Int.J.Curr.Microbiol.App.Sci (2016) *5*(3): 226-230

International Journal of Current Microbiology and Applied Sciences
ISSN: 2319-7706 **Volume 5 Number 3(2016) pp. 226-230**
Journal homepage: http://www.ijcmas.com

Original Research Article http://dx.doi.org/10.20546/ijcmas.2016.503.027

Seroprevalence of HAV among Male patients living with HBV at four private hospitals in Southwestern Nigeria

T.O. Idowu[1,2]* and O.B. Balogun[2]

[1]Department of Microbiology and Immunology, Inje University College of Medicine, Busan, South Korea
[2]Department of Biological sciences, College of Natural Science, Joseph Ayo Babalola University, Ikeji-Arakeji, Osun State, Nigeria
**Corresponding author*

Keywords

Hepatitis A Virus (HAV), Hepatitis B Virus (HBV), Seroprevalence, Co-infection.

Article Info

Accepted:
15 February 2016
Available Online:
10, March 2016

A B S T R A C T

HAV and HBV are one of the major causes of acute viral hepatitis in human. These two viral infections however possess different routes of transmission. While HAV is transmitted via the faecal-oral route and is associated with poor hygiene practices, HBV is transmitted via contacts with infected body fluids. This study aims at determining the seroprevalence of HAV among male patients infected with HBV within four (4) private hospitals located at southwestern Nigeria for a period of 8 months. Co-infection rates were analyzed comparing the ages of patients. The ages of the HBV positive patients varied from 11 to 60 years. Sterile venous anti-coagulated blood were collected from a total of 120 donors, the serum was separated from the red blood cell and confirmed for HBV markers after which it was analyzed for HAV surface antigen. Among the 120 HBV positive samples, 12 individuals (10%) tested positive to hepatitis A, additionally the age group of most infected individuals fell within ages 11 to 20 years which tallied 6 (6%) reactors among 12 donors. This study emphasizes the monitoring of HAV co-infection among patients infected with HBV.

Introduction

Acute viral infections caused by HBV or HAV (in very rare cases) are recognized major public health problems worldwide however; more prevalent in developing countries most especially countries within the African continent. According to WHO 360 million people worldwide are chronic carriers of HBV (WHO, 2009), while HAV infection is a common infection responsible for 1.4 million new infections worldwide each year (WHO, 2000).

The natural history and modes of transmission of these two viruses are different. While HAV which is a non-enveloped 27-nm, heat, acid and ether resistant RNA virus in the genus Hepatovirus of the family Picornaviridae causes acute self-limited disease which is transmitted via the faecal oral route (Jacobsen KH *et al*., 2004) and is influenced by general hygiene condition which includes water supplies and food preparation

(Furusyo N, *et al*., 1998). HBV infection on the other hand is acquired through contact with bodily fluids of infected individuals. HBV compared to HAV can cause persistent infection, hepatocellular carcinoma and chronic hepatitis (Lemon SM *et al*., 1997).

Current trend shows an increase in the prevalence of HBV and other type of hepatitis co-infections; hence this study was conducted to determine the seroprevalence of HAV in HBV positive patients in order to prevent progression of infection to cirrhosis, hepatocellular carcinoma and other liver related mortalities.

Materials and Methods

Study Design, Period and Area

This was a cross-sectional study of HBV positive patients who were either admitted or receiving treatments at 4 Private hospitals located in southwestern Nigeria. A total of 120 samples were collected, Serological testing for HBV was carried out at the Pathology Laboratory of each hospital.

Specimen Collection

The attending phlebotomist drew five milliliters of blood from all enrolled patients. The serum was transported to the laboratory on ice packs at a temperature of 0°C to 4°C. Upon arrival to the laboratory the serum was separated from the red blood cells by centrifugation and stored at -20°C until processed.

Viral Serology

Determination of HBeAg and analysis for IgM anti-HAV for the detection of Hepatitis A was carried out using commercially available ELISA kit.(BioneovanHBeAg ELISA kit, catalog number BE103A and ALPCO anti-HAV IgM ELISA, catalog number 68-4AME3).

Study Population

The study populations were male patients living with Hepatitis B virus (HBV) at four (4) private hospitals located within strategic high populated areas of 2 large cities of southwestern Nigeria.

Study Period

The study was conducted between 20th October 2012 and 15th June 2013.

Ethical Considerations

Ethical approval for the study was given by the ethical board of each respective hospital. Permission was granted to conduct the studies within the hospital as stipulated by the National Ethical board.

Data Analysis

Data was entered and analyzed using the Statistical Package for Social Sciences (SPSS) version 16.0 with values expressed in means and percentage. The determined proportions were compared using Fishers exact test. A P-value of <0.05 was regarded as significant.

Results and Discussion

This study was conducted after obtaining clearance from institutional ethics committee on a total of 120 samples during a period of 8 months.

The seroprevalence of HAV in HBV positive patients was 10% (12 cases) (Table 1). Age group 11 to 20 years was the most prevalent group which tallied 6 cases among 12 donors, age group 21 to 30 years had 3 cases out of 19 donors, age group 31 to 40 had 3 cases out of 32 donors while the remaining age groups didn't have any positive case (Figure 1).

Also the percentage number of cases per age group was 50%, 15.8%, 9.4%, 0% and 0% for age groups 11-20 years, 21-30 year and 31-40 years 41-50 years and 51 to 60 years depending on the number of donors in each age group respectively (Figure 2).

Table.1 Prevalence of HAV In HBV Positive Patients

Age group	Number of donors	No of anti-HAV IgM positive donors	HAV per age group (%)	HAV per overall no. of donors (%)
11-20	**12**	**6**	**50**	5
21-30	**19**	**3**	**15.8**	2.5
31-40	**32**	**3**	**9.4**	2.5
41-50	**20**	**0**	**0**	0
51-60	**37**	**0**	**0**	0
Total	**120**	**12**	**75.6**	**10**

Figure.1 Number of Anti-HAV IgM Positive Cases Compared to the Total Number of Donors. Upon Detection of Anti HAV IgM via ELISA, Negative and Positive Cases were Compared and Analyzed

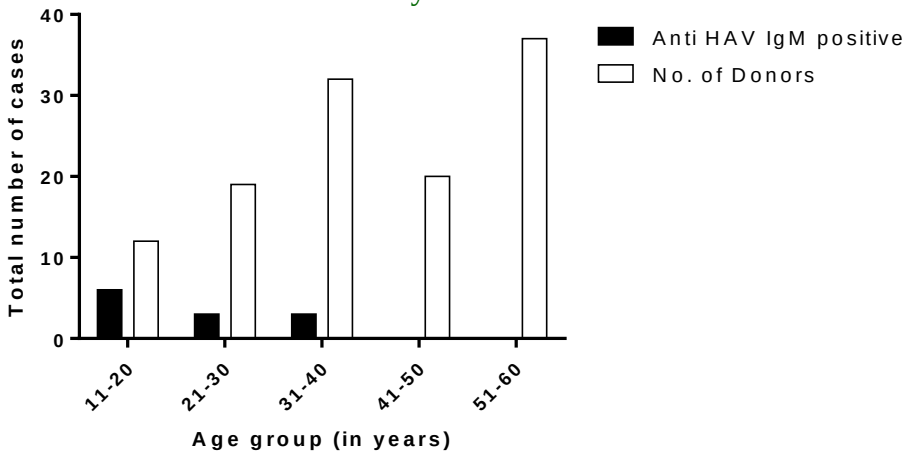
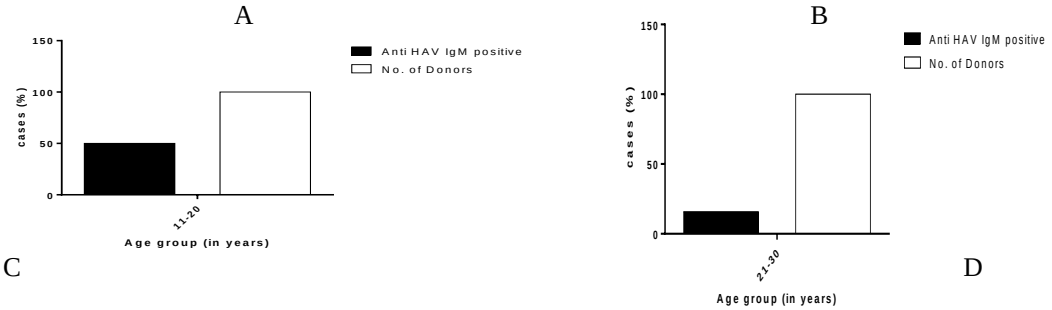
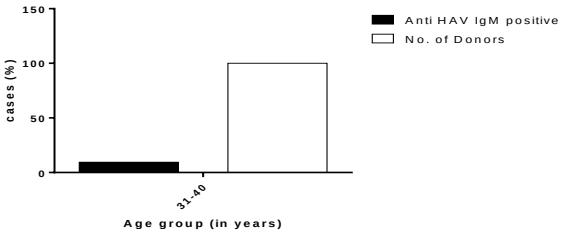
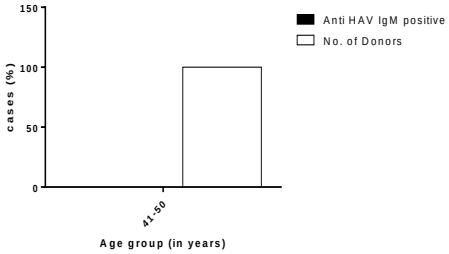


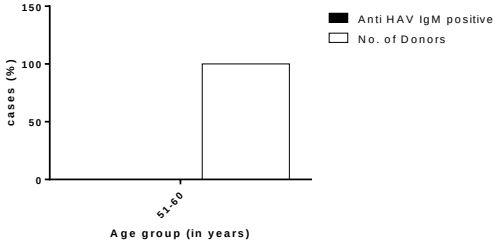
Figure.2 Percentage Prevalence of Anti-HAV IgM Positive Samples. The Total Number of Donors was Regarded as 100% and Compared to that of the Positive Cases







E



The present study was conducted mainly to determine the prevalence of HAV in HBV positive patients at specific high populated states in southwestern Nigeria. According to our experimental results only 10% of patients were positive to anti HAV IgM. Also, 50% of the HAV positive patients were between the ages of 11 to 20 years. While the remaining 50% was shared equally among patients within age groups 21-30 years (25%) and 31-40 years (25%) respectively. Also; patients above 40 years were all negative to anti HAV IgM. Our results however correlates with the works of Joon A *et al.,* in which HAV infection was seen in all age group except above the age of 45 years (Joon A *et al*., 2015). 6 (50%) out of 12 patients between ages 11 and 20 years tested positive to anti HAV IgM which signifies that co-infection might be more prevalent in children than in adults. This is quite possible since the incidence of HAV is closely related to the socioeconomic conditions of sanitation and hygiene, also; considering the fact that it is spread oral faecally it's quite convincing that children are at higher risk of infection than adults due to their inability to maintain good personal hygiene standards.

We found out that majority of donors reside in rural areas among which two (2) who were positive to anti HAV IgM drink stream water (as stipulated in their questionnaire) which might have been contaminated with faecal matter (Oyedeji *et al*., 2011), also; eight (8) of the infected patients eat at local food joints majority of which are known to be the dwelling place of countless disease causing organisms (Smith *et al*., 2009) due to improper food handling and poor sanitation practices.

In conclusion, for this study, HAV were identified to co-exist in patients infected with HBV mostly among the younger ones. Various risk factors attributed with this reasons were also identified which included source of water, poor sanitation and improper handling of consumables. Increasing awareness of infectious diseases and improved hygiene standards may result in the decrease of HAV prevalence.

Recommendation

The findings in this study might be an underestimate of the true prevalence of HAV in HBV infected patients since only little fraction of individuals were involved in the study, however this study emphasizes

the need for proper screening of patients infected with HBV for co-infections with other viral related infections like HAV in order to decrease liver damage. This study lays more emphasis on monitoring Hepatitis A virus (HAV) infection among children infected with Hepatitis B virus (HBV).

Acknowledgment

We gratefully thank all patients who participated in this study. We thank all academic and nonacademic staffs of the department of biological sciences, Joseph Ayo Babalola University for their supports. We also thank Professor L.E Okoror for his helpful discussion.

References

Furusyo, N., *et al*. 1998. The elimination of hepatitis B virus infection: changing seroepidemiology of hepatitis A and B virus infection in Okinawa, Japan over a 26–year period. *Amer. J. Trop. Medi. Hyg.*, 59: 693–698.

Jacobsen, K.H., Koopman, J.S. 2004. Declining hepatitis A seroprevalence: A global review and analysis. *Epidemiol. Infect.*, 132: 1005–22.

Joon, A., Rao, P., Shenoy, S.M., Baliga, S. 2015. Prevalence of Hepatitis A virus (HAV) and Hepatitis E virus (HEV) in the patients presenting with acute viral hepatitis. *Ind. J. Med. Microbiol.* 33: 102–5.

Lemon, S.M., Thomas, D.L. 1997. Vaccines to prevent viral hepatitis. *New England J. Medi.*, 336: 196–204.

Oyedeji, O., Olutiola, P.O., Owolabi, K., Adeojo, K.A. 2011. Multiresistantfaecal indicator bacteria in stream and well waters of Ile-Ife city, Southwestern Nigeria: Public health implications. *J. Public Health Epidemiol.*, 3(8): 371–381.

Smith, S.I., Alao, F., Goodluck, H.T., *et al*. 2008. Prevalence of *Salmonella typhi*among food handlers from bukkas in Nigeria. *British J. Biomed. Sci.*, 65(3): 158–160.

World Health Organization. 2000. Hepatitis A vaccine: WHO position paper. *Wkly. Epidemiol. Rec.*, 75: 38–44.

World Health Organization. 2009. Hepatitis B vaccine: WHO position paper. *Wkly. Epidemiol. Rec.*, 84: 405–420.

How to cite this article:

Idowu, T.O. and Balogun, O.B. 2016. Seroprevalence of HAV among Male patients living with HBV at four private hospitals in Southwestern Nigeria. *Int.J.Curr.Microbiol.App.Sci.* 5(3): 226-230. doi: http://dx.doi.org/10.20546/ijcmas.2016.503.027