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Prevalence of Types of Diabetes among People Living with HIV/AIDS in Kinshasa: Case of Patients Followed at the Kinshasa Provincial General Hospital (KPGH) from 2010 to 2015

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Abstract

Context: *In the Democratic Republic of Congo (RDC), the Human Immunodeficiency Virus (HIV) infection associated with Diabetes remains a public health problem.*

Objective: *The objective of this work was to determine the prevalence of type of diabetes among People Living with HIV (PLHIV) followed at the Kinshasa Provincial General Hospital (KPGH).*

Methods: *This is a retrospective survey based on 132 records of patients infected by HIV associated with diabetes followed at KPGH in the Department of Internal Medicine from 2010 to 2015. All records of diabetic PLHIV followed during the study period. The parameters of interest for this survey were: age, sex, marital status, clinical HIV stage, type of diabetes, and ARV regimen.*

Results: *The most represented age group was that of more than 42 years with 33 patients (25%) and a predominance of women with 74 patients (56.1%). The most recorded civil status was that of single with 54 patients (40.9%). Type 2 diabetes was dominant in the population with 89 patients (67.4%).*

Conclusion: *Diabetes mellitus type 2 (67.4%) was the most common type of diabetes found in the population of People Living with HIV followed in the Department of Internal Medicine of the Kinshasa Provincial General Hospital.*

Keywords: *HIV/AIDS, diabetes, Kinshasa, PLHIV.*

1. Introduction

The Human Immunodeficiency Virus (HIV) infection is an epidemic whose spread is currently still increasing in some countries, special Low and Middle Income Countries (LMIC), affecting millions of men, women and children [1].

Associated with Diabetes, whose numbers leave no doubt as to its global scale, the number of diabetics has increased from 30 million in 1985 to 180 million in 2000 and 246 million in 2007 [2].

The Democratic Republic of Congo (DRC) is not spared by this epidemiological surge. Currently a very considerable increase in its diabetic population with 800 thousand diabetics in 2009, and nearly 1 million diabetics in 2011 according to the estimates of the National Program against Diabetes [3]. The Antiretroviral (ARV), particularly the Protease Inhibitors (PI), can cause hyperglycemia, which increases the risk of pre-diabetes and diabetes or unbalances, a well-managed diabetic condition [4].

In addition, the care of People Living with HIV (PLHIV) associated with is carried out in services of expensive clinics in Kinshasa whose coverage and impact on the state of health of the population are quite modest [5].

In the DRC, some studies have been conducted in this direction. Hence the ob jective of this study was to determine the prevalence of types

of diabetes among PLHIV followed at the Kinshasa Provincial General Hospital (KPGH) during the period of 2010-2015.

2. METHODS

This study was conducted at the Kinshasa Provincial General Hospital (KPGH) in the Department of Internal Medicine. This study was a retrospective survey based on the records of adult PLHIV affected by diabetes, followed in this medical institution from 2010 to 2015.

2.1. Samples

This study included all records of diabetic patients living with HIV aged of at least 18 years followed during the study period at the KPGH. Patients aged under 18 and those not consenting nor willing to participate were not included in the study. The parameters of interest for this survey were: age, sex, marital status, clinical HIV stage, type of diabetes, and ARV regimen. Clinical stages and profiles were determined according to the World Health Organization classification for all patients. Files that did not contain all of the data listed above were not retained.

This study had received consent authorization from the scientific and ethical comity. It also received the agreement from the center to collect information if the patients'files.

2.2. Data analysis

The data were collected using the survey sheets previously tested. They were entered and recorded on Windows Excel.

3. RESULTS

Five hundred and twenty (520) cases of diabetic PLHIV had been consulted in the record of the Department of Internal Medicine of the KPGH. Only 132 files had met the inclusion criteria of the survey. The female population was dominance with 74 patients (56.1%).

The most represented age group was that of more than 42 years with 33 people (25%) for both sexes followed by that of 33 to 37 years with 19.6% of the population and that of 23 to 27 years with 17.4% of the population.

The most recorded civil status was that of single with 54 patients (40.9%) followed by that of married with 40 patients (30.3%). Type 2 diabetes was dominant in the population of PLHIV with 89 patients (67.4%) compared to Type 1 diabetes with 43 patients (32.6%). The sociodemographic data, the type of diabetes mellitus data, the ARV regimen, and the clinical stage are presented in the following table 1. The ARV regimen is presented in table 2.

Table1. *Sociodemographic data, the type of diabetes mellitus data, and the clinical stage of PLHIV*

Characteristics	Patients		
	Females	Males	Total
Genders			
	74 (56.1%)	58 (43.9%)	132 (100%)
Age groups (years)			
18-22	8 (10.8%)	7 (12.1%)	15 (11.3%)
23-27	15 (20.3%)	8 (13.8%)	23 (17.4%)
28-32	12 (16.2%)	10 (17.2%)	22 (16.6%)
33-37	12 (16.2%)	14 (24.1%)	26 (19.6%)
38-42	6 (8.1%)	7 (12.1%)	13 (9.8%)
>42	21 (28.4%)	12 (20.7%)	33 (25.0%)
Civil status			
Single	34 (45.9%)	20 (34.5%)	54 (40.9%)
Married	18 (24.3%)	22 (37.9%)	40 (30.3%)
Divorced	4 (5.4%)	8 (13.8%)	12 (9.0%)
Widowed	18 (24.3%)	8 (13.8%)	26 (19.6%)
Type of diabetes			
Type 1	25 (58.1%)	18 (41.8%)	43 (32.6%)
Type 2	52 (58.4%)	37 (41.5%)	89 (67.4%)
Clinical stage of HIV			
Stage 1	13 (56.5%)	10 (43.4%)	23 (17.4%)

Stage 2	47 (54.6%)	39 (45.3%)	86 (65.1%)
Stage 3	12 (52.1%)	11 (47.8%)	23 (17.4%)

Table2. *ARV regimen of PLHIV*

ARV Treatment	Frequency
First line treatment n=120 patients (90.9%)	
AZT + 3TC + NVP	68 (56.7%)
TDF + 3TC + NVP	21 (17.5%)
d4T + 3TC + NVP	20 (16.7%)
TDF + 3TC + EFV	6 (5.0%)
AZT + 3TC + EFV	5 (4.1%)
Second line treatment n=12 patients (9.1%)	
ABC + 3TC + LPV/r	5 (41.7%)
AZT + 3TC + LPV/r	3 (25.0%)
AZT + 3TC + LPV/r	3 (25.0%)
ddI + ABC + LPV/r	1 (8.3%)

3TC: Lamivudine, ABC: Abacavir, AZT: Zidovudine, d4T: Stavudine, ddI: Didanosine, EFV: Efavirenz, LPV/r: Lopinavir boosted by Ritonavir, NVP: Nevirapine, TDF: Tenofovir.

4. Discussion

This work aimed to determine the prevalence of type of diabetes among PLHIV followed at the Kinshasa Provincial General Hospital (KPGH). Data were collected from the medical records of 132 diabetic patients followed at KPGH in the Department of Internal Medicine from 2010 to 2015.

The female population was the most represented with 74 patients (56.1%) against 58 men (43.9%) thus giving a sex ratio of 1.3 women for 1. This sex ratio corroborates the national guide that states that the female sex predominates over the male sex [PNLS]. This is justified by the fact that HIV screening is systematized in women during prenatal consultations (PNC) and at childbirth. In Low and Middle Income Countries (LMIC), the HIV infection in women is favored by several factors such as poverty, low level of education and/or remunerated sexual favor [6], which make women more vulnerable than men [7]. This sex ratio is presented in different studies in Kinshasa [10].

The most represented age group was that of more than 42 years with 33 people (25%) for both sexes followed by that of 33 to 37 years with 19.6% of the population and that of 23 to 27 years with 17.4% of the population. The age group of patients aged over 42 years is the group where most chronic complications occur which are over expressed by the associated HIV infection and Antiretroviral Treatment (ART) prescribed [8].

Fifty-four patients (40.9%) patients of the selected population are single, followed by the group of patients who are married (30.3%), those who are widowed (19.6%) and those who are divorced (9.0%). The patients who are single have difficulty complying with treatment and dietary requirement than married [10]. The majority of single patients in this study are female with 45.9% against 34.5% of men, while the married men (37.9%) are dominant against married women (24.3%) in the married patients group.

Eighty-six patients (65.2%) started ART on clinical stage 2 of HIV infection according to the World Health Organization (WHO) recommendations, followed by 23 patients (17.4%) on clinical stage 1 and clinical stage 3. These data suggest a patient staging problem for patient starting ART in our environment. These results are similar to those published by different authors for Kinshasa [10].

Eighty-nine (67.4%) HIV-positive patients had type 2 diabetes mellitus compared to 43 (32.6%) HIV-positive patients of type 1 diabetes. These figures confirm the data obtained from a study conducted in the United States, the Sudan and Togo where 67% of hospitalized PLHIV with cardiovascular complications. There was a predominance of type 2 diabetes mellitus compared to type 1 [11].

The first line ART combination that was more used was the AZT + 3TC + NVP in 68 cases (56.7%) followed by TDF + 3TC + NVP (17.5%), d4T + 3TC + NVP (16.%), TDF + 3TC + EFV (5.0%) and AZT + 3TC + EFV (4.1%). The second line ART combination used were ABC + 3TC + LPV/r with 5 cases (41.7%) followed by AZT + 3TC + LPV/r and AZT +

ddI + LPV/r (25.0% each), and ddI + ABC + LPV/r (8.3%). According to data reported in the literature by Botomwito et al, 100% of providers and prescribers use the molecules available through the National AIDS Control Program [12].

5. Conclusion

Diabetes mellitus type 2 (67.4%) was the most common type of diabetes found in the population of People Living with HIV followed in the Department of Internal Medicine of the Kinshasa Provincial General Hospital.

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