

Hepatitis C Virus Infection among Teaching Hospital Patients in Kano, Nigeria: A Retrospective Study

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Abstract

Background: Chronic infection with hepatitis C is considered to be a causative factor in hepatocellular carcinoma. The prevalence of this virus in Kano is not known.

Method: A total of one thousand and seven subjects were recruited for the study. They included 681 males and 326 females. Hepatitis C virus (HCV) antibody was tested using ELISA technique with reagent supplied by Anhet laboratory, Cortex, USA.

Results: A total of sixty two subjects were positive out of one thousand and seven, with a period prevalence rate of 6.2% and confidence interval of 5.4 – 6.9%.

Conclusion: Even though Nigeria does not lie within HCV endemic region, this study shows that the prevalence rate of 6.2% is quite significant. It is suggested that HCV antibody screening should be included in the screening tests carried out in blood banks and in patients with sexually transmitted diseases.

Key words: Hepatitis, HCV, hepatocellular carcinoma

Résumé

Introduction: Infection chronique avec hépatite C est considérée d'être un facteur causatif dans carcinome hépatocellulaire. La fréquence de ce virus à Kano n'est pas connu.

Méthode: Un total de mille et sept sujets ont été recrutés pour cette étude, y compris 681 du sexe masculin, 326 du sexe féminin. On avait fait l'examen d'anticorps virus C hépatite à travers l'utilisation de la technique d'ELISA avec le réactif fourni par laboratoire de Anhet, Cortex, USA.

Résultats : Un total de soixante deux sujets étaient positif entre mille et sept, avec un taux de la période de la fréquence de 6,2% et interval de la confiance de 5,4 – 6,9%.

Conclusion: Quoique le Nigéria n'entre pas dans la région endémique du VCH, cette étude montre que le taux de la fréquence de 6,2% est assez importante. Nous suggérons que le dépistage d'anticorps du VCH devrait être inclu dans l'examen de dépistage effectué dans la banque du sang et chez des patientes avec des maladies sexuellement transmissible.

Mot-clés: Hépatite, VCH, carcinome hépatocellulaire

Introduction

Hepatitis C, a member of the Flaviviridae family, contains a genome of single stranded RNA 9.4kb in size. It appears that the majority of infections become persistent, even in adults. Chronic infection with hepatitis C virus (HCV) is also considered to be a causative factor in hepatocellular carcinoma.¹ Most probably, HCV acts indirectly in the development of hepatocellular carcinoma (HCC). There are currently over 250 million people worldwide persistently infected with hepatitis B virus and over 170million

chronic carriers of hepatitis C virus – large pool of individuals at risk of developing liver cancer.^{1,2}

In approximately 50% of individuals diagnosed with sporadic hepatitis C, the source of infection is unknown². Hepatitis C is particularly prevalent in some developing countries. The incidence varies from 0.05% to 3% in various countries. There is a high prevalence in Japan, the Mediterranean countries of Europe and the Middle East. Reported prevalence rates in Africa vary between 0.41% and 12%.³ HCV is transmitted primarily through blood and blood products. Other routes of HCV transmission include

sexual, vertical, tissue/organ transplantation and via house hold contacts.³ In most cases infection is associated with high risk life-style or particular demographic groups rather than a specific route of transmission. Recent reports suggest that the prevalence of hepatitis C infection in normal Africans may be as high as 10.9% while the corresponding value for patients with primary liver cell carcinoma (PLCC) would be about 18.7 – 38%.⁴ The prevalence of HCV in Kano, Nigeria is not known.

Subjects and Methods

One thousand and seven consecutive subjects referred to the laboratory from the various clinics and wards of Aminu Kano Teaching Hospital, Kano, Nigeria for HCV antibody screening were included in the study between January 2002 and December 2003. They were 681 males and 326 females. They include patients suspected of HCV infection. Blood donors and HIV positive patients were excluded from this study.

Blood samples were collected aseptically in to plain bottles which were allowed to clot for 20 minutes at room temperature. The samples were centrifuged to obtain sera at 1000g for 10 minutes. HCV antibody testing was done using ELISA technique (HCV Murex 40, Anhet laboratories, USA).

Manufacturer's instructions were strictly adhered to and control sera were included at every run. Chi square statistical analysis was used to compare the results.

Results

Out of 1007 patients tested over the two year period, 62 were hepatitis C antibody positive giving a period seroprevalence rate of 6.2% with a 95% confidence interval of 5.4% to 6.9%. Table 1 shows the distribution of HCV infection according to gender. Out of the 681 males tested 38 (5.6%) were seropositive for hepatitis C antibody. Similarly out of the 326 females tested, 24 (7.4%) were seropositive.

The difference was not statistically significant (X^2 @ 1df and $p > 0.05 = 0.27$) although a higher proportion of females (7.4%) were seropositive compared to males (5.6%).

Table 2 shows the distribution of HCV infection rate according to age groups. The results show that the lowest prevalence rate was 1.6% in the first ten years of life while the highest was 10.1% among those in age bracket 31-40 years. In the first and second decades, the total numbers tested were the lowest which was 62 and 78 respectively. There were over a hundred and thirty sera in the other age groups.

Table 1: Hepatitis C seropositivity and sex in 1007 subjects

Sex	No. seropositive (%)	No. seronegative (%)	Total
Males	38(5.6)	643(94.4)	681
Females	24(7.4)	302(92.6)	326
Total (%)	62(6.2)	945(93.8)	1007(100)

$p = 0.27$ (not significant)

Table 2: Hepatitis C virus positivity and age in 1007 subjects

Age (years)	No. seropositive (%)	No. seronegative (%)	Total
≤10	1(1.6)	61(98.4)	60
11 – 20	6(7.7)	72(92.3)	78
21 – 30	8(4.8)	157(95.2)	165
31 – 40	20(10.1)	179(89.9)	199
41 – 50	9(6.5)	129(93.5)	138
>50	11(6.1)	168(93.9)	179
Not stated	7(3.8)	179(96.2)	186
Total (%)	62(6.2)	945(93.8)	1007(100)

Discussion

Antibody to hepatitis C was found in 6.2% of the subjects screened for HCV infection at Aminu Kano Teaching Hospital, Kano between January 2002 and December 2003. This is comparable to the recent estimates in West African countries that range from 1.1% to 6.7%,⁵ 7% of a cohort of 58 people living with Aids receiving HART in Dakar, Senegal, 5%

among sickle cell anaemia patients of Lagos University Teaching Hospital and 6% among patients with a previous history of traditional surgery.⁶ However, our result is less than 14% found at University of Benin Teaching Hospital among accident and emergency patients by Halim et al,⁷ 18.7% found among patients with hepatocellular carcinoma at Ibadan by Olubuyide et al,⁸ 24% found among patients with acute icteric hepatitis also at

Ibadan,⁹ and 19.4% found among sickle cell disease patients attending a haematology clinic in Ibadan, Nigeria.¹⁰ This 6.2% prevalence rate in Kano patients is however higher than 1.6% found in Dakar, Senegal among blood donors,⁵ Mauritania 1.1% and Benin 1.4% respectively.⁵

Gender-wise, we found that 5.6% of males and 7.4% of females respectively are seropositive to hepatitis C antibodies in Kano. Although a higher proportion of females (7.4%) were seropositive compared to males (5.6%), this difference was not statistically significant. Among different age-groups however, 31-40 age-groups has the highest compared to age group below 10 years. This age group is among those associated with the likelihood of heterosexual transmission of hepatitis C, intravenous drug use and other high risks related to acquisition of hepatitis C.⁷

This study shows that HCV infection is prevalence among patients in Kano, Nigeria. These individuals with hepatitis C antibody can infect their sexual partners if they donate blood to any family member who needs blood the recipient may be infected. Any infected person may develop severe liver disease such as liver cirrhosis and or hepatocellular carcinoma. This should be a source of concern to both health care providers and policy makers.

Hepatitis C antibody screening should be included as one of the diseases screened for among blood donors, intravenous drug users, sexually transmitted infection clients and others with high risk behaviour. A larger survey needs to be carried out among the general population of Kano as well as among the high risk groups. This will enable the government determine the true level of infection in the population and how best to tackle it.

References

1. Jawetz CW. Medical microbiology. Lange, Connecticut, 2001; 403 – 409
2. Shenson DC. Microbiology in clinical practice. Butterworth – Heinemann, 2000; 277-294
3. Ayodele OE, Salako BL. Hepatitis C virus and chronic renal disease. *Afr J Med med Sci* 2003;32: 287-291
4. Bojuwale BJ. The burden of viral hepatitis in Africa. *West Afr J Med* 1997; 16:198-203
5. Etard J-F, Colbachini P, Dromigny J-A, et al. *Emerg Infect Dis* 2003; 9:1492-1493
6. Lesi OA, Kehinde MO. Hepatitis C virus infection in patients with sickle cell anemia at the Lagos University Hospital. *Niger Postgrad Med J* 2003;10:79-83
7. Halim NK, Madukwe U, Saheeb BD, et al. Hepatitis B surface antigen and antibody to hepatitis C virus among accident and emergency patients. *East Afr Med J* 2001; 78: 480-483
8. Olubuyide IO, Aliyu B, Olaleye OA, et al. Hepatitis B and C viruses and hepatocellular carcinoma. *Trans R Soc Trop Med Hyg* 1997; 91: 38-41
9. Ola SO, Otegbayo JA, Odaibo GN, et al. Serum hepatitis C virus and hepatitis B surface antigenaemia in Nigerian patients with acute icteric hepatitis. *West Afr J Med* 2002; 21:215-217
10. Fasola FA, Odaibo GN, Alenova YA, et al. Hepatitis B and C viral markers in patients with sickle cell disease in Ibadan, Nigeria. *Afr J Med med Sci* 2003; 32: 293-295