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Co-infection of HIV, HBsAg and HCV Among Pregnant Women of African Descent

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Abstract

Human Immunodeficiency Virus (HIV), Hepatitis C virus and Hepatitis B virus (HBV) are blood borne pathogens that can be transmitted through sexual contact, vertical transmission, and could pose great danger in healthcare delivery.

Prevalence of co-infection of HIV, HBsAg and HCV was determined in pregnant women of African descent. One hundred (100) pregnant women of African descent were used for the study having obtained their consent and approval by the Research and Ethics committee. The screening and confirmatory tests were done using double check gold and Immunocomb II respectively while HBsAg and HCV were determined with one step test strip.

Out of the one hundred (100) subjects studied, the prevalence rate was noted as 15%, 6% and 2% for HIV, HBsAg and HCV respectively. Co-infection of HIV and HBsAg was more prevalent, followed by co-infection of HIV and HCV and lastly co-infection of HBsAg and HCV. The age group of 25-29 years tested positive to HIV, HBsAg and HCV. All other age groups tested positive to HIV and either HBsAg or HCV while age group of 20-24 years tested positive to only HIV and negative to both HBsAg and HCV.

Though these rates might be lower compared to previous studies, counseling and enlightenment campaigns should be sustained especially on the mode of transmission, prevention and management of these diseases. Government should ensure that compulsory screening for pregnant women is available and affordable at all levels.

Keywords

Prevalence; Screening; Confirmatory

Introduction

The Human Immunodeficiency Virus (HIV), Hepatitis B Virus (HBV) and Hepatitis C virus (HCV) infection are a global public health problem. Different prevalence rates have been obtained from different studies around the world. However, the prevalence rate for the markers of these viruses among people is related to certain factors, such as socio-economic level and environmental factors. In general, low prevalence rates has been reported among populations in the industrialized world compared with the population recorded in the less industrialized world [1].

An estimated 350-400 million people are chronically infected with hepatitis B virus (HBV) while 190 million are chronically infected with hepatitis C virus (HCV) [2]. Since the beginning of HIV epidemic, more than 70 million people have been infected with the HIV virus, while about 35 million people have died of HIV. At the end of 2016, 36.7 million people were living with HIV globally [3]. As a result of shared routes of transmission, HIV, HBV and HCV epidemics overlap, with around 10% of the HIV infected population estimated to have chronic HBV infection and around a third estimated to have chronic HCV infection [2]. Reduced haematological indices associated with anaemia and compromised immune system has been reported in HIV patients [4].

HBV ranges in severity from a mild illness, lasting a few weeks (acute), to a serious long term (chronic) illness that can lead to liver cirrhosis or cancer [5]. HVB infection is a serious health hazard in many countries with about 10% prevalence rate [6]. Previous studies conducted in Western countries have shown that chronic liver disease especially due to HBV was the fifth leading cause of death among HIV infected pregnant women [7]. In another study, clinical assessment of hepatitis B virus positive patients showed that majority of them (68%) had no symptom (asymptomatic patients) while few of them (32%) had symptoms (symptomatic patients) such as abdominal pain, jaundice, pale dark urine, nausea, loss of appetite and body ache [8].

HCV is associated with many extra hepatic manifestations. Glomerulonephritis is one of the most common consequences of HCV infection often resulting in end stage renal disease

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in some cases [9]. The active years of 20 to 40 years is the period most women become pregnant, it is also this period that the incidence of HCV infection is rising rapidly. Any woman with risk factors of Hepatitis C should be screened for the infection before and during pregnancy [10].

Co-infection with these viruses is a growing problem [11]. Therefore, there is the need to determine the co-infection rate of these viruses in pregnant women of African descent.

Subjects

The study population consists of one hundred (100) pregnant women of African descent from diverse ethnic group and socio economic background attending Madonna University Teaching Hospital (MUTH) Elele Nigeria.

Ethical Clearance and Consent

Ethical clearance was gotten from the ethical committee of the institution and informed consent was obtained from all the participants after explaining the objective of the study.

Sample Collection and Analysis

Using standard vein puncture technique [12], blood samples were collected from the subjects and delivered into dry sterile plain bottle for clotting to occur. The cell-free serum was recovered after clotting into another plain bottle and used for the tests.

The samples were screened for HIV, HCV and HBV using Immuno Chromatographic Qualitative methods according to standard protocols [13] and manufacturer's instructions. Positive results for HIV were confirmed using Western Blot test.

Results

A six (6) week study on the prevalence of HIV, Hepatitis B surface antigen and Hepatitis C virus among pregnant women attending Madonna University teaching Hospital (MUTH) Elele was carried out between November 2017 to January 2018. Out of the one hundred (100) participants recruited for the study, 15 (15%) tested positive to HIV, 6 (6%) tested positive to HBV while 2 (2%) tested positive to HCV.

Discussion

Prevalence rate of HIV among pregnant women in Nigeria differ significantly at interstate levels and with age [14]. In this study, the difference in prevalence rate of HIV, HBV and HCV infections in various age groups indicate that this factor plays an important role in the prevalence rates. This study indicates that the highest prevalence rate is seen in age group of 25-29 years. This could be as a result of the high sexual activity of this group. It has been reported that at least 38% of women infected with HIV is through heterosexual contact with HIV positive partners [15]. Many of these infected women are involved in unprotected sex with opposite sex. Over 60% of sexually active respondents in Nigeria have two or more sexual partners [16], despite the low usage of condoms. Previous studies have shown that most Nigerian men prefer not to use condom [17,18].

Week	HIV+	HBV+	HCV+	HIV&HBV+	Total
1	5	1	1	1	20
2	2	1	0	0	20
3	2	1	0	0	20
4	2	1	0	0	20
5	2	1	0	1	10
6	2	1	1	0	10
Total	15	6	2	2	100

Table 1: The prevalence rate of HIV, HBV and HCV among the study population

Age group (Years)	HIV (%)	HBV (%)	HCV (%)
20 – 24	2 (13.3)	0 (0.0)	0 (0.0)
25 – 29	5 (33.3)	3 (50)	1 (50)
30 – 34	2 (13.3)	1 (16.6)	0 (0.0)
35 – 39	2 (13.3)	0 (0.0)	1 (50)
40 – 44	2 (13.3)	1 (16.6)	0 (0.0)
45 – 49	2 (13.3)	1 (16.6)	0 (0.0)

Table 2: Distribution of HIV, HBV and HCV according to age group

Hepatitis B is one of the diseases of mankind and is a serious global health problem. It has been established that HBV infection can be transmitted from mother to child during birth [19]. High prevalence rate of HBV among pregnant women increases the chances of transmitting to their neonates. From this study, the prevalence of HBV is 6.0%. In Nigeria, 11.6% prevalence rate has been reported from Maiduguri, 4.3% from Port Harcourt, 5.7% from Ilorin, 4.4% in Lagos and 8.3% in Zaria [20-23]. Though these figures are related, there is need to do more in combating the menace. HBV positive patients may be at risk of developing anaemia [19], hence early diagnosis is advocated especially in pregnant women.

Co-infection of HIV and HBV recorded 2% as only two participants tested positive to HIV and HBV. Co-infection with HIV and HCV was not recorded neither with HBV and HCV. This study shows that HIV is more prevalent than HBV and HCV in the study population. Proper screening and early detection still remains the key while vaccination and management should be sustained.

In conclusion, this work recorded 2% co-infection of HIV and HBV among pregnant women of African descent and the highest prevalence rate of infection was noted in age group of 25-29 years.

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