

Research Article

ASSESSMENT OF IMMUNOLOGIC AND VIROLOGIC REQUEST TO ANTIRETROVIRAL TO PERSONS WITH AIDS FOLLOW-UP IN N'DJAMENA

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ABSTRACT

This study at assessing the impact of antiretroviral treatment to the persons living with the Human immunodeficiency HIV, regularly follow-up at the General Hospital of National Reference in N'Djamena, and eligible to this treatment mainly to determine the progress of TCD4 lymphocyte rates and the viral load and to establish the correlation between observance and biologic evolution. The study was the longitudinal type on two years going from October 2011 to October 2013. The sample size was calculated by the Lorenz's formula $N = \frac{Z^2 P Q}{D^2}$. In total 110 patients under antiretroviral replying to inclusion criteria were adopted for the study. The data gathered were controlled and printed thanks to software Epi Info version 7. The obtained results have showed that the CD4 median rates was of 173 cells/mm with an average of 188 of cases to JO, respectively against 599 CD4 620 to M24. Similarly to JO, the median of the viral load was at 24 070 copies/ul and 875.7 of average to 24th month. After twenty and four months of treatment, 94.54 % of our patients would recover their Immune competence, and 60% had undetectable viral load. This evolution is controlled at observance respectively($p = 0.009$) for CD4 and ($P = 0.61$). There forfeit high lights that the treatment efficiency was relatively good with a clinic improvement mainly a good kinetic of weight line.

Keywords: CD4 Lymphocyte rates, Viral Loads, Observance, GHNR, N'Djamena.

INTRODUCTION

The epidemiologic situation of HIV in the whole population in Chad is marked by a favorable progress of the treaty of several years of rigorous attack. Indeed, according to UNUAIDS database (2013), the prevalence of HIV which was of 3.3% in 2005, is estimated at the moment at 2.7%. This result is the fruit of the different programs and adequate strategies adopted successively, including the taking in charge and clinic follow up and free biologic of sick persons by HIV. The establishment of free ARV, biological tests and drugs for the infectious diseases. The health centers have implemented many strategies to assure the cares and the accurate treatments to PVHIV. The following situation below gives an outline of achievements during the period of 2007- 2011: Training of 220 prescribers of ARV, training of 50 paramedical prescribers to the renewal of ARV prescriptions, integration of the taking in charge by ARV, PVHIV in 7 health centers, acquisition of 34 CD4 devices, the number of patients under ARV goes from 17.900 in 2008 to 30.832 in June 2011, whose 676 children under 15 years old (sector- based committee of Fight against CSLS AIDS, 2011). Several other studies mainly socio-behavioral have been carried out in order to reinforce the follow-up activities and the assessment and the appreciation of their coherence. One can name: the CAP studies and seroprevalence as part of Lake Chad Basined Initiative (2011). The analysis of the situation of the orphans and children living with HIV (2010), the study on the situation of HIV in the refugees camps in the South of Chad (2010).

Apparently no clinic study has been carried out in Chad to show the impact of ARV treatment on the Immune system and the replication of HIV. It is in this context that this study intends to assess the progress of the two indicators of follow up (CD4 and CV) of sick persons by HIV, and the taking in charge by ARP at the General Hospital of National Reference in N'Djamena.

MATERIAL AND METHOD

Population of study

The population of study was constituted of HIV sick persons, eligible and under antiretroviral Treatment, follows up at the General Hospital of National Reference.

Methodology

It was about a study of cohort going from October 1st, 2011 to October 1st, 2013 and it concerned patients that were regularly followed mainly having a medical papers containing.

Size of Sample

We have used the LORENZ formula to calculate our sample: N This calculation is based on the prevalence of 3.3% for HIV in Chad (DSIS, 2005).

N: Size of sample

Z: degree of trust inferred from trust rate (most of the time 1.96% for a rate of trust of 95%). **P:** estimate proportion of the population having the studied characteristic in this work.

P= 3.3%. **Q=** 1-P and **D=** (0.5 standard value). It is the level of precision. The minimal require size for this study was of 50 patients.

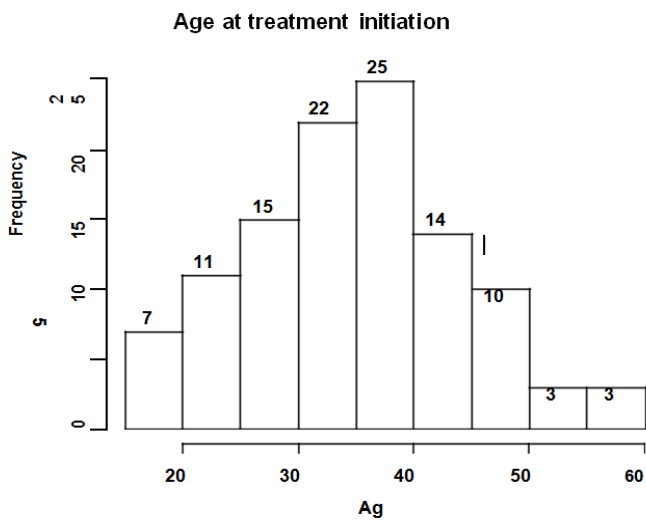
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But we went to 110 thanks to the availability of patients to this study. The following variables were studied: socio-demographics (age, sex), clinic (observance), biologic (CD4, CV). The T CD4 lymphocytes were counted by Fcount (Betcton Dickson, San Jose, CA); and the plasmatic viral charge was determined by I Time PCR, (M2000 , ABBOTT). Excel, Access software and EPI INFO version 7 were used to analyze databases. The Fisher statistic test was used for the comparison of averages. The P values (Threshold of signification) lower to 0.05 were considered as being statistically significant.

RESULTS

Distribution according to the age at the start treatment

The picture 5 below represents the division up of listed persons according to the age at the start treatment. Age at the initiation of treatment

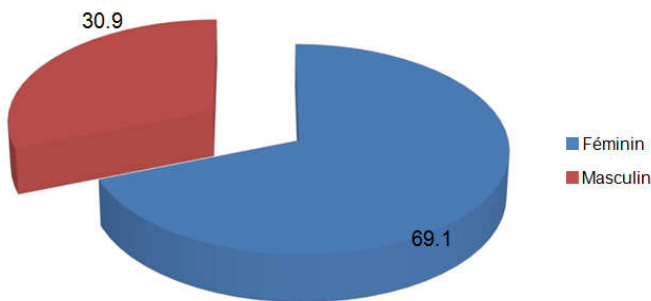


Picture 1: Distribution of patients 'ages at the initiation treatment.

We note that the median of age bracket including 35 and 45 the most representative of the sample with a percentage of 34.09%.

Distribution according to sex

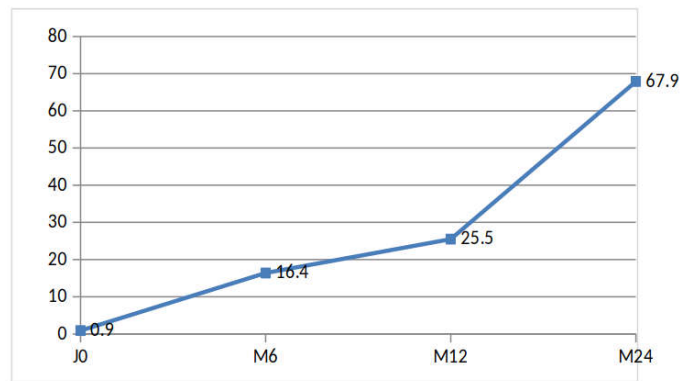
The distribution of the listed patients according to sex is represented on picture 6 below. The female sex has predominated in sample with the ratio-sex of 0.45.



Picture 2: Spreading of patients according to sex

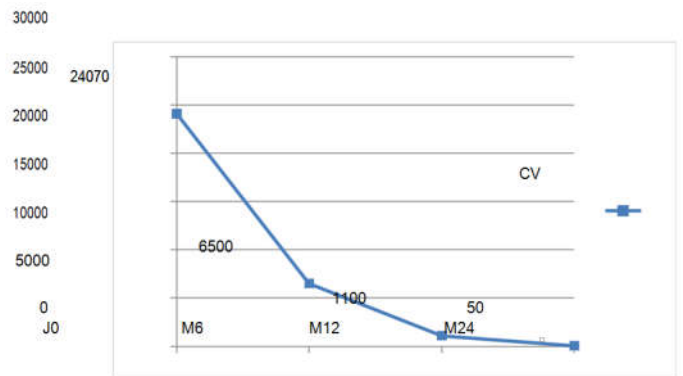
Assessment of the immunologic response to the ARV treatment:

The picture 3 presents us the level of the rate recovery of CD4 according to the time under ARV treatment.



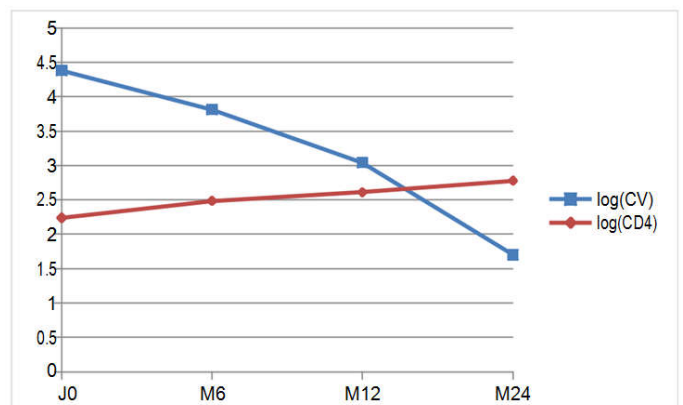
Picture3: progress of the proportion of patients having a rate of CD4 (500) with the treatment duration.

In view of this curve, we have observed that at 34th month 74 patients had a rate of CD4 (500) with the treatment duration of either 67.9%. We noticed on picture 4 of this curve a quick diminishing of the median of the viral charge at the start treatment at 6th month then a progressive diminishing even undetectable during 12th and 24th month of the patients follow up under ARV treatment.



Picture4: Progression of the median of CV with the treatment time

Time Correlation CD4/CV to the different periods of treatment



Picture 5: Correlation between the median of viral charges and those of CD4 following the treatment time.

We notice that the median of log CD4 increases while the median of log of viral charge decreases progressively.

Correlation CD4 and CV compared with M24 observance

Correlation CD4 compared with M24 observance

We notice I the opposite chart a good appropriateness between CD4 and observance after 24 months of treatment. Indeed, all patients

who are not well followed have a weak rate of CD4 at the end of the study.

Chart 1: Accuracy between CD4 and Observance at M24

Observance	CD4				P
	< 462	[462,599)	[599,775)	> 775	
Good	23	27	27	28	0.009
Bad	5	0	0	0	

Correlation CV compared with observance at M24

At the close of 24 months of treatment, we have not put a significant link in obvious place between observance and the virology response due to the difficulties to achieve this test.

DISCUSSION

Age:

The age bracket of our patients was from 40 to (35-45 years old). Other studies in sub-Saharan Africa have brought back average ages going from 34 and 40.2 years old. Those results show that the infection to HIV touches predominantly the youth population sexually active. This is what is put into evidence by Mahamadou (2006) as well as Dicko (2002, and Saliou (2005) who found 30.7% corresponding to the age bracket of 34 years and 46% to this of 40.2 years old. We have noticed a predominant female with 69.72% either the ratio-sex (M/W) of 0.45% this corroborates the idea that HIV in Africa is conjugated in female.

Progression of CD4 rate:

At JO the average rate of CD4 was of 188.2 cells/mm³. This would explain by the late admission of patients in consultation. Indeed, according to the recommendations of World health Organization and the group of experts in France, TAR would be started when the number of CD4 lymphocytes in our study was of 173 cells/mm³ and 139 cells/mm³ respectively observed by Dokékiás and al (2008) and Sozio and al (2009) in Italy. The average number of CD4 lymphocytes at the beginning of TAR in the study of Daniel and al (2006) was lightly superior to ours with 156 cells/mm³. Carmody and al (2008) | Brazil had noticed an average rate of CD4 lymphocytes of 276/mm³ and Getahun and al (2006) had found an average rate lower (13 cells/mm³). The average gain of lymphocytes CD4 in 6th month in our study is stacking to those of Dokekiás and al (2008) . Daniel and al (2006); Ferrer and al (2008) and Farradini and al (2007). At 24 months we noticed a gain in average number of lymphocytes CD4 during the whole period of fellow up. Our results suggest that the TAR treatment would lead to immune reconstruction.

Progression of the viral charge

At JO, our average viral charge was at 58.590 copies/ ul while Dokekiás's works and al (2008) have shown an average viral charge of 21,400/ul. This weakness of viral charge at the beginning would be explained by the fact that the cases are seen at an advanced level of infection by HIV. Kaptri and al (2007) had found 123,482 copies/ul at inclusion.

At 6th month of follow up(M6) the viral charge had an average of 15,470 copies/ul against 52,083 copies/ul found by Kaptri and al. (2007) in Yaoundé in Cameroon. This should be probably explained by the viral sensitivity to ARV treatment, consecutive to the good conduct of ARV treatment. Reappear's study(2005) in Bordeaux had found a low viral charge at 50 copies in 92% of cases while our study had found a CV low to 50 copies in 60 cases.

CONCLUSION

Our study had the purpose to appreciate the impact of the taking charge of PVHIV by ARV at the disease stage. For that, two main biologic indications of follow up were evaluated. It is about the numeration of CD4 lymphocytes, and the viral charge. At the end of evaluation, it emerges from this evaluation that when the lymphocytes rate increases, the measures of the viral charge decreases as time goes. There is a good correlation between membership to the treatment and increase of lymphocytes CD4 rate. The correlation between the viral charge diminishing and observance being lukewarm by the fact that the viral charge although available is not frequently requested like the CD4 lymphocytes. However, this study has put into evidence the efficiency of ARV available in a context like ours where the follow up of sick persons by HIV is a big problem, in terms of regularity of medical and biologic follow up, as well as lack of ARV and reactive in the laboratories.

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