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Detection and prevalence of Hepatitis B and C among the residents of Umuaka Community, Njaba L.G.A, Imo State, Nigeria

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Abstract

Hepatitis is swelling and inflammation of the liver. It is commonly caused by a viral infection. There are, however, other causes of hepatitis. These include autoimmune hepatitis and hepatitis that occurs as a secondary result of medications and chemical agents. This disease is characterized by fever, vomiting, nausea and jaundice. Various forms of hepatitis exist and they include; Hepatitis A, B, C, D, E, F. Owing to the sad experience of wrong diagnosis of this case and wrong treatment which most times lead to death this study work aimed at determining the presence of hepatitis agents and the prevalence of hepatitis among residents of Umuaka Community in Njaba L.G.A of Imo State was carried out between the month of September and November, 2013. Hundred and twenty (120) subjects between the age range of 5-84 years were screened for Hepatitis, using immunochromatographic (IC) strips. Two forms of Hepatitis: HBV and HCV were tested for, in the study area. The overall prevalence of all forms of Hepatitis in the study area was 9.16%. The prevalence for HBV and HCV were 9.16% and 0.0% respectively. The distribution of hepatitis groups among males and females was variable. Hepatitis B virus was the most dominant group and occurred 6.4% among males and 11.0% among females. In the age group 5-14 years 3 subjects were infected with hepatitis B virus and 25-34 years, 4 subjects each, were infected with Hepatitis. Females were more infected in these age groups than males. This is because, the anatomical site of female genital organ allows for easy contact with the semen of an infected sex-partner. These findings imply that there is adverse level of prevalence of Hepatitis B virus in this study area. However, rural people should be educated on the need to abstain from unsafe sexual engagements and avoid sharing of shaving sticks, blades and needles.

Keywords: Hepatitis; Liver; Serum; Community; Umuaka; Inflammation

1. Introduction

Hepatitis is the inflammation of the liver resulting to the damage of liver cells commonly called hepatocytes. This name was derived from ancient Greek word, 'hepar or "hepato" meaning Liver and "itis" inflammation. Hepatitis is usually caused by viruses or less commonly by certain medications or chemical agents such as alcohol, carbon tetrachloride occasionally acetaminophen. The diseases is characterized by fever, gastrointestinal symptoms particularly nausea, vomiting and jaundice. Various forms of hepatitis exist and they include; Hepatitis A, B, C, D, E, F [1]. About 195,000 persons are affected yearly by this disease in the U.S.A. [2]. Other viruses such as cytomegalovirus, Epstein Barr virus, Herpes simplex virus, yellow fever virus, Enterovirus and Rubella virus have also been implicated in viral hepatitis. Some other viruses associated with hepatitis that cannot be ascribed to known agents and the associated diseases are designated Non A-E virus [3]. The Non-viral infections include: Autoimmune, alcoholic, toxic/drugs-induced hepatitis, granulomatous hepatitis as well as infectious mononucleosis [4].

Hepatitis B virus infects the liver hominoidae, including humans and causes an inflammation known as hepatitis. The disease originally called "Serum Hepatitis" has caused epidemics in parts Asia and Africa [5, 6]. Endemicity of disease

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has been reported in China and different parts of Asia [7]. Infection by HBV may be acute or chronic. Acute hepatitis resolves quickly, especially in healthy immune system, but chronic hepatitis is a long term disease. Acute Hepatitis and Liver failure has been reported in seven patients in Hawaii, after using dietary supplement intended for weight loss and muscle building [2]. An estimate of 400million people have been reported to be chronic carriers of hepatitis B global. According to the report of Paitoonpong and Suankratay [8], one-third of the world population has been exposed to this infection, with an estimated proportion of 3- 6% infected.

The disease may cause hepatocellular damage which impairs many processes in the body, particularly detoxification of potentially harmful substances such as alcohol, ammonia, nicotine and harmful by-products of digestion. There is also impairment of the metabolism of protein, glucose, vitamins and fats. Bilirubin is retained in the blood leading to high levels of bilirubin in the blood. This condition is regarded as Hyperbilirubinaemia. There is also jaundice or icterus, a condition characterized by yellowness of the sclera of the eyes, skin and mucous membranes. Hepatitis may also be asymptomatic and in such case these symptoms are not averted. In such case the existence of the disease may not be quickly recognized in humans. This situation is very common in rural areas where the zeal for medical attention is low. Many of the estimated 800,000-1.4milliom people living with hepatitis B (HBV) and the estimated 3 million persons living with hepatitis C virus (HCV) infection in United State are ignorant of their infection and are not under any hepatitis treatment [9]. According to the same source hepatitis C virus (HCV) infection is the major cause of liver transplantion and a common cause of hepatocellular carcinoma, which is the most rapidly increasing reason for cancer- related deaths in United States.

2. Material and methods

2.1. Study Area

This research work was carried out in Umuaka Community in Njaba L.G.A, Imo State, South Eastern Nigeria with a latitude of 5.27-5.31 N and longitude of 5.5-7.03 E. Umuaka Community is inhabited by Igbo ethnic group. The climate of the area is tropical with a mean daily temperature of 26-50^{0}C in most of the years. Majority of the inhabitants are farmers.

2.2. Sample collection and Participants

Blood samples were randomly collected from residents of Umuaka Community, 5-84 years and were of males (47) and females (73) for screening base on written and informed ethical consent. A letter of introduction was obtained from the department of Medical Laboratory Science Imo State University and the community ruler of the study community. Ethical approval was granted to me on the agreement that good laboratory practice and quality control must be ensured. Informed consent was also received from the Participants before the collection of the samples.A total of 120 subjects were tested. Blood samples were collected from the patients by venous puncture. Surface of the skin was swabbed with methylated spirit soaked cotton wool and 3ml of venous blood was withdrawn through the median cubital vein with the aid of sterile needles and syringes.

2.3. Laboratory processing of samples

Samples collected and properly identified, were immediately transported to Imo State University Medical Laboratory for processing and analyses. The blood was allowed to clot and the serum was separated from the clot and prepared as specimen for the test. Where delay was envisaged, the samples were preserved by refrigeration prior to investigation. Immunochromatographic (IC) strips were used to diagnose for hepatitis B and C virus [3]. Strips that produced double bands (test and control) were recorded positive for the appropriate hepatitis virus, whereas those that showed only a single band only (control) were regarded as negative.

2.4. Statistical analysis

The data were expressed as mean $\pm$ SEM. Significance was determined using the student's t-test method. Values at $P < 0.05$ were considered statistically significant [2].

3. Results

The results from the research work are presented in Figures 1-.3. Figure 1 shows the overall prevalence of Hepatitis B and C virus among the participants. Figure 2 shows gender distribution of Hepatitis B and C viruses. The distribution of hepatitis B and C viruses according to age groups is presented in Table 3.

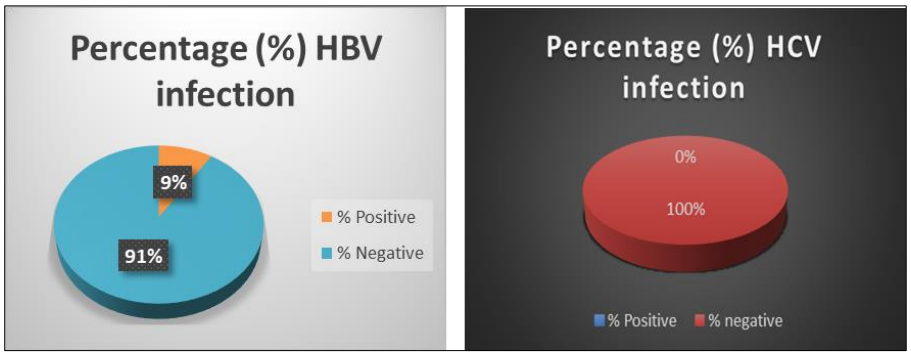

Figure 1 Prevalence of hepatitis B and C Viruses among the participants

Figure 1 shows the overall prevalence of Hepatitis B and C viruses in the study population. Out of 120 subjects screened, 11 (9.17%) were positive for Hepatitis. HCV was not detected among the participants. However, the group of hepatitis detected was HBV 11 (9.17%), while HCV was not detected, 0(0.0%).

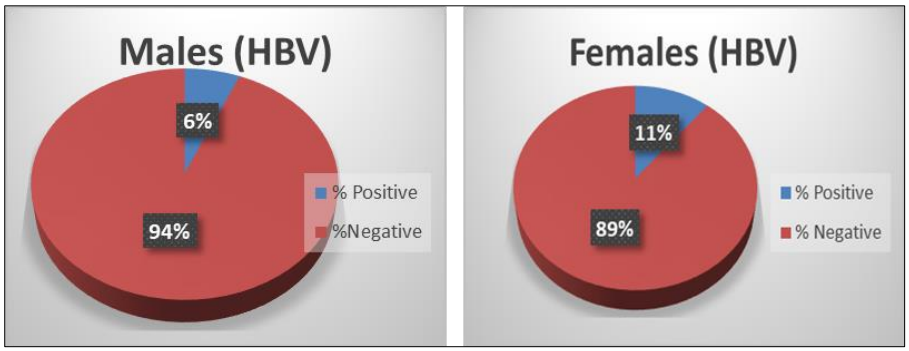

Figure 2 Gender based distribution of Hepatitis B and C virus among participants

This shows Infection rates as recorded among the sexes. Both males and females were screened for hepatitis in the study area. Both gender groups were infected with hepatitis, but at varied degrees. Females who tested positive were 8 (11%), while 3 (6.4%) males were positive. Hepatitis C infection recorded the highest prevalence among females than male.

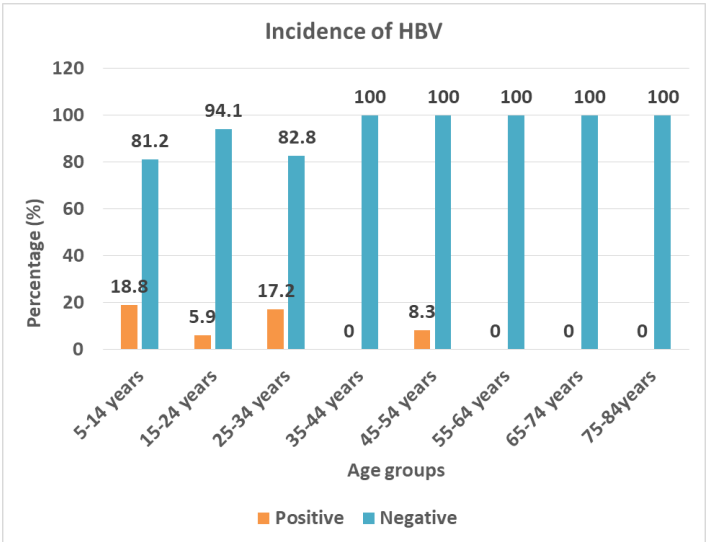

Figure 3 Distribution of Hepatits B and C Virus according to age group

This shows the Infection rates recorded according to age groups. The highest prevalence of hepatitis was in the age range of 25-34 years, where five (5) participants were infected and 4 (80%) were females, while 1 (20%) was a male. In the age group, 5-14 years, three (3) were also infected and 2 (66.6%) were females, while 1 (33.3%) was a male.

4. Discussion

Among total of 120 participants screened for Hepatitis B and C virus in Umuaka community within the period of this study, eleven (11) of them turned positive for this disease agent establishing a community prevalence of 9.16% of Hepatitis in the area. This level of prevalence suggests that rural areas are prone to adverse level of prevalence of hepatitis and this may be due to illiteracy and low levels of public enlightenment. Hepatitis B virus (HBV) generally has the highest prevalence of 11 (9.16%). No positive cases were recorded for Hepatitis C virus (HCV) among the 120 subject tested. This conforms to the earlier investigation conducted by Ibeawuchi [10] in Owerri, Imo State, Nigeria and a related study conducted in Alaska by Mc-Mahon *et al.,* [11], who reported that HBV was more prevalent with a percentage of 7.26% out of 112 subjects screened.

5. Conclusion

Basically, hepatitis A, C, D and E viruses are not highly endemic in Nigeria. The highest sex-dependent prevalence of four (4) was detected among female age group 25-34 years , thus result could be attributed to unprotected sexual intercourse that is common among married couples. The Hepatitis B virus is contained in the vaginal fluid and semen and can be contracted through sexual intercourse. This study revealed the presence and prevalence of HBV in the study area. To avoid spread of Hepatitis in rural communities, there should be an energetic public health campaign and enlightenment. Rural people should be educated on the symptoms of this disease, how to prevent it and also to go for periodic medical checkup. Married couples should abstain from sex throughout the period of the infection of a partner until he/she has been certified free from the disease, especially in cases of HBV, since transmission can be through sexual intercourse. Blood samples should be thoroughly screened before transfusion. Surgical instruments should be properly sterilized before use. Needles should be discarded after use and should never be reused. Blood and blood products should be properly screened before transfusion.

Compliance with ethical standards

Acknowledgments

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Disclosure of conflict of interest

There is no conflict of interest.

Statement of informed consent

Informed consent was obtained from participants of the study.

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