

HEPATITIS C VIRUS ANTIBODIES AMONG BLOOD DONORS IN JOS, NIGERIA

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Abstract

Background: Hepatitis C virus (HCV) is one of the hepatitis agents known to be transmitted through blood and blood products. Hepatitis C virus has been implicated as a major cause of chronic liver disease and hepatocellular carcinoma worldwide. This study was, therefore, undertaken with the objective of determining the sero-prevalence of HCV antibodies among blood donors in the central city of Jos, Nigeria.

Method: A total of two hundred blood donors were recruited from three hospitals within Jos metropolis. Sera from all subjects were tested for Hepatitis C virus antibodies using a second generation enzyme linked immunosorbent assay (ELISA).

Results: Ninety five percent (95%) of the blood donors were males and most of them were aged between 21 and 50 years. Twelve (6.0%) of the blood donors were anti-HCV seropositive and all of them males.

Conclusion: There is an urgent need to introduce routine screening of blood donors for Hepatitis C virus markers in centers where this is not currently been practiced. This will reduce the risk of transfusion-associated hepatitis C infection and its complications in Nigeria.

Key words: Hepatitis C virus, blood donors, Jos

Introduction

Viral hepatitis is now known to be the most common complication of blood transfusion.¹ The hepatitis agents known to be transmitted through blood and blood products include hepatitis B virus (HBV), hepatitis C virus (HCV), hepatitis D virus (HDV), and hepatitis G virus (HGV).² Hitherto, only hepatitis A virus (HAV), and HBV were characterized, and hepatitis not caused by these two agents was then referred to as non-A non-B hepatitis.³ In 1989, the genome of the HCV was cloned and the virus was identified as the major cause of non-A non-B hepatitis with blood transfusion and intravenous drug use as the major modes of transmission.^{3,4} HCV has been implicated as a major cause of chronic liver disease, most of which progresses to end-stage liver disease and hepatocellular carcinoma.⁵ Although screening for HBV markers in blood donors was introduced over two decades ago, transfusion-associated hepatitis due to HCV has continued to occur. In this environment, data on the seroprevalence of HCV in blood donors is non-existent to the best of our knowledge. This paper therefore examines the situation with a view to introducing testing methods for HCV antibodies in blood donors.

Materials and Methods

Study area and population

This study was hospital based and was carried out in the Jos University Teaching Hospital (JUTH), Evangel Hospital and the Plateau state Specialist Hospital, all located in Jos metropolis. Subjects included healthy individuals who reported at the blood transfusion units of the three hospitals to donate blood between January and March 2001.

A written and informed consent was sought for and obtained before inclusion in the study. All blood donors who reported more than once during the study period to donate blood were included only once. The demographic data of the donors was obtained using a questionnaire. A total of two hundred blood donors were recruited for the study.

Collection and processing of blood samples

Blood samples were collected from each subject by venepuncture of the cubital veins. The site was cleaned thoroughly using 70% isopropyl alcohol in water and 1% iodine for one minute and allowed to dry. Taking precautions to avoid contamination of the site, about 5 millilitres of blood was collected using a sterile syringe and needle and dispensed into clean plastic

containers (z-10tubes). The blood was allowed to clot and all samples were transported to the Medical Microbiology laboratory of JUTH where all the processing was carried out.

The clotted blood samples were centrifuged at 1800rpm and the serum obtained was stored at -20 oC. Testing for HCV antibodies was carried out using a second generation ELISA (Microwell by Diagnostic Automaton Inc; USA). Results were read using EL x 800 universal micro-plate reader, (Biotek Instruments Inc.). All positive samples were retested using the same method (double ELISA).

Ethical approval

Ethical approval for this study was obtained from the JUTH ethical committee. Attached is a copy of the ethical approval.

Results

A total of two hundred blood donors were recruited into this study. Out of the 200, males constituted 191(95.5%) of the blood donors, while females accounted for only 4.5% (9 out of 200). Majority (83.5) of the blood donors were aged between 21 and 50 years (Table1).

Twelve (6.0%) blood donors in this study had antibodies to HCV (Table 2). All the anti-HCV positive blood donors were males.

Table 1: Age and sex distribution of blood donors in Jos

Age (Years)	Sex		Total (%)
	M	F	
11 – 20	15(7.5)	1(0.5)	16(8.0)
21- 30	93(46.5)	2(1.0)	95(47.5)
31 – 40	62(31.0)	5(2.5)	67(33.5)
41 – 50	19(9.5)	1(0.5)	20(10.0)
51 – 60	2(1.0)	-	2(1.0)
Total	191(95.5)	9(4.5)	200(100)

Table 2: Anti-HCV status of blood donors in Jos

Anti-HCV	Sex		Total (%)
	M	F	
Positive	12(6.0)	-	12(6.0)
Negative	179(89.5)	9(4.5)	188(94.0)
Total	191(95.5)	9(4.5)	200(100)

Discussion

Our findings further confirm the presence of hepatitis C infection Nigeria. ^{6, 7} The sero-prevalence of 6.0% in blood donors in this study is similar to the report from southern Nigeria, where 5.8% prevalence was found

among normal blood donors. ⁷ Our finding is however higher than values ranging between 0 and 1.4% reported from USA and Europe. ^{1, 4, 8} Prevalence rates reported from some African countries also differ from place to place, a low prevalence of 2.8% was found in blood donors in a Ghana study while 15.8% prevalence was reported among Egyptian blood donors. ^{9, 10} The differences in prevalence rates of anti-HCV between developed countries where prevalence rates are low and developing countries where prevalence rates are higher may be explained by certain factors. These include socio-cultural practices involving the use of sharp instruments contaminated by blood and body fluids for procedures such as scarifications, tattooing, circumcision and so on which are common practices in many developing countries. Many of these countries also do not have facilities to test for hepatitis C virus. On the other hand, most developed countries are now having low prevalence rates of HCV because blood and blood products for transfusion are routinely tested for various blood-borne pathogens including HCV and measures such as the use of sterilized instruments and the needle exchange program for intravenous drug users has also served to reduce the prevalence of hepatitis C infection. In most developing countries, Nigeria inclusive, most blood transfusion units only test blood donors for hepatitis B virus antigen and the human immunodeficiency virus (HIV) antibodies.

With the low prevalence of anti-HCV in developed countries, the risk of infection is still estimated at about 1:100,000. ¹¹ This risk is expected to be higher in our environment where the prevalence is high in addition to the virtual non-existence of testing methods for HCV markers.

The finding of a high prevalence of HCV antibodies in blood donors in Jos brings to the fore the necessity of adopting measures that will ensure that blood is transfused to its recipients with minimal risk of transmission of HCV. We therefore recommend that all blood transfusion units in Jos as well as other parts of Nigeria should introduce routine testing of blood donors for HCV markers.

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