SURVEILLANCE OF ANTI-HCV ANTIBODY AMONGST IN-SCHOOL YOUTH IN A NIGERIA UNIVERSITY

Muhibi M A1,2*, Ifeanyichukwu M O2, Olawuyi A O3, Abulude A A2, Adeyemo M O4, Muhibi M O5

1 Haematology and Blood Transfusion Department, Ladoke Akintola University of Technology Teaching Hospital, Osogbo, Osun State, Nigeria; 2 Medical Laboratory Science Department, Nnamdi Azikwe University, Nnewi Campus, Anambra State, Nigeria; 3 Chemical Pathology Department, Ekiti State University, Ado-Ekiti, Ekiti state, Nigeria; 4 Nursing Department, Osun State University, Osogbo, Osun State, Nigeria; 5 Health Information Management Department, Ladoke Akintola University of Technology Teaching Hospital, Osogbo, Osun State, Nigeria.

Correspondence: Name: Muhibi M A, PMB 5000, Ladoke Akintola University of Technology Teaching Hospital, Osogbo, Osun State, Nigeria. E-mail: muhibudeen@yahoo.com Telephone: +2348033802694

ABSTRACT

Infection with Hepatitis C Virus (HCV) is a public health problem. Worldwide, there are about 170 million people infected with HCV. HCV is transmitted through sex and use of contaminated sharp objects during tattooing or intravenous drug abuse. These routes make youth to be more vulnerable. Transfusion and mother to child transmissions are also documented modes. This study was carried out to determine sero-prevalence of hepatitis C virus infection among in school youth at Achievers University, Owo in southwest Nigeria. Samples of blood were collected from 70 undergraduate students and sera harvested were tested for the presence of antibodies against hepatitis C virus by Enzyme Immunoassay Technique. Most participants fall within age range 21-25 (91.4%). The study showed that none of the subjects was positive for anti-HCV antibodies. Education and awareness level might have impacted positively on this outcome. Thus routine screening for HCV and sustained awareness creation activities to eradicate HCV and its attendant consequences from our society is of paramount importance.

Key words: HCV, prevalence, in-school youth, education.

SURVEILLANCE D’UN ANTICORPS ANTI-VHC CHEZ LES JEUNES À L’ÉCOLE DANS UNE UNIVERSITÉ DU NIGERIA

Muhibi M A1,2*, Ifeanyichukwu M O2, Olawuyi A O3, Abulude A A2, Adeyemo M O4, Muhibi M O5

1 Département d’hématologie et de transfusion sanguine, hôpital universitaire de l’Université de technologie Ladoke Akintola, Osogbo, État d’Osun, Nigéria; 2 Département des sciences de laboratoire médical, Université Nnamdi Azikwe, Campus Nnewi, État d’Anambra, Nigéria. 3 Département de pathologie chimique, Université d’État d’Ekiti, Ado-Ekiti, État d’Ekiti, Nigéria; 4 Département des soins infirmiers, Université d’État d’Osun, Osogbo, État d’Osun, Nigéria; 5 Département de gestion de l'information sur la santé, hôpital universitaire de l'Université de technologie Ladoke Akintola, Osogbo, État d’Osun, Nigéria. Correspondance: Nom: Muhibi M A, PMB 5000, hôpital universitaire de l'Université de Ladoke Akintola, Osogbo, État d’Osun, Nigéria. E-mail: muhibudeen@yahoo.com Téléphone: +2348033802694

ABSTRACT

L'infection par le virus de l'hépatite C (VHC) est un problème de santé publique. À l'échelle mondiale, environ 170 millions de personnes sont infectées par le VHC. Le VHC se transmet par le sexe et l'utilisation d'objets tranchants contaminés au cours du tatouage ou de l'abus de drogues par voie intraveineuse. Ces itinéraires rendent les jeunes plus vulnérables. La transfusion et les transmissions mère-enfant sont également des modes documentés. Cette étude visait à déterminer la prévalence de la séropositivité au virus de l’hépatite C chez les jeunes scolarisés de l’Université Achievers, à Owo, dans le sud-ouest du Nigéria. Des échantillons de sang ont été prélevés chez 70 étudiants de premier cycle et les sérums prélevés ont été testés pour détecter la présence d’anticorps contre le virus de l’hépatite C par la technique d’immunoanalyse enzymatique. La plupart des participants sont âgés de 21 à 25 ans (91,4%). L’étude a montré qu’aucun des sujets n’était positif pour les anticorps anti-VHC. Le niveau d’éducation et de sensibilisation pourrait avoir eu un impact positif sur ce résultat. Le dépistage systématique du VHC et des activités de sensibilisation soutenue visant à éradiquer le VHC et les conséquences qui en découlent pour notre société sont de la plus haute importance.

Mots clés: VHC, prévalence, jeunes scolarisés, éducation

Copyright ©2017 AJCEM. This work is licensed under the Creative Commons Attribution 4.0 International License CC-BY
INTRODUCTION

Viral hepatitis is a life threatening liver disease, caused majorly by hepatitis B and C viruses, and is a major public health problem; particularly in developing countries (1,2). Hepatitis C is an infectious disease affecting primarily the liver, caused by the hepatitis C virus (HCV). HCV is a single-stranded RNA virus of the flavivirus family, about 9.5 kb in length. HCV has a long lag time between onset of infection and clinical manifestation of liver disease which may be up to 20 years (3). HCV has become a significant causative factor in the aetiology of chronic liver disease worldwide (4). Individuals with chronic infection of HCV have a high risk of liver cirrhosis and hepatocellular carcinoma. Serological markers for HCV are screened in blood banks and antenatal clinics routinely. The prevalence of HCV in a population can be determined by risk factors associated with the transmission of infection such as blood transfusion, intravenous drug abuse, unsafe injections, sexual activity, shared needle, other body fluids such as semen, virginal secretions and breast milk, from mother to child, needle stick injury, ear piercing, tattooing and scarifications, exposure to barbers razors, surgical procedures and vertical transmission. Viral hepatitis during pregnancy is associated with high risk of maternal complication the virus can be transmitted through infected blood, mother to child in perinatal period. Perinatal transmission is the most common mode of HCV transmission worldwide (11). Viral infection is public health problem and is highly endemic in the sub-Saharan Africa (12, 13). Prevalence rates of anti-HCV antibodies have been determined for various nations of the world. Nigeria as one of the countries highly endemic for viral hepatitis was reported to have a prevalence rate of 3.6% through 12.3% (14, 15). Hepatitis C is an infectious disease affecting primarily the liver, caused by the hepatitis C virus (HCV). HCV is a single-stranded RNA virus of the flavivirus family, about 9.5 kb in length. HCV has a long lag time between onset of infection and clinical manifestation of liver disease which may be up to 20 years (3).

MATERIALS AND METHODS

Study setting: This study was carried out at Achievers University, Idashen, Owo in southwestern Nigeria. The University is a private sector initiative established in 2007 and it houses students from all major tribes in Nigeria running undergraduate programs in various departments of the 2 faculties. Owo is situated halfway between the Nigerian towns of Ife and Benin. The primary occupation of Owo people is farming and trading. They are producers of cocoa, cotton and timber.

Study subjects: A total of 70 apparently healthy students of the university who consented to participate in the study were recruited. All the participants were offered pre-test and post-test counseling.

Procedure: Five milliliters (5ml) of venous blood were collected from each subject by venepuncture into vacuum plain tube. The specimens were centrifuged at 1200 revolution per minute (rpm) for 5 minutes to harvest serum into a microtube for the anti-HCV (IgG) testing with third generation Enzyme Immuno-Assay (EIA) method. Donor’s serum was added to the microwell together with a second antibody conjugated with the enzyme horseradish peroxidase (the HRP-Conjugate) and directed against a different epitopes of HCV. During incubation, the specific immunocomplex formed in case of presence of anti-HCV in the sample, was captured on the solid phase which generates an optical signal that is proportional to the amount of anti-HCV antibodies present in the sample. The commercially prepared positive and negative controls were treated alongside the specimens. A cut-off value was determined and results were interpreted as positive and negative according to manufacturer’s instructions.

Statistical analysis: The data generated were coded, entered, validated and analyzed using Statistical Package for Social Science (SPSS) version 20.0. The seroprevalence of HCV were expressed for the entire study group and documentation of participants’ age, gender, knowledge and attitude was done.

RESULTS

A total of 70 healthy Achievers students within the age range of 15-30, were tested for HCV. The distribution of HCV in relation to age and gender was determined. Majority of the respondents were in the age range of 21-25 years. Out of 70 respondents, thirty nine were males (56%) and twenty one were females (44%). The sero-prevalence of HCV obtained from this study was zero (0%).
TABLE 1: AGE DISTRIBUTION AND PREVALENCE OF HCV AMONG IN SCHOOL YOUTH.

| Age group | No examined (n) | Percentage (%) | Sero positivity of HCV |
|-----------|-----------------|----------------|------------------------|
| 15-20     | 21              | 4.3            | 0                      |
| 21-25     | 64              | 91.4           | 0                      |
| 26-30     | 3               | 4.3            | 0                      |
| Total     | 3               | 100            | 0                      |

TABLE 2: DISTRIBUTION OF HCV INFECTION BY GENDER

| Gender | No examined (n) | Percentage (%) | Sero-positivity of HCV |
|--------|-----------------|----------------|------------------------|
| Male   | 39              | 55.7           | 0                      |
| Female | 31              | 44.3           | 0                      |
| Total  | 70              | 100            | 0                      |

TABLE 4.3: RESPONDENT’S AWARENESS ON THE ROUTE OF TRANSMISSION OF HEPATITIS C

| Major route of infection | Frequency (n) | Percentage (%) |
|--------------------------|---------------|----------------|
| Coitus                   | 30            | 48.6           |
| Blood transfusion         | 26            | 1.4            |
| Use of infected material  | 14            | 50.0           |
| Total                    | 70            | 100            |

DISCUSSION

Seventy healthy students were examined for presence of marker of HCV infections. The age range of subjects was 15-30 years. There was no sero-positivity to this viral infection among the subjects studied. No prevalence of HCV infection in this community was found and this is in contrast to reports from some countries in Western Pacific (3.9%), South East Asia (2.1%), America (1.17%), Europe (1.03%) and Eastern Mediterranean (26) (4.6%). It is still at variance with reports from some researchers about the entire Africa (5.3%) (26) and Egypt (20.0%) (15). In Enugu where 14.9% was reported (16); the 5.2% and 11.09% reported in Jos and Kaduna respectively (15) were all higher than what was reported in this study. The sero-prevalence of anti-HCV antibodies reported in this study differs from previous studies including the 13.3% reported for Anti-HCV in Keffi; Nigeria (17). The 9.2% found by Ogunro et al. 2007 (27) in Osun State; the 8.4% anti-HCV antibody seroprevalence rate reported in Lagos (28); the 3.0% found by Ezeani (29) in Southeastern, Nigeria; the 2.4% HCV infection rate found by Olokoba et al (21); the 1.1% reported by Buseri et al (22) for HCV in Osogbo; Nigeria are all alarming. However, our report is exactly the same with 0.0% HCV seroprevalence previously reported by Elfaki (30) in Sudan, another African country. The zero level prevalence reported in this study and that of Sudan may be due to high level of awareness and adherence to safety practices among the participants in the studies. No doubt, students of the Achievers University, Owo have enough information on transmission of HCV and their attitudes generally about transfusion transmissible infections reflect their level of awareness.

CONCLUSION

In conclusion, the results of this study have highlighted that HCV infection is not common in Owo. However, a prospective cohort study is suggested for newly admitted students till their year of graduation for HCV seroprevalence in order to affirm our observation.

REFERENCES

1. Haider Z, Khan AA, Rehman K, Janjua MI, Iqbal J, Chishti MA. Sero-diagnosis of Viral hepatitis in 93 patients admitted with acute hepatitis in three different teaching hospitals in Lahore. J Pak Med Assoc 1994; 44: 182-4.

2. Munoz PS, Robert S, Sheffiedld. J et al. 6.3% Prevalence of hepatitis B and C in pregnant women who are infected with HIV. American Journal of Obstetrics and Gynecology Vol 2005; 193, (3) Supplement 1, September: 1270-3.

3. National Institutes of Health. Consensus Development Conference Statement: Management of Hepatitis C. 2002.

4. World Health Organization. Hepatitis C Assay: Operational Characteristics (phase 1), report 2, World Health Organization, Geneva 2001; http://www.who.int/entity/diagnostics_laboratory/evaluations/en/hcv_rep2.pdf. Accessed August 10, 2010.
5. B.H. Tess, A. Levin, G. Brubaker, J. Shao, J.E. Drummond, H.J. Alter, and T.R. O’Brien. Seroprevalence of Hepatitis C Virus in the General Population of Northwest Tanzania. American Journal of Tropical Medicine and Hygiene 2000; 62(1) 138–141.

6. Abildgaard N, Peterslund NA. Hepatitis C virus transmitted by tattooing needle. Lancet 1991; 338: 460.

7. Akbar N, Basuki B, Mulayanto, Garabrant DH, Sulaimon A, Noer HM. Ethnicity Socioeconomic status, transfusion and risk of hepatitis B and C infection. J GastroenterolHepatol 1997; 12: 752-757

8. Luby SP, Qamruddin K, Shah AA, Omair A, Pahsa O, Khan AJ. The relationship between therapeutic injection and high prevalence of hepatitis C infection in Hafizabad, Pakistan. Epidemiol infection 1997;119: 349-356.

9. Nacos, B. Dao, M. Dahourou, and et. al. HBs antigen carrier state in pregnant women in BoboDioulasso (Burkinafaso). Dakar Medicine 2000; 42(2) 188-190.

10. Agbede O.O, Iseniyi J.O, Kolawole M.O and Ojuawo A. Risk factors and seroprevalence of hepatitis B surface antigenaemia in mothers and their pre-school age children in Ilorin, Nigeria. Therapy 2007; 4(1) 67-72.

11. Tran TT. Understanding cultural barriers in hepatitis B virus infection. ClevelandClin. J. Med. 2009;76 (Suppl 3): 10-13.

12. Kramvis A, Kew M. Epidemiology of hepatitis B virus in Africa, its genotypes and clinical associations of genotypes. Hepatol. Res. 2007; 37 (Supplement 1): 9-19.

13. Kwan LC, Cho Y, Lee SS . The declining HBsAg carriage rate in pregnant women in Hong Kong. EpidemiolInfect 1997; 119 (2): 281-283.

14. Imoru M, C. Eke, and A. Adegoke. Prevalence of Hepatitis-B Surface Antigen (HbsAg), Hepatitis C Virus (HCV) and Human Immunodeficiency Virus (HIV) among Blood Donors in Kano State, Nigeria. Journal of Medical Laboratory Sciences 2003; 12(1) 59-63.

15. Frank C, M. Mohammed, and G. Strickland. The role of parenteral antischistosomal therapy in the spread of Hepatitis C virus in Egypt. Lancet 2002; 355: 887-891.

16. Ebie J.C, and O.A. Pela. Some sociocultural aspects of the problem of drug abuse in Nigeria. Drug and Alcohol Department 2006; 8: 301-306.

17. G.R. Pennap, A. Yakubu, O. Oyioge, and J. Forbi. Prevalence of hepatitis B and C virus infection among people of a local community in Keffi, Nigeria. African Journal of Microbiology Research 2010; 4 (4) 274-278.

18. Inyama P.U, C.J. Uneke, G.I. Anyanwu, O.M. Njoku, J.H. Idoko, and J.A. Idoko. Prevalence of Antibodies to Hepatitis C virus among Nigerian Patients with HIV Infection. Online Journal of Health and Allied Sciences 2005; 2:2. www.ojhas.org/issue14/2005-2-2.htm. Accessed August 10, 2010.

19. Mabayoje V.O, P.O. Akinwusi, O.O. Opaleye, O.A. Abderin, B.E. Egbewale, and A.H. Fagbami. Prevalence of Hepatitis B Surface Antigen, Hepatitis C and Human Immunodeficiency Virus Antibodies in a Population of Students of Tertiary Institution in Nigeria. African Journal of Clinical and Experimental Microbiology 2010; 11(2) 68-74.

20. Nwokediuko S.C, O.G. Ibegbulam, and Ugwu T. Hepatitis C virus seroprevalence in blood donors at the University of Nigeria Teaching Hospital, Enugu. Journal of College of Medicine 2007; 12(2) 85-88.

21. Olokoba, A.B. L.B. Olokoba, F.K. Salawu, A. Danburam, O.O. Desalu, J. Midala, and S. Aderibigbe. Hepatitis C virus and Human immunodeficiency virus co-infection in North-Eastern Nigeria. Research Journal of Medical Sciences 2008; 2(5) 217-219.

22. Buseri F.J, M.A. Muhibi, and Z.A. Jeremiah. Sero-epidemiology of transfusion-transmissible infectious diseases among blood donors in Osogbo, South-West Nigeria. Blood Transfusion 2009; 7(4) 293-299.
23. Chandra T, A. Kumar, and A. Gupta. Prevalence of transfusion transmitted infections in blood donors: an Indian experience. Tropical Doctor 2009; 39:152-154

24. Ugbebor O, Aigbirior M, Osazuwa F, Enabudoso E, Zabayo O. The prevalence of hepatitis B and C viral infections among pregnant women. North Am J Med Sci. 2011;3(5):238.

25. Ryan K. J., Ray C. G. Shenis Medical Microbiology 4th ed. McGraw Hill 2004; 551-552.

26. World Health Organisation. Hepatitis C, estimated Prevalence and number infected by world region 2007. Available at http://www.who.int/csr/disease/hepatitis.

27. Ogunro PS, Adekanle DA, Fadero FF, Ogungbamigbe TO, Oninla SO. Prevalence of anti-hepatitis C virus antibodies in pregnant women and their offspring in a tertiary hospital in Southwestern Nigeria. J Infect Dev Ctries. 2007; Dec 1;1(3):333-6.

28. yolabi, et al. "Sero-prevalence of hepatitis C virus among blood donors in Lagos, Nigeria." African Journal of Biotechnology 2006; 5:20: 1944-1946.

29. Ezeani M C, Oluchi O, Onyenekwe CC, Meludu SC, Okonkwo JE. Prevalence Of Hepatitis B And C Virus Amongst Blood Donors And Abnormal Alt Activities In Blood Donors In Nigeria. Journal of Biomedical Investigation 2006; Vol. 4 (2) pp. 32-36.

30. Elfaki AMH, Eldour AAA, Elsheikh NMH. Sero-prevalence of immunodeficiency virus, hepatitis B and C and syphilis among blood donors at ElObeid Teaching Hospital, West Sudan. Sudan Journal of Medical Science 2008; Vol. 3 (4); pp. 333-338.