

## HCV And HBV Infections In Nigerian Patients With Liver Cirrhosis And Hepatocellular Carcinoma

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### ABSTRACT

Although efforts have made to determine the significance of Hepatitis B virus (HBV) infection in Nigerians with chronic liver diseases, the role of Hepatitis C Virus (HCV) infection has not been fully elucidated. The present study is aimed at determining the incidence of HCV and HBV infections in Nigerian patients with Liver Cirrhosis (LC) and Hepatocellular Carcinoma (HCC). The incidence of HBV and antibodies to HCV was determined by Enzyme Linked Immunosorbent Assay (ELISA) in 24 Nigerians with histologically confirmed Liver Cirrhosis (n=10) and Hepatocellular carcinoma (n=14), as well as healthy adult Nigerians who served as Controls (n=14) at the University College Hospital, Ibadan. Incidence rates of 50%, 71% and 40% of HBsAg were obtained in patients with LC, HCC and Controls respectively while 20%, 14% and 20% were Anti HCV positive in the respective groups ( $P < 0.0005$  for HCC). Co-infection by HBV and HCV was found in one patient with HCC. Infection by HCV occurred in older age group (57.5+8years) than HBV infection (47.8 + 4 years,  $P < 0.01$ ) while both infections were commoner in male subjects. In summary, HBV infection is commoner than that of HCV in patients with HCC. However, both HBV and HCV might be contributory to the aetiology of LC and HCC. Efforts should be intensified at reducing the high prevalence of HBV infection as well as that of HCV in Nigerians by instituting active preventive measures.

KEY WORDS - Anti-HCV, HBV infection, Nigerian patients.

### INTRODUCTION

Liver Cirrhosis (LC) and Hepatocellular carcinoma (HCC) are common liver diseases in the tropics including Nigeria. Many aetiological factors such as alcohol, haemochromatosis, Wilson's disease and viruses have been reported to be responsible for LC. Similarly the disease tends to progress to HCC or their sequelae<sup>2,9</sup>. Both LC and HCC tend to occur secondarily to infections by hepatotropic viruses particularly the Hepatitis B viruses<sup>9,14</sup>. However some patients are HBV seronegative and aetiologically cryptogenic<sup>10-15</sup>. With the discovery of the Hepatitis C virus (HCV), some of the latter patients have been found to be anti-HCV seropositive. In addition both HBV and HCV have been found in some patients with only LC, HCC or combined LC and HCC<sup>11-16</sup>. These two viruses are possibly acting in concert to induce both LC and HCC<sup>17,19</sup>. In Nigerians, there is a dearth of information on the role of HCV or the effects of combination of HBV and HCV in LC and HCC. Hence we present the result of

our study on HCV and HBV infections in Nigerian patients with LC and HCC compared to healthy adults.

### MATERIALS AND METHODS

Thirty-eight adult Nigerian subjects participated in the study comprising 10 patients with LC (group I), 14 patients with HCC (group II) and 14 healthy adult subjects (group III). The subjects in the groups I to III were 59 ± 9, 49 ± 15 and 51 ± 12.5 years in age respectively. The study patients were matched with the age and sex of the Control group. Diagnoses of LC and HCC were made from clinical features, results of relevant laboratory investigations and the histological findings of liver biopsy specimens. Ten millilitres of blood was collected from each subject and centrifuged into EDTA tubes for analysis. The plasma was separated and stored at -20°C until ready for analysis. The sample were tested for the presence of HBV and HCV infections by assay of Hepatitis B Surface Antigen (HbsAg) and antibodies to HCV (anti-HCV) using Enzyme Linked Immuno-absorbent Assay Method - ELISA (Murex Diagnostic Ltd, Dartford, United Kingdom, Lot No K891510 for HbsAg and K886910 for Anti-HCV) at the Department of Virology, University College Hospital, Ibadan; Nigeria.

### RESULTS

Tables I shows the sex distribution in the three groups. About 70% of the subjects in each group were aged between 25-60 years. Hepatitis B surface Antigenaemia was present in 50% 71% and 43% of the subjects with LC, HCC and Controls respectively. Differences in HBsAg seroprevalence was observed when the patients with HCC were compared with the Controls ( $P < 0.05$ ). Seroprevalences of anti-HCV in LC, HCC and Controls were similar (20%, 14%, and 20% respectively). The prevalence of HbsAg was higher than that of anti-HCV in HCC patients ( $P < 0.005$ ). Dual HbsAg and anti-HCV was found in two patients with HCC. Subjects with HbsAg+ / anti-HCV were found in equal proportions in LC and HCC compared with Controls (50%, 57% and 40% respectively) while subjects with HbsAg / anti-HCV+ were detectable in LC patients and Controls (20% each) but not in HCC patients. There was absence of both HbsAg and anti-HCV occur in equal proportions of the subjects with LC, HCC and Controls. Both HbsAg and HCV infections were commoner in males than females with sex ratio 3:1 and 6.0 respectively. However, HCV infection occurred in older subjects (57.5 + 8 years) compared to HBV infection (47.8+4years),  $p < 0.01$ .



Table I  
Biodata of all the subjects studied

Parameters	Groups		Controls N=14
	Liver Cirrhosis N=10	Hepatocellular Carcinoma N=14	
Age (years)			
25 - 60	7	10	7
> 60	3	4	3
mean $\pm$ SD	59 $\pm$ 9	49 $\pm$ 15	51 $\pm$ 12.5
male (Female)	8(2)	11(3)	8(2)
S.D.	Standard Deviation		

Table II  
Sero prevalence of HbsAg and anti-HCV by ELISA in all subjects

Parameters	Groups		
	Liver Cirrhosis N=10	Hepatocellular Carcinoma N=14	Controls N=14
HbsAg+	5(50)	10(71)	6(43)
Anti-HCV	2(20)	2(14)	2(14)
HbsAg /Anti-HCV			
+ve / +ve	-	2(14)	-
+ve / -ve	5(50)	8(57)	6(43)
-ve / +ve	2(20)	-	2(14)
-ve / -ve	3(30)	4(29)	6(43)
Paranthesis - percentage	+ve - positive	-ve - negative	
HbsAg - Hepatitis B-surface Antigen	Anti-HCV -		
Antibody to Hepatitis C virus			
ELISA - Enzyme Linked Immunosorbent Assay			

## DISCUSSION

Hepatitis B virus infection is endemic in Nigerians<sup>8,9,14</sup>. Between 1990 to 1997, the prevalences of HBV infection in at low risk healthy Nigerians and hospital patients without liver diseases are 4.5 - 36%<sup>20,24</sup> and 11.5-50%<sup>15,21</sup> respectively. In addition, 67% and 59-61% of Nigerians with LC and HCC, respectively have been reported to have the infection<sup>14,19</sup>. The seroprevalence rates of HbsAg in 50%, 70% and 50% of our subjects with LC, HCC and Controls respectively shows that the rate of HBV infection is still high among Nigerians. This observation is similar to the findings in other African countries<sup>15,19,25</sup>. Hence, much premium should be placed on the control of the HBV infection among Nigerians and other Africans by the government of each country. Since HCV is also parenterally transmitted just as HBV, knowledge on the role of the former virus among Nigerians is also important. The data on the prevalence of HCV infection in Nigerians are scanty however between 5.8 - 12% and 10.9% of some at low risk healthy Nigerians and hospital patients without liver diseases respectively have been reported. To carry the virus<sup>14,26</sup>. Hepatitis C Virus infection plays an important role in chronic liver diseases<sup>19</sup>. Detection of the presence of this infection in 14% of our patients with HCC is similar to the report of Ojo et al and Olubuyide et al in Nigerian patients<sup>11,17</sup>. However it is lesser than the prevalences of 41% and 29% in patients with HCC in Senegal and South African blacks respectively<sup>25,27</sup>. This is in sharp contrast to the absence of the infection in Kenyan patients with HCC<sup>11</sup>. It is significant to note that our study is the first to show the presence of anti-HCV among Nigerians patients with LC,

although the prevalence rate obtained is lower than 35% reported by Tsega et al in similar group of Ethiopians<sup>16</sup>. Again the absence of anti-HCV as obtained by Ilako et al in Kenyan patients is worthy of note. Dual infections by HBV and HCV detected in our patients with HCC has been reported by other workers in Nigerians<sup>18</sup> and Ethiopians<sup>16</sup>. The infection by HCV commonly occur among the elderly compared to HBV infection which tend to occur in younger populations<sup>19,22</sup>. This has been corroborated by this study which also show a preponderance of both infections among the male Nigerian subjects. The higher rate of HBV and HCV among males may explain the high prevalence of chronic liver diseases among the same gender population of Nigerians<sup>8,9</sup>. These suggest that both HBV and HCV infections may be aetiologically related (singly or in concert) to LC and HCC which are common among the various adult age groups of Nigerians and Africans<sup>8,9,19</sup>. These observations have also re-emphasized the important roles of HBV and HCV as major aetiological factors of both LC and HCC among the Nigerian and African populations in comparison the European and American populations<sup>11,15,17,19</sup>.

In conclusion, our study has shown that the prevalence of HBV infection is still high among Nigerians. In addition, HCV infection is common in the Nigerian healthy adults and patients with Liver Cirrhosis as well as those with Hepatocellular Carcinoma. Although HBV infection is commoner than that of HCV, efforts should be intensified at eliminating and reducing the infections through active preventive and therapeutic measures among Nigerians.

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