

Short Communication

Sero-prevalence of hepatitis C virus among blood donors in Lagos, Nigeria

Ayolabi, C. I.^{1*}, Taiwo, M. A.¹, Omilabu, S. A.², Abebisi, A. O.¹ and Fatoba, O. M.¹

¹Department of Botany and Microbiology, University of Lagos, Lagos, Nigeria.

²Department of Medical Microbiology and Parasitology, College of Medicine, University of Lagos, Lagos, Nigeria.

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The prevalence of Hepatitis C virus (HCV), one of the causative agents of viral hepatitis was investigated. One hundred and sixty-seven (167) blood samples from donors which were sero-negative to hepatitis B virus markers were screened for presence of HCV IgM antibodies using a third generation ELISA kit. Out of the 167 sample tested 14 (8.4%) were positive for anti-HCV with the highest prevalence rate recorded in the age group 30-39 years. There is no statistically significant association between the sex and the rate of HCV infection (p 0.05).

Key words: Hepatitis, prevalence, blood transfusion.

INTRODUCTION

Hepatitis is an inflammatory condition of the liver while viral hepatitis is a conventional term used to denote hepatitis caused by the hepatotropic viruses (hepatitis A-G). The disease presents a serious public health problem in developing countries like Nigeria even in the world at large, affecting over 300 million people (Fenner and White, 1994). Hepatitis C virus (HCV), one of the agent of the disease in question, is a single stranded, enveloped, negative sense RNA virus with genomic size approximately 9.4 kb (Ogata et al., 1991). HCV, a member of flavivirus have been discovered to play a primary role in post transfusion hepatitis, proclivity to establish long standing persistent infections, association with chronic cirrhosis and hepatocellular carcinoma (Stanley and Edwin, 1995; Coursaget et al., 1990). It is transmitted via blood and blood product, parenterally and by sexual contact (Alfredo et al., 1990). The endemicity in the developing parts of the world is high with majority of people being seropositive, with most becoming infected at birth or in early childhood. In Nigeria, the prevalence rate of HCV varies between 5.8-12.3% (Halim and Ajayi, 2000; Bojuwoye, 1997; Aliyu, 1996).

Report has shown that viral hepatitis is endemic in Africa (Oon, 1984). Hepatitis infection is on the increase in the society despite the routine screening for Hepatitis B virus (HBV) in blood for transfusion (Fenner and White, 1994). Perhaps, this problem may be due to HCV as emphasis are being placed only on HBV which is just one of the several agents of the disease as facility for their screening are unavailable and very expensive. Absence of facilities necessary for proper blood selection may mean that people receiving blood transfusion in the hospitals are exposed to various hazards. Hence, this work is designed to carry out investigation on the prevalence of HCV among HBV sero-negative blood donors to know the role of the virus (HCV) in hepatitis infection.

MATERIALS AND METHODS

Study population

A total of one hundred and sixty seven (167) blood samples from commercial donors aged between 20–59 years in Lagos Island, Nigeria, were screened for anti HCV between January to November 2004.

Sample collection, processing and analysis

Five milliliter of peripheral blood samples were collected by venous

*Corresponding author E-mail: ciayolabi@yahoo.co.uk. Tel: +234-8037186163.

Table 1. Age and sex distribution of hepatitis C virus among blood donors.

Age Group	No. of patients (%) screened	Sex distribution		No. of positive patients	No. of negative patients
		Male (%)	Female (%)		
10–19	2 (1.20)	2 (100.00)	0 (0.00)	0 (0.00)	2 (100.00)
20–29	48 (28.74)	45 (93.75)	3 (6.25)	1 (2.08)	47 (97.92)
30–39	82 (49.10)	80 (97.56)	2 (2.44)	8 (9.76)	74 (90.24)
40–49	29 (17.37)	28 (96.55)	1 (3.45)	4 (13.79)	25 (86.21)
50–59	6 (3.59)	5 (83.33)	1 (16.67)	1 (16.67)	5 (83.33)

Table 2. The incidence of HCV with sex among blood donors.

Sex	Positive (%)	Negative (%)	Total (%)
Male	13 (8.13)	147 (91.87)	160 (95.81)
Female	1 (4.29)	6 (85.71)	7 (4.19)
Total	14 (8.38)	153 (91.62)	167 (100)

$$\chi_2 = 0.03$$

puncture using sterile syringes and needles. The blood samples were transferred into sterile universal bottles. Serum was extracted by centrifugation of blood specimens at 3000 rpm for 10 min and stored frozen at -20°C until analyzed. The serum samples were coded and the kits were brought to room temperature after which screening for anti HCV (IgM) using third generation ELISA kit (Monolisa antiHCV plus). The serum samples were added to the wells of microtiter plate which were pre-coated with HCV antigen. After incubation the wells were aspirated and washed with washing solution after which conjugate solution (horse radish peroxidase) was added. The presence of antibody to HCV was exhibited by the resulting enzyme activity on tetra-methyl benzidine (TMB) measured at 450 nm. Samples were considered positive if the OD value is equal or greater than 0.5.

RESULTS AND DISCUSSION

Out of the total 167 samples screened, IgM antibodies to HCV were found present in 14 (8.4%) patients of which 13 (92.8%) were males and 1 (3.4%) was a female (Table 1). The highest prevalence rate was recorded in age group 30 – 39 years. There is no statistical significant association between the gender and HCV infections (Table 2). The prevalence rate (8.4%) of HCV is high compared to the previous studies which reported 6% among blood donors (Bojuwoye, 1997). Age group 30–39 years recorded the highest positive rate with 8 (9.76%) being positive among 82 patients. This indirectly revealed the sexually active group of the population hence, showing probably the mode of transmission of the virus.

It is also clear from this work that the transfusion of blood not screened for hepatitis C virus serve as means of acquiring the virus which in turn leads to hepatitis infection, as some HBV sero-negative donors are positive to HCV in this present study. Thus, this poses a high risk on patients requiring organ transplant and sicklers among

others who often require blood transfusion during operation and crisis, respectively.

The ever-increasing frequency of anaemia, haemorrhage, severe and multiple road accident, complicated pregnancies and so on has created an overwhelming demand for efficient blood transfusion services in this part of the world, and transfusion of blood and blood product in clinical practice has become an everyday affairs. It is therefore imperative that government should make policies to increase the quality of blood being transfused in our nation hospitals by including HCV among the blood pathogens routinely screened for in blood meant for transfusion. HCV is endemic in our environment; therefore there is also need for the development of vaccines against the virus.

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