WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 5.990
Volume 4, Issue 8, 204-208. Research Article ISSN 2277– 7105

CD_4 COUNT AND VIRAL LOAD QUANTITATION OF HIV INFECTED PREGNANT AND NON PREGNANT WOMEN ON DIFFERENT ANTIRETROVIRAL THERAPY IN LAGOS STATE, NIGERIA

Onyeka[1], P.I.K., Emmanuel[1], U.O., Udujih, G. O[2]. Nwabueze E. U.[1], Udujih H.I.[3*]

[1]Department of Animal and Environmental Biology. Faculty of Biological Sciences, Imo State University Owerri, Nigeria.

[2]Department of Public Health Technology, School of Health Technology, Federal University of Technology Owerri.

[3]Department of Medical Laboratory Science, Faculty of Health Science, Imo State University Owerri.

Article Received on
26 May 2015,

Revised on 21 June 2015,
Accepted on 14 July 2015

***Correspondence for Author**
Udujih H.I.
Department of Medical Laboratory Science,
Faculty of Health Science,
Imo State University
Owerri.

ABSTRACT

The present study was designed to compare the differences in the CD_4 count and viral load of pregnant and non pregnant women infected with HIV, on different antiretroviral therapy. CD_4 count and viral load quantitation were done using the automatic CD_4 Partec Cyflow counter and Amplicor HIV-1-monitor kit respectively. Forty six human patients (pregnant patients, n = 21, non pregnant patients n = 25) were recruited during this study from the PEPFAR (President Bush Emergency Plan for Aids Research) clinic in Lagos State University Teaching Hospital, Lagos, Nigeria. The patients were between the ages of 29 – 34 years. Results showed no significant difference in both CD_4 count and viral load for both groups. There was no correlation between CD_4 count and viral load for both the HIV infected pregnant and non pregnant women. Findings in this study suggest that CD_4 count and viral load was not affected during pregnancy because of the effectiveness of antiretroviral therapy administered.

KEYWORDS: HIV, CD_4, Viral load, Antiretroviral therapy.

INTRODUCTION

CD_4 cells are a type of lymphocyte[1] (White Blood Cell), they are an important part of the immune system and play a vital role in establishing and maximizing the capabilities of the

immune system. Their relevance can be seen during HIV infection, as this infection causes the CD_4 count cell to be reduced. While CD_4 tests are not diagnostic for HIV infection in that they do not check the presence of viral DNA, or specific antibodies, they are used to access the immune system of patients.

Viral load, on the other hand, is a measure of the severity of a viral infection, and can be calculated by estimating the amount of virus in an the body fluid.[2] Information on the viral load quantitation is used in conjunction with the CD_4 cell count to monitor the status of HIV disease to guide recommendations for therapy, and to predict the future course of HIV.

Antiretroviral drugs, combined with HIV testing of pregnant women and appropriate infant feeding practices, are already being used to prevent HIV transmission from pregnant women to their children.[3]

MATERIALS AND METHODS

All human patients (n=46) that participated in the research were recruited after ethical consent from the PEPFAR Clinic of the Lagos University Teaching Hospital, Lagos. The study population was divided into two groups; the pregnant group and non pregnant group. The pregnant group (n=21; Age=30 ± 3) were all HIV positive women in their second trimester of pregnancy. They were administered one of the group of the following antiretroviral drugs; (1.) Zidorudine (AZT) (2.) Combivir (CBV), Refonaviv (RTV) and Saquinaviv (SQR) or (3.) Fixed Dose (FDC). Non pregnant patients (n=25, Age= 29 ± 5) were all HIV positive women. They were administered one of the following antiretroviral drugs; (1.) Triomium (2.) Combivir and Nevirapine (3.) Trurada and Nevirapire (4.) Fixed Dose (FDC) (5.) Efernrenz and Combivir. Venous blood was collected from each subject and divided between a plane tube and an EDTA (Ethylene Diamine Tetra Acetate) tube. The samples in the plane tubes were allowed to clot, centrifuged at 1.6 RCF for 10 minutes. Serum for viral load quantitation were separated into cryogenic vial and stored at 20^oC. These samples were analyzed within one week. Samples collected in the EDTA tubes were analyzed for CD_4 count within 2 hours of collection with the automatic CD_4 partec cyflow counter.

RESULTS

The students t-test was used to assess if there were significant mean differences for the CD_4 count and viral load quantitation for both groups, while correlation analysis was used to detect if there were any relationship between CD_4 count and viral load quantitation. ANOVA

(Analysis of Variance) was done to determine if the various antiretroviral therapies had any effect on the CD_4 count and viral load values.

Table 1.0: Statistical Comparison on CD_4 Count and Viral Load Values of Both HIV Group

Parameters	Non Pregnant Patient group	Pregnant patient group	T-test at 95% CI	Inference
CD_4 count (cells/mm^3)	440.4 ± 41.10	316.6 ± 40.35	0.02 < 1.96	No Significant difference
Viral load (RNA copies/ml)	5.8779 ± 4.9791	14352.62 ± 12603.23	0.86 < 1.96	No significant difference

Values are mean and standard error of mean.

CI: Confidence Interval

The mean CD_4 count and viral load quantitation were lower in the HIV positive pregnant group when compared with those of the HIV positive non pregnant group. However statistical analysis showed no significant difference between CD_4 and viral load quantitation for both groups.

Table 2.0: Effect of Viral Load on CD_4 of the HIV Patients (Both Pregnant and Non Pregnant)

Group	Parameter 1	Parameter 2	Coefficient of Correlation	Significance test	Inference
Pregnant Patient	Viral load (RNA copies/ml)	CD_4	- 0.25	-0.25<0.43	No linear relationship
Non Pregnant Patient	Viral load (RNA copies/ml)	CD_4	- 0.44	-0.44<0.39	No linear relationship

Statistical analysis showed that there was no linear relationship between viral load and CD_4 counts for both HIV positive women groups.

Table 3: Effect of Antiretroviral Therapy on the CD_4 Counts of Both HIV groups.

Group	Calculated F-value	Tabulated F-value	Inference
Pregnant Patient	2.32	2.87	Equal Effect
Non Pregnant Patient	0.83	3.55	Equal effect

Table 4: Effect of Antiretroviral Therapy on the Viral Load Values of Both HIV groups.

Group	Calculated F-value	Tabulated F-value	Inference
Pregnant Patient	0.94	2.87	Equal Effect
Non Pregnant Patient	0.86	3.55	Equal effect

Analysis of variance proved that all antiretroviral therapy had equal effect on both CD_4 count and viral load values for both group of patients.

DISCUSSION

The present study reveals that the mean values of CD_4 count of the sampled HIV positive pregnant women were lower than those of the sampled HIV positive non pregnant women. However, this decrease was not affected during pregnancy because of the effectiveness of ART administered. This result is in tandem with that of O'sulhran (1995)[4] who also confirmed a no significant difference in CD_4 counts of both HIV group.

Pregnancy has not been demonstrated to adversely impact on HIV infection (Niemec, 2000).[5] Modeoui (2000)[6] also proved statistically that there is no rise in viral load value associated with pregnancy. Result from this study showed that the mean viral load value of the pregnant group was lower than that of the non pregnant group, but statistically there was no significant difference. This shows that pregnancy has no impact on HIV progression.

Correlation analysis between viral load value and CD_4 count for both groups showed no significant linear relationship. Sarcletti and his colleagues (2002)[7] confirmed that there is no correlation between HIV-1-RNA levels (viral load) and CD_4 count during ART use. However, a study carried out by Morrupa et. al., (2009)[8] showed that without antiretroviral therapy, annual CD_4 decline correlated with viral load only on population level.

In this study, analysis on the various antiretroviral types given to both groups of HIV infected patients showed that all the antiretroviral therapy had equal effect on the CD_4 counts and viral load values. This shows that the various ART types administered to both groups of pregnant and non pregnant women were very effective.

REFERENCES

1. Anglaret, X. T., Diagbouga, S. P., Mortier, E. P., Meda, N. T. and Verga Vallete, V. H. (1997): CD_4 T-lymphocyte counts in HIV infection. *Journal of Acquired Immune Deficiency Syndrmes.*, 14: 361-367
2. Clerenberg, P. N., Durank, J. T and Chaillou, S. P. (1999): HIV Drug Retroviral and Insufficient Drug Plasma Levels. AIDS Reviews., 1: 156-166.

3. Fitscte, M. A., Parker, C. B. and Pattineli, O. T. (1990): A randomized controlled trial of reduced daily dose of zidomdine in patients with AIDS. *England Journal of Medicine., 323: 409-415.*
4. O'sullivan, S. A., Biggar, R. J. and Nourjah, P. T. (1995): Changes in CD_4 and CD_8 cell levels. Journal of Obstetric and Gynecology., 174: 1461-1468.
5. Niemec S. O., Bisalinkumi, E. N., Nawrock, P. T. and Bulterys, M. P. (2000): Changes during and after pregnancy. African Mothers., 94: 19-24.
6. Modeoui A. S., Clevenberg, P. N., Durant, J. T. and Chaillou, S. P. (2000): HIV Drug Retrovir and Insufficient Drug Plasma Levels. AIDS Reviews., 1: 156-166.
7. Sarcletti, S. P., Hoetelmans, R. S., Van Heesiwijk, R. P. and Meenhorst, P. U. (1998): Determination of HIV – RNA response. Genere., 421: 261-267.
8. Morrupa, E. T., Moore, J. A. and Valette, G. A. (2009): Plasma and Intracellular Triphosphate Concentrations of ZDV and ZTC. Journal of San Francisco., 96: 25-50.