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Hepatitis B Virus Profile of Patients in Karu, Karu Local Government Area of Nasarawa State

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ABSTRACT

Hepatitis B virus profile of patients in Karu, Karu Local Government Area of Nasarawa State, Nigeria was investigated to ascertain the level of infection. A total of three hundred and eighty-four (384) blood samples comprising of two hundred and forty (240) male and one hundred and forty-four (144) female were collected from patients using 5ml syringe and needle. The blood samples were then dispensed into ethylenediaminetetraacetic acid (EDTA) tubes. Each sample was centrifuged at 3000 revolutions per minute for 5 minutes in a centrifuge to get the plasma. Three (3) drops of each sample (plasma) was transferred into the five sample wells and results were recorded as appropriate. Results showed that male was more infected 132(68.75%) compared to their female counterparts 60(31.25%). There was a significant difference ($p<0.05$) with regards to rate of infection in gender. The most infected age groups were 30-39 years and 40-49 years with 72 (37.50%) and 48(25.00%) positive cases respectively. There was a significant difference ($p<0.05$) with respect to infection and age group. The rate of infection was high in patients who had one sexual partner 114(59.37%) followed by those without sexual partners 54(28.13%). Though there was no significant ($p>0.05$) difference in the rate of infection among those without and one sexual partner. Those without sexual partners were more at risk with 18(60.00%) positive HBeAg. Recovery through the HBeAb and HBcAb in patients having one sexual partner were higher with values of 132(55.00%) and 96(57.14%) respectively. Vaccination as a means of prevention is very important, therefore mass immunization of those not vaccinated should be encouraged through awareness programs.

INTRODUCTION

Conventionally, hepatitis refers to the disease caused by viruses which primarily affects the liver. This is mainly caused by hepatitis viruses which include hepatitis A, B, C, D, E, G, and Transfusion Transmitted Virus (TTV) that were recently discovered (Ochei and Kolhatkar, 2007; Willey *et al.*, 2008). hepatitis B virus (HBV) also called serum hepatitis (Baker *et al.*, 2009., Willey *et al.*, 2008) has long incubation period (Lucas and Gilles, 2009; Okhuakhua and Omisakin, 2013). HBV also gives rise to hepatocellular carcinoma, one of the ten most common cancers. There is also evidence that HBV is the etiological agent in up to 80% of cases (Lucas and Gilles, 2009).

The disease has worldwide distribution and second only to tobacco as a known cause of human cancer. Susceptible people become infected through sexual means, vertical means (mother to child at birth), contact with body fluids such as blood and blood products during transfusion, and body fluids contaminated equipment (Baker *et al.*, 2009; Falase and Akinkugbe, 2002; Willey *et al.*, 2008). The virus can also be transmitted through other means like saliva, sweat, semen, breast milk, urine, feces (Falase and Akinkugbe, 2002; Willey *et al.*, 2008).

HBV could be symptomatic or asymptomatic, the majority of the people infected are asymptomatic. However, symptoms normally appear 1-4 months after contact with those that are symptomatic (Willey *et al.*, 2008). It is diagnosed through the use of its diagnostic marker, HBsAg which occurs at a higher titer (Baker *et al.*, 2010). Other markers used in the diagnosis are HBeAg, and HBcAg and their corresponding antibodies HBeAb, HBcAb respectively and in addition to the antibody to HBsAg (HBsAb) (Lucas and Gilles, 2009; Ochei and Kolhatkar, 2007).

MATERIALS AND METHODS

Sample Size

New Karu with a population size of 205,477; confidence level = 95; confidence interval = 5. The sample size = 383 (Raosoft.com software, 2014).

Sample Collection

With a sample size of 383, samples of 5ml of blood were collected from each patient using a 5ml syringe and needle. It was dispensed into ethylenediamine (EDTA) tubes. Blood samples were centrifuged at 3000 revolutions for five minutes to obtain plasma. The plasma after centrifugation was dispensed into clean, labeled tubes using Pasteur pipettes and was immediately subjected to analysis.

Sample Analysis

The refrigerated reagent was brought to cool at room temperature (27^0C), the pouch at the notch was removed from the device. The test device was placed on a clean, flat surface and labeled with the respective specimen's number. Two drops of plasma were taken with the dropper (60µl) into each of the sample wells ensuring that there were no bubbles. The buffer was added to the specimen that did not flow within thirty seconds to the result window. The timer was set, results were read within five minutes.

Questionnaires

Questionnaires were provided to every client for obtaining information on gender, age, and the number of sexual partners. This was treated confidentially.

The POSHOC for multiple comparisons at 95% level of confidence using Excel 2001was used.

RESULTS AND DISCUSSION

Table 1: Hepatitis B Virus Profile Based on Gender

	HBsAg		HBeAg		HBsAb		HBeAb		HbcAb	
G	N (%)	P (%)	N (%)	P (%)	N (%)	P (%)	N (%)	P (%)	N (%)	P (%)
Male (240)	108(56.25)	132(68.75)	216 (61.02)	24(80)	222(64.91)	18(42.86)	102(70.83)	138(57.50)	162 (72.97)	78(48.15)
Female (144)	84(43.75)	60(31.25)	138(38.98)	6(20)	120 (35.09)	24(57.14)	42(29.17)	102 (42.50)	60 (27.03)	84(51.85)
Total (384)	192(100)	192(100)	354(100)	30(100)	242(100)	42(100)	144(100)	240(100)	222(100)	162(100)

F cal-2.477. Significant 0.174. P=0.041 (P<0.05) = Significant at 0.05 level of significance

KEY

HBsAg-Hepatitis B surface antigen; HBsAb- Hepatitis B surface antibody; HBeAg= Hepatitis B enzyme antigen; HBeAb= Hepatitis B enzyme antibody; HBcAb= Hepatitis B core antibody. N= negative, P= positive, G= Gender

Table 2: Hepatitis B Virus Profile Based on Age (years)

	HBsAg		HBeAg		HBsAb		HBeAb		HbcAg	
AY	N (%)	P (%)	N (%)	P (%)	N (%)	P (%)	N (%)	P (%)	N (%)	P(%)
0-9(12)	12(6.25)	0(0.00)	12(3.57)	0(0.00)	12(3.57)	0(0.00)	0(0.00)	12(5.12)	0(0.00)	12(7.14)
10-19(60)	24(12.50)	36(18.75)	54(15.25)	6(20)	54(16.07)	6(12.50)	18(12.00)	42(17.95)	30(13.89)	30(13.89)
20-29(102)	66(34.37)	36(18.75)	90(25.42)	12(40)	78(23.21)	24(50.00)	36(24.0)	66(28.21)	48(22.22)	54(25)
30-39 (90)	18(9.38)	72(37.50)	78(22.03)	12(40)	84(25)	6(12.50)	48(32.00)	42(17.95)	72(33.33)	18(8.33)
40-49 (96)	48(25.00)	48(25.00)	96(27.10)	0(0.00)	96(28.57)	0(0.00)	48(14.29)	48(20.51)	66(30.56)	30(13.89)
≥50 (24)	24(12.50)	0(0.00)	24(6.78)	0(0.00)	12(3.57)	12(25.00)	0(0.00)	24(10.26)	0(0.00)	24(14.29)
Total (384)	192(100)	192(100)	354(100)	30(100)	336(100)	48(100)	150(100)	234(100)	216(100)	168(100)

F cal- 2.4477. Significant 0.1744. Fvalue= 2.449.

(P<0.05) at 0.05 level of significance.

Key

HBsAg= Hepatitis B surface antigen

HBeAg= Hepatitis enzyme antigen

HBsAb= Hepatitis b surface antibody

HBeAb= Hepatitis B enzyme antibody

HBcAb= Hepatitis B core antibody

AY= Age in years.

P=Positive, N= Negative

Table 3: Hepatitis B Virus Profile Based on Number of Sexual Partners

	HBsAg		HBeAg		HBsAb		HBeAb		Hbcab	
NS	N (%)	P (%)	N (%)	P (%)	N (%)	P (%)	N (%)	P (%)	N (%)	P (%)
0(114)	60(31.25)	54(28.13)	96(27.12)	18(60)	102(29.82)	12(28.57)	36(25.00)	78(32.50)	54(25)	60(35.72)
1(228)	114(59.37)	114(59.37)	222(62.71)	6(20)	216(63.16)	12(28.57)	96(66.67)	132(55.00)	132(61.11)	96(57.14)
>1(42)	18(9.38)	24(12.50)	36(10.17)	6(20)	24(7.02)	18(42.86)	12(8.33)	30(12.50)	30(13.89)	12(7.14)
Total (384)	192()	192(100)	354(100)	30(100)	342(100)	42(100)	144(100)	240(100)	216(100)	168(100)

F cal =2.68. The mean difference was not significant at the 0.05 (P> 0.05).

Key

O= No sexual partners

1= One sexual partner

>1=More than one sexual partner

NS= Number of sexual partners

P= Positive, N=Negative

DISCUSSION

Results from the analyses showed that male was more infected with this virus than their female counterparts. This corresponds with the work of Wang *et al*. (2002) that said there were differences in results in terms of gender but does not conform to a study conducted in the Eastern part of Nigeria by Emechebe *et al.* (2009) who opined that there was no significant difference ($p>0.05$) between the male and their female counterparts with regards to hepatitis B virus infection. Analyses also showed that more of the infected men were at high risk (showing the virus at replication stage) than the female.

In age, the results showed that active years of life (20-39 years) are directly related to rate of infection with this disease which agreed with the study of Wang *et al*. (2002), but disagreed with that of Willey *et al*. (2008) who opined that most people become infected at birth. This may be related to the fact that there is a massive campaign on immunization of the pregnant mothers and their neonates for some years now. This work also showed that those infected with this virus and at high risk were also within the same age group.

The results of the analyses also showed that clients having only one sexual partner had the highest rate of infection from this virus. This means that transmission of this virus in New Karu may be through other means of transmission such as close contact with infected clients, early childhood infection, lack of vaccination as opined by Cheesbrough (2004); Lucas and Gilles (2009); Nester *et al*. (2009); Willey *et al*. (2008).

CONCLUSION

It was established from the analysis of this study that HBV infection was highest among male within the age range of 30-39 years. Those with one sexual partner had the highest rate of infection as compared to their counterparts with multiple partners'. HBV can be transmitted to uninfected persons through other means aside sex, therefore vaccination campaigns on HBV should be encouraged in New Karu so that control of HBV will be brought to a minimal level.

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