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Short Communication

Evaluation of impact of HIV on haematological indices of pregnant women in Umuahia

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Abstract

The research was done to evaluate the impact of HIV on haematological indices of pregnant women in Umuahia. HIV has been described as a silent killer. The clinical manifestations differ with individuals. The study was done in Umuahia. 150 subjects were recruited for the study. 50 subjects were HIV positive pregnant women, 50 subjects were HIV positive women and 50 subjects were HIV negative pregnant women. 2.5ml of venous blood was collected from each subject into EDTA anticoagulated containers for the CD4 count and Full blood count. Two different HIV screening kits were used, determine and Unigold test kits. Haemoglobin was determined by Haemoglobincyanide technique and PCV by microhaematocrit method. The result showed significant decrease (P<0.05) in platelets, white blood cells, neutrophil, PCV, Hb of the HIV positive pregnant women compared to the HIV positive pregnant women and no significant difference (P>0.05) in lymphocyte and red blood cell of the HIV positive pregnant women and that of HIV negative pregnant women respectively. The result also showed significant decrease (P<0.05) in platelets, white blood cell, neutrophil, PCV and Hb of the HIV positive pregnant women compared to HIV positive women and no significant difference (P>0.05) in lymphocytes and red blood cell count of the HIV positive pregnant women compared to the HIV positive women. HIV causes cytopenia in pregnancy and could lead to severe anaemia and opportunistic infections if not properly cared for.

Keywords: HIV, Haematological indices, Pregnant women, Umuahia

INTRODUCTION

HIV has been described as a silent killer. The clinical manifestation differs with individuals. Sub-Sahara Africa is the region mostly affected (UNAIDS, 2011). Human immunodeficiency virus (HIV) is a retro virus that causes Acquired Immunodeficiency Syndrome through some stages (Obeagu et al., 2014).

HIV infects important cells in the human immune system. This could leads to depletion of CD4 T cells through a number of mechanisms (Obeagu et al., 2014).

It is shown that the haematological effect of HIV infection is dominated by peripheral blood cytopenia especially with the advent of antiretroviral therapy and related treatments for HIV-associated infections and malignancies (Ibeh et al., 2013).

Each pregnancy is highly unpredictable. Haematological profile is considered to be one of the major factors affecting pregnancy and its outcome. During pregnancy, changes occur and can be observed

Table 1. Showing haematological indices of pregnant women and HIV positive pregnant women subjects

Parameters	Pregnant women	HIV+ Pregnant women	P-Level
Platelets ($X10^9$/L)	250.52±18.14	177.00±23.00	P<0.05
WBC ($X10^9$/L)	7.90±1.50	4.20±1.20	P<0.05
Absolute			
Lymphocytes ($X10^9$/L)	3.20±0.40	3.00±0.70	P>0.05
Absolute			
Neutrophil ($X10^9$/L)	5.60±0.90	1.20±0.60	P<0.05
PCV (%)	34.23±5.60	28.70±8.00	P<0.05
Haemoglobin (g/dl)	12.0±2.50	10.87±1.57	P<0.05
RBC($X10^{12}$/L)	3.99±0.90	3.40±0.60	P>0.05

Key
P<0.05=significant, P>0.05=not significant
HIV+ Pregnant women =HIV positive Pregnant women
PCV= packed cell volume
RBC=red blood cell

in haematological indices.HIV suppresses bone marrow activity (Ibeh et al., 2013).

AIM

To ascertain the impact of HIV on haematological indices of pregnant women in Umuahia.

MATERIALS AND METHODS

Study Area

The study was done in Umuahia, Abia State, Nigeria. The subjects were chosen from the Department of University Health Services, Michael Okpara University of Agriculture, Umudike, Abia State, Nigeria and Daughters of Mary Mother of Mercy Hospital Ahieke, Ihe Ndume, Umuahia, Abia State, Nigeria.

Subjects

One hundred and fifty (150) subjects were recruited for the study. Fifty (50) subjects were HIV positive pregnant women, fifty (50) subjects were HIV positive women and fifty (50) subjects were HIV negative pregnant women. All the subjects were selected from the two hospitals.

Ethical consideration

The procedure of the research was explained to the subjects before blood samples were collected. The subjects were allowed to withdraw at any stage. Informed consents were obtained from them and confidentiality of the results assured to them.

Laboratory investigations

HIV Screening

Two different HIV screening kits were used (determine and Unigold test kits).

Haemoglobin determination by Haemoglobincyanide technique

Packed Cell Volume Determination by microhaematocrit method

Platelet and Total White Cell Count by manual count Blood film/differential cell count by film method

RESULTS AND DISCUSSION

The study showed significant decrease (P<0.05) in mean values of platelets, total white blood cells count, neutrophil, PCV, Hb (177.00 ±23.00 $X10^9$/L, 4.20±1.20 $X10^9$/L, 1.20±0.60 $X10^9$/L, 28.70±8.00%,10.10±0.80g/dl, 3.40±0.60 $X10^{12}$/L) of the HIV + pregnant women compared to the HIV positive pregnant women (250.52±18.14 $X10^9$/L,7.90±1.50 $X10^9$/L, 5.60±0.90 $X10^9$/L, 34.23±5.60%, 11.96±2.6g/dl,3.99±0.90 $X10^{12}$/L) and no significant difference in lymphocyte and red blood cell count of the HIV positive pregnant women (3.00±0.70 $X10^9$/L, 3.40±0.60 $X10^{12}$/L) and that of HIV negative pregnant women (3.20±0.40 $X10^9$/L,3.99±0.90 $X10^{12}$/L) respectively. This observation could be that HIV infection in pregnant women suppresses haematopoiesis and the bone marrow activity. Pregnant women avoid any thing that could lead to HIV infection to avert its danger on them (Obeagu et al., 2014). Anaemia is one of the major common haematological effects of pregnancy which could be physiological anaemia of pregnancy (Viten,

Table 2. Showing haematological indices of the HIV positive women and HIV positive pregnant women

Parameters	HIV+Women	HIV+ PW	P-Level
Platelets ($X10^9$/L)	523.00±36.00	177.00±23.00	P<0.05
WBC ($X10^9$/L)	5.40± 1.69	4.20±1.20	P<0.05
Absolute			
Lymphocytes ($X10^9$/L)	2.60±0.50	3.00±0.70	P>0.05
Absolute			
Neutrophil ($X10^9$/L)	2.80±0.30	1.20±0.60	P<0.05
PCV (%)	31.80±12.00	28.70±8.00	P<0.05
Haemoglobin (g/dl)	11.20±1.70	10.10±0.80	P<0.05
RBC($X10^{12}$/L)	3.70±0.40	3.40±0.60	P>0.05

Key
P<0.05=significant, P>0.05=not significant
HIV+Women = HIV positive women
HIV+PW = HIV positive women
PCV**=** packed cell volume
RBC**=**red blood cell

1994). The human immunodeficiency virus (HIV) has also emerged as a general cause of anaemia, especially in sub- Saharan Africa and has negative effects on pregnancy outcome (Braddick et al., 1990) adding a new risk to the mothers and their infants, regardless of mother-to-child transmission of HIV.

The result also showed significant decrease (P<0.05) in platelets, white blood cell count, neutrophil, packed cell volume and haemoglobin (177.00±23.00$X10^9$/L, 4.20±1.20 $X10^9$/L, 1.20±0.60$X10^9$/L, 28.70±8.00%, 10.10±0.80g/dl of the HIV positive pregnant women compared to HIV positive women (525.00±36.00$X10^9$/L, 5.40±1.67$X10^9$/L, 2.80±0.30 $X10^9$/L, 31.80±12.00%, 11.20±1.70g/dl) and no significant difference (P>0.05) in lymphocytes and red blood cell count of the HIV positive pregnant women (3.00±0.70$X10^9$/L, 3.40±0.60$X10^{12}$/L) compared to the HIV positive women (2.60±0.50$X10^9$/L, 3.70±0.40$X10^{12}$/L).This shows that HIV infection affect the blood cells of the pregnant women except lymphocyte and red blood cell count. The cytopenia can increase risk of pregnancy both to the mother and the child (De Cock et al., 1990). It is shown that HIV aggravates anaemia in pregnancy (Van den Broek et al., 1998). There is a close link between HIV infection and severe anaemia (Zucker et al., 1994). Cytopenia in HIV Positive pregnant women is proven even in neutrophils and thrombocytes (Perkocha and Rodgers, 1988).

CONCLUSION

The haematological indices studied were significantly decreased in HIV positive pregnant women. The combination of pregnancy with its challenges and burden of HIV suppressed bone marrow which lead to cytopenia observed in the subjects.HIV causes cytopenia in pregnant women. They will be faced with severe anaemia and opportunistic infections if not properly cared for, Clinicians, Nurses, Medical Laboratory Scientists and all those involved in managing these subjects should take note of these changes in the subjects and have a more holistic management. Haematological parameters should be seriously monitored in HIV positive pregnant women.

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