

Clinical and Immunological Characteristics in HIV-Infected Patients at the Treatment Initiation at the University Hospital of Parakou (Benin)

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Abstract

Goal: To describe the clinical and immunological characteristics in the HIV-infected patients at the antiretroviral treatment initiation. **Methods:** This was a descriptive and retrospective study on the cohort of the patients living with HIV followed at Parakou teaching hospital from the 1st January 2004 to the 31st December 2012. Persons under the age of 15 and the pregnant women have been excluded from the study. **Results:** The active file was composed of 988 patients under antiretroviral treatment. They were 339 men and 649 women. The sex ratio was 0.52. The average age of the patients was 35.49 ± 9.72 years. The immunodeficiency was profound with 57.65% of patients at the stage 3 of WHO and 42.35% at the stage 4. Opportunistic infections at the antiretroviral treatment initiation were dominated by oral candidiasis (30.16%), the diarrhea (20.45%) and zona (11.03%). **Conclusion:** HIV infection touched young adults who consult at an advanced stage of immunodeficiency.

Keywords

Clinical, Immunological, HIV, Parakou, Benin

1. Introduction

HIV infection is still a real public health problem in the world, and Sub-Saharan Africa is still the most affected continent with 24.7 millions of people living with

HIV by the end of 2012 [1] and 1.3 millions of death in 2013 [2]. The HIV infection is chronic and provoking cellular immunizing deficit. This ultimate stage of the HIV infection is characterized by the unexpected arrival of opportunistic infections. These last ones are the major causes of HIV-related morbidity and mortality. The antiretrovirus and cotrimoxazole allow a significant reduction of the opportunistic infection incidence and the extension of patients living with HIV life expectancy [3]. The starting of the antiretroviral treatment in someone living with HIV depends on the WHO stage and the level of immunodeficiency. The goal of this study is to specify the reason for testing of HIV infection and to describe the clinical and immunological characteristics of HIV-infected patients at the antiretroviral treatment initiation at Borgou Departmental University Hospital (CHUD-B) in Parakou.

2. Patients and Study Methods

This was a retrospective and descriptive study on the cohort of the patient living with HIV followed at CHUD-B from the 1st January 2004 to the 3st December 2012. The persons under the age 15 years and the pregnant women have been excluded.

The variables studied were:

- 1) The age,
- 2) The sex,
- 3) Nutritional condition of the patient assessed with the body mass index using Kg/m^2 ,
- 4) The reason for testing of HIV infection,
- 5) The clinical stage according to WHO of the patient at the antiretroviral treatment initiation,
- 6) The opportunistic infection at the antiretroviral treatment initiation,
- 7) The CD4 cells level of the patients at the antiretroviral treatment initiation.

3. Results

3.1. Patients Distribution by Age

Out of the total of 988 included patients, 339 are men and 649 are women. The sex-ratio was 0.52.

3.2. Age Distribution

The average age of the patients was 35.49 ± 9.72 years with the extremes 17 and 74 years old.

3.3. Nutritional State of the Patients

The **Table 1** shows the patients distribution by the nutritional condition. Out of the 873 patients whose nutritional state has been assessed, 297 (34.02%) were malnourished (Body Mass Index $< 18.5 \text{ kg/m}^2$).

3.4. Reason for Testing of HIV Infection

The **Table 2** shows the patients distribution by the reason for testing. The reason for testing has been inquired in 491 patients. Chronic diarrhea was the most frequent reason for testing, followed by systematic testing during the preoperative assessment and voluntary blood donation.

3.5. WHO Clinical Stage of the Patient at the Antiretroviral Treatment Initiation

The **Figure 1** shows the patients distribution by the WHO stage. Out of the total number of 988 patients included in the study, (57.65%) were at stage 3 of WHO and 123 (12.35%) at stage 4.

3.6. Opportunistic Infections at the Antiretroviral Treatment Initiation

The **Table 3** shows the patients distribution by opportunistic infections that they presented. The opportunistic infections at the antiretroviral treatment initiation were dominated by oral candidiasis (30.16%), diarrhea (20.45%) and zona (11.03%).

3.7. CD4 Cells Level of the Patients at the Antiretroviral Treatment Initiation

The **Figure 2** shows the patients distribution by the level of CD4. Out of 911

Table 1. Nutritional condition of the patients living with HIV at the ARV initiation (n = 873).

| | Size | % |
|-----------------------------------|------|-------|
| BMI < 18.5 kg/m ² | 297 | 34.02 |
| 18.5 ≤ BMI < 25 kg/m ² | 498 | 57.04 |
| 25 ≤ BMI < 30 kg/m ² | 66 | 7.56 |
| IMC ≥ 30 kg/m ² | 12 | 1.38 |

Table 2. Reasons for testing of patients living with HIV at the ARV initiation.

| Reason for testing | Size | % |
|--------------------|------|-------|
| Chronic diarrhea | 138 | 28.11 |
| Long-term fever | 82 | 16.70 |
| Chronic cough | 70 | 14.26 |
| Weight-loss | 60 | 12.22 |
| Voluntary | 53 | 10.79 |
| Systematic* | 130 | 26.48 |
| Others** | 87 | 17.72 |

*Pregnancy, surgery, blood donation, **Accidental blood exposure, cervical and abdominal tumor, skin tumor.

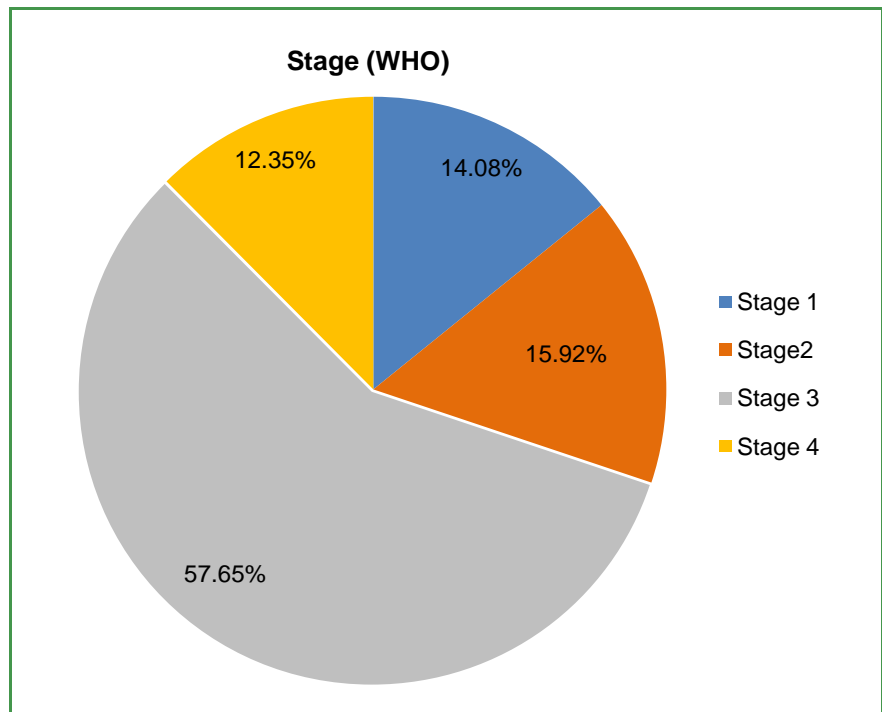


Figure 1. Patients distribution by the stage (WHO) of HIV infection.

Table 3. Patients distribution by opportunistic infections at the ARV treatment initiation (n = 873).

| Opportunistic infections | Size | % |
|---|------|-------|
| Oral candidiasis | 298 | 30.16 |
| Enteritis | 202 | 20.45 |
| Zona | 109 | 11.03 |
| Prurigo | 93 | 9.41 |
| Bacterial pneumonia due to common germs | 73 | 7.39 |
| Tuberculosis | 43 | 4.35 |
| Genital herpes | 8 | 0.81 |
| Kaposi sarcoma | 8 | 0.81 |
| Pulmonary toxoplasma | 8 | 0.81 |
| Ophthalmic zona | 8 | 0.81 |
| Pneumocystosis | 2 | 0.20 |
| Cryptosporidiosis | 1 | 0.10 |
| Isosporosis | 1 | 0.10 |
| Cytomégalovirus retinitis | 1 | 0.10 |
| Extra-pulmonary tuberculosis | 1 | 0.10 |

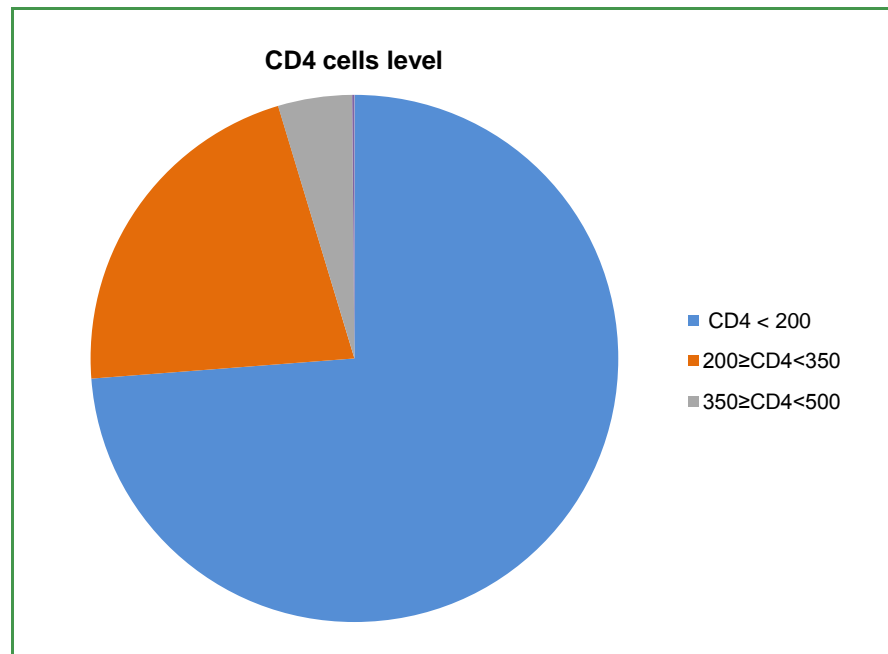


Figure 2. Patients distribution by the lymphocytes CD4 (cell/mm³) cells count.

patients having a CD4 numeration, 651 (71.46%) had a CD4 count under 200 cells/mm³.

4. Discussion

In this study, the HIV-infected persons were young adults with an average age of 35.49 ± 9.72 years old. This remark has been underlined by many authors with an average age that varies between 34.3 ± 8.4 years and 41 ± 10 years [4] [5]. The most affected age range was 25 to 34 years that represented 41.30% of the study population. Adamou reached similar outcomes. In his study, 40% of patients were between 25 and 35 years old. According to Apetse [3], the age range 39 to 39 years was the most represented with 34.73% of the cases.

We noticed a female predominance among the HIV-infected persons. Zannou [6] and Kra [7] had also made the same remark. Whereas Shen *et al.* [8] reported a male predominance. In view of these results, it is hard to affirm the most pre-disposed sex to catch HIV infection.

HIV infection, when it's not treated is responsible of undernutrition. In this study, 34.02% of the patients were undernourished. These outcomes are superimposable to the ones of Marazzi [9] who reported 34% as prevalence of undernutrition in HIV infected patients. Koné [10] reported a body mass index average of 17.2 ± 3.06 kg/m², indicator of undernutrition.

HIV is responsible of a latent infection that is asymptomatic at the beginning. With the immunodeficiency worsening, appeared some signs that motivate the patients consultation. In this study, the reasons for consultation were dominated by chronic diarrhea in 28.41% of the cases. The main reasons for coming reported by Déguénonvo [4] are long-term fever (83%), weight-loss (83%), cough

(54%), diarrhea (30%), dysphagia (17%) and coma (15%). Koné [10] reported the following reasons for testing: long-term fever (87.7%), weight-loss (74.90%), chronic diarrhea (67.80%) and oral candidiasis (57.30%). The dominant main signs pointed out by Zannou [6] during the testing were: weight-loss (88%), fever (80%), cough (71%) and diarrhea (51%).

The different clinical signs presented by the patients allow to classify them according to the 4 stages of WHO. In the absence of CD4 cells count, this classification is enough for an ARV treatment initiation. So the persons classed at stage III or IV of WHO are eligible to ARV treatment. In this study, 7 of 10 patients (70%) are eligible to the treatment with respectively 57.65% at stage III and 42.35% at stage IV. Déguénonvo [4] reported that 88% of his range patients were at stage IV of WHO. Koné [10] reported that 64.50% of the patients were at stage III and 15.70% at stage IV. Dicko [11] reported similar results with 64% at stage IV and 27% at the stage III. In Cameroun the stage IV represented 55.5% of Mahy's range patients [12] whereas Zoungrana [13] in Burkina Faso reported that the patients at the stages III and IV represented 61%.

Immunodeficiency created by the HIV favours the unexpected arrival of many opportunistic infections. The opportunistic infections at the antiretroviral treatment initiation are dominated by oral candidiasis (30.16%), diarrhea (20.45%) and zona (11.03%). Apetse [3] reported similar results with a predominance of oral candidiasis (49.7%) followed by tuberculosis 11.30% and toxoplasmosis (11.20%). A similar situation exists with the results of Zannou [6] in which digestive candidiasis (53%) predominated followed by pneumonia (18%), tuberculosis (12%), undetermined pneumonitis (29%), prurigo (20%) zona (16%), cryptosporidiosis (4%), cerebral toxoplasmosis (3%) and Kaposi's disease (1%). Déguénonvo [4], rather reported that tuberculosis predominated (40.9%) followed by oro-esophageal candidiasis (35.3%) and bacterial pneumonitis (18.8%). According to Kra [7] the reasons of hospitalisation were dominated by tuberculosis (34.2%), cerebral toxoplasmosis (17.9%) and neuromeningeal cryptococcosis (8%).

The HIV-infected patients monitoring is clinic looking for the opportunistic affections but also virological through the measurement of the viral load. The immunological monitoring consists on counting the number of CD4 cells. More than three of four patients (71.46%) had a CD4 count under 200 cells/mm³ showing a major immunodeficiency. Admou [5] and Diop [14] have reported similar results with respectively 60.4% and 65% of patients who had a CD4 cells level below or equal to 200/mm³. Shen [8] and Koné [10] reported an average CD4 lymphocytes level respectively at 138 cells/mm³ and 144.3 ± 135.8/mm³, indicator of profound immunodeficiency. Whereas Cazein [15] concluded that 50% of the patients had their CD4 count > 350 cells/mm³ in France. This difference could be explained by the fact that the patients are earlier detected, also by the health policy that allows the ARV initiation with CD4 lymphocytes level below 500 cellules/mm³. In Benin, the CD4 level at 500 cells/mm³ as recommenda-

tion for the treatment of HIV-infected patients entered into forces at the beginning of 2015.

5. Conclusion

HIV infection affects young adults who consult at an advanced stage of immunodeficiency. It is urgent to encourage the HIV voluntary testing and to popularize the new recommendations of ARV initiation at the level of 500 cells/mm³. This will allow the morbidity and mortality decreasing in the patients living with HIV.

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