic but one 19 years old female was non-cirrhotic and this may be the first case of HCV which has developed HCC without going to cirrhotic stage.

Conclusion: Good compliance on drugs is mandatory and patients should be strictly prohibited against smoking and alcohol intake which increases the risk of developing HCC. Females with HBV and HCV requires strict vigil, as they may develop HCC with low viral loads in HBV and even non-cirrhotic can develop HCC in background of HCV. Due to efforts under NVHCP, the need of liver transplant is decreasing steadily in HBV and HCV group.

Keywords: HBV, HCV, Hepatocellular carcinoma, Viral load, Fibroscan

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INTRODUCTION

Liver cancer which is one of the leading causes of cancer deaths worldwide has recently recorded annual death toll with700,000 around the globe [1]. Hepatocellular Carcinoma (HCC) forms the major chunk (75% -90%) of primary liver malignancies [2]. Most cases of HCC (75% to 90%) develop in cirrhosis resulting from chronic infection by hepatitis B virus and hepatitis C virus, alcoholic injury, Metabolic associated steatotic liver disease (MASLD) and to a lesser extent from genetically determined disorders such as hemochromatosis [3-5]. In last three decades, about 63% increase in total deaths has been reported globally because of viral hepatitis. Hepatitis B and C infections accounted for most of the morbidity and mortality since it leads to progressive hepatic damage in patients and ultimately causing cirrhosis and hepatocellular carcinoma [6]. The incidence of HCC increases with age in all populations and shows a slight decline in the elderly population. HCC shows a strong male preference. In low incidence regions, it is four times more common in males while in high prevalence areas, it is about eight times more common. It may be attributed to additional effect of other factors including higher levels of alcohol intake and smoking coupled with a higher incidence of cirrhosis in males. Animal experiments have suggested the role of sex hormones and/or hormone receptors. Orchidectomy reduces the carcinogenic effects of chemicals in male rats to the level found in females. A similar effect has been observed with stilbesterol or estradiol pellets' implantation but the effect was comparatively less. [7]. In western countries, inborn errors of metabolism and congenital abnormalities have also contributed towards HCC in some cases [8]. Our department is Model treatment center under National Viral Hepatitis Control Program where free treatment is provided to Hepatitis B and C patients (HBV & HCV), hence we have analyzed the data pertaining to HBV and HCV related HCC.

MATERIAL AND METHODS

This was a prospective study done at Medical Gastroenterology Department, PGIMS,Rohtak conducted over a period of five years i.e. 01.08.2020 to 31.07.2025, during which patients diagnosed to be having HCC due to HBV and HCV were enrolled into study, after written consent for the same. The data pertaining to eighty HCC patients, fourty each of HBV and HCV was analyzed. The patients who visited the Medical Gastroenterology department in last five years and were confirmed to be having HBV or HCV infection on ELISA as well as PCR DNA/RNA and confirmed to be having HCC on Triple phase CECT scan abdomen and AFP level were investigated fully and their detailed records were collected regarding aeitiological and epidemiological factors & clinical spectrum.The detailed clinical examination and laboratory investigations were done including complete blood counts, liver function tests, kidney function tests, thyroid function test, serum electrolytes, coagulation parameters (PT, INR), blood sugar, autoimmune profile, Hbs Ag, anti HIV antibody, anti HCV antibody, HBV DNA Quantitative, HCV RNA Quantitative, Ultrasonogram abdomen, Chest x ray PA view and Fibroscan were done.

OBSERVATIONS AND RESULTS

In the present study total eighty patients of HCC were analyzed and both HBV and HCV had equal representation i.e. fourty in each group.

Table 1: Showing Distribution of H.C.C patients on basis of HBV and HCV infection

Total Patients	HBV	HCV
80 (100%)	40 (50%)	40 (50%)

Table 2: Showing age distribution in HBV and HCV related H.C.C.

AGE (YRS)	HBV (N-40)	HCV (N=40)
10-19	0	1
20-29	2	0
30-39	2	0
40-49	4	3
50-59	9	16
60-69	16	9
70-79	7	10
80-89	0	1

The above table has clearly highlighted the fact that both HBV and HCV related H.C.C is commonly seen in older age group. In Hepatitis B group, out of 40 patients, 32 patients (80%) were above 50 yrs of age. The two patients who belonged to third decade were non cirrhotic and were having chronic hepatitis B with high viral load and directly developed multifocal H.C.C without going into cirrhotic stage. Rest all 38 patients of HBV were cirrhotic. In Hepatitis C group, out of 40 patients, 23 patients (90%) were above 50 yrs of age. Out of 40 HCV patients, 39 were cirrhotic but one 19 years old female was non-cirrhotic and this may be the first case of HCV which has developed HCC without going to cirrhotic stage.

Table 3: Showing Epidemiological factor Distribution in HBV and HCV related H.C.C.

Epidemiology	HBV (N-40)	HCV(N=40)
Sex (Male)	36	30
Sex (Female)	4	10
Rural	33	32
Urban	7	8
Diabetes	1	4
Smoking	19	12
Alcohol	16	12
Coinfection	HCV-5	HBV-2
Cirrhosis	38	39

The above table has clearly highlighted the fact that H.C.C is commonly seen males but predominance is more in HBV in comparison to HCC. In Hepatitis B group, out of 40 patients, 36 patients (90%) were males whereas in HCV group, out of 40 patients, 30 (75%) were males. H.C.C is commonly seen in rural area. In Hepatitis B group, out of 40 patients, 33 patients (82.50%) and in HCV group, out of 40 patients, 32 (80%) belonged to rural area. As expected, Diabetes mellitus was seen more commonly in HCV group i.e. in 4 patients (10%) whereas it was seen in 1 (2.5%) patient of HBV group. Out of 40 patients of HBV, 16 (40%) were alcoholic, whereas in HCV group of 40 patients, it was seen in12 patients (30%). In HBV, 19 patients (47.5%) were smoker whereas in HCV group 12 patients (30%) smoked. In HBV group of 40 patients, 5 (12.5%) patients were found to be co-infected with HCV whereas in 40 patients of HCV, only 2 (5%) patient was found to be HBV co-infected. In both the HBV and HCV groups, none patient was infected with HIV.

Table 4: Showing Parameters Distribution in HBV and HCV group of H.C.C.

Parameters	HBV (N=28)	HCV (N=25)
AST	38-450	30-185
ALT	36-466	29-197
S. Bilirubin	0.4- 2.8	0.5-3.6
S. Albumin	2.4-4.2	2.3- 4.3
INR	0.98-1.98	0.96-1.85
Platelet Count	0.66- 2.2 L	0.72 – 2.1 L
S. Creatinine	0.8- 2.1	0.9-1.83
Fibroscan	6-75 Kpa	6.5-75 Kpa
Viral Load	101-1010	101-108

In HBV group AST level varied from 38-450 IU (mean 99), whereas in HCV range was 30-185 IU (mean 82). In HBV group ALT level varied from 36-466 IU (mean 95), whereas in HCV range was 29-197 IU (mean 102). In HBV group serum bilirubin level varied from 0.4-2.8 (1.32) mg/dl, whereas in HCV range was 0.5-3.6 (mean 1.92). In HBV group serum albumin level varied from 2.4-4.2 (mean 3.60), whereas in HCV range was 2.3-4.3 (mean 2.8). In HBV group INR level varied from 0.98-1.98 (mean 1.23), whereas in HCV range was 0.96-1.85 (mean 1.19). In HBV platelet level varied from 0.66- 2.2 lakhs/mm3 (mean 1.1), whereas in HCV range was 0.72-2.1 lakhs/mm3 (mean 1.10). In HBV and HCV group serum creatinine level varied from 0.8-2.1 (mean 1.2) and 0.9-1.83 (mean 1.1) respectively. In HBV and HCV group Fibroscan score varied from 6-75 Kpa (mean 41) and 6.5-75 Kpa (mean 39.) respectively. The HBV & HCV viral load ranged between 101-1010 IU/ml (mean 106) and 101- 108 (mean 105) respectively. of total 40 patients of HBV, 39 were on monotherapy and 1 was on dual therapy. All the 40 patients in HCV group, 39 patients received sofosbuvir 400 mg & Velpatasvir 100 mg combination and only 1 patient received sofosbuvir 400 mg & Daclatasvir 60 mg combination. Out of 40 patients of HCV, only 16 (40%) patients achieved sustained virological response (SVR).

DISCUSSION

Hepatocellular carcinoma (HCC) is a highly prevalent cancer globally, occupying the sixth place and was the third leading cause of cancer death worldwide in 2020 [9]. Viral hepatitis and alcohol consumption are the most important risk factors for the development of HCC [10]. In countries where vaccination against hepatitis B virus (HBV) is widely available, alcohol-related HCC can be more prevalent [11]. In the last decades, non-alcoholic fatty liver disease (NAFLD), now called as MAFLD has become a more prevalent risk factor for HCC due to the rise of obesity and metabolic syndrome in this country [12]. Early detection of HCC is likely beneficial, and prognosis can be calculated using tumour characteristics, clinical parameters, or both. HCC accounts for 70% of primary liver cancers and is the sixth most common cancer worldwide [9-11,13]. It is the third leading cause of cancer-related deaths in the world [10-12]. It is more common in men and the average age at diagnosis is 50 – 70 years [10-11] which is in alignment with our study group of 80 patients, in which majority of patients were males and above fifty years of age. The male predominance was more significantly in HBV group then HCV group. Africa and Asia account for 80% of all HCC cases, with Asia bearing approximately 72.5%. This is thought to be due to their high rates of HBV infection, as well as high rates of aflatoxin exposure [10,11,14]. Limited access to HBV screening, vaccination, and treatment also plays a role [15]. The incidence of HCC in patients with chronic HBV and HCV

infection is 44% and 21% respectively. In both HBV and HCV groups rural predominance was seen because these two diseases occur more commonly in rural areas due to lack of proper safe needle practices because of lack of trained health professionals in rural areas. The prevalence of diabetes mellitus was seen more commonly seen in HCV group in comparison to HBV group which is in alignment with other studies which clearly prove the stronger association of HCV with diabetes mellitus. The history of alcohol and smoking was seen in significant number of patients in both the groups which is in accordance to other studies reported in literature, as smoking and alcohol are independent risk factors for causing HCC and when these factors are clubbed with HBV and HCV infection, then as expected risk of developing HCC rises. It is well known fact that majority of patients of HBV pass through cirrhotic stage for progressing into HCC and same was seen in our HBV study group in which 95% were cirrhotic and only two young non-cirrhotic patients, in chronic hepatitis stage with high viral load and transaminases level developed HCC. In Chronic HCV, till date it is reported that all patients will proceed into cirrhotic stage before developing into HCC but in our HCV study group, as an exception, one 19 yrs old, non-cirrhotic female developed HCC. This may be the first case report of non-cirrhotic HCV developing HCC and is food for thought for further research. The HBV & HCV co-infection increases risk of H.C.C. and in our study group also, five HBV patients were co-infected with HCV and two patients in HCV group were having HBV co-infection. Out of 40 patients in HBV group, 38 were on monotherapy and two were on dual therapy. In 40 patients of HCV, all were treated with antiviral treatment but only 25 patients (60%) achieved sustained virological response (SVR). We know that SVR is 90-93% in non-cirrhotic and decreases to 80-90% in cirrhotic and in our study group all were cirrhotic. The non-achievement of SVR is well proven risk factor for developing HCC in future. The AST & ALT elevation were seen maximally in HBV group in which many patients may have developed acute flare leading to significant rise in transaminases. The serum albumin level & platelet counts were maximally reduced and INR & serum creatinine rise was maximally seen in HBV group, in comparison to HCV group. Fibroscan score and viral load was more increased in HBV group, in comparison to HCV. Many patients, especially females in HCV group with low viral load developed HCC which is area of further research to conclude that like alcohol which is more dangerous in low amount for females, in contrast to males. It may be proven by other ongoing research that HCV in low viral load can be more detrimental in females, the exact reasons for the same need to be explored. In HBV study group, patients with HCC had both high and low viral loads.

CONCLUSION

HBV and HCV are the major risk factors for virus-induced HCC development through direct or indirect mechanisms but good thing is that there is provision of free treatment for both of them under National viral hepatitis control (NVHCP) in India. Thus, need of time is integrated approach of both prevention and treatment for them which require widespread screening of high- risk groups for early detection and timely treatment by dedicated team. Moreover, good compliance on drugs is mandatory and patients should be strictly prohibited against smoking and alcohol intake which increases the risk of developing HCC. Females with HBV and HCV requires strict vigil, as they may develop HCC with low viral loads in HBV and even non-cirrhotic can develop HCC in background of HCV. Due to efforts under NVHCP, the need of liver transplant is decreasing steadily in HBV and HCV group.

Conflict Of Interest:

The authors declare that there was no conflict of interest during this research study.

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