Scientific Research Publishing

Frequency and Factors Associated with Erectile Dysfunction in People Living with HIV Managed in the Department of Internal Medicine at the Departmental Hospital University of Borgou (DHU-B) in 2017

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Abstract

Introduction: Highly active antiretroviral treatment has considerably reduced the morbidity and mortality associated with HIV infection. However, we are witnessing the emergence of cardiovascular and metabolic diseases. The aim of this work is to study erectile dysfunction (ED) and the associated factors with HIV positive people managed DHU-B. **Methods:** This was a cross-sectional, descriptive and analytical study covering the period from March 1, 2017 to June 31, 2017. The study involved HIV-positive patients 18 years old and above, male, under antiretroviral treatment and have given their consent. ED was assessed by the IIEF5 score (International Index of Erectile Function). The data collected had been recorded and processed with the EPI INFO software (Version 7.2). The significance level was 5%. **Results:** A total of 280 patients were included in the study. The average age was 42 ± 10.04 years with extremes of 23 and 67 years. The prevalence of ED was 52.14%. Among patients with ED, 41% had severe ED. Factors associated with ED in multivariate analysis were: age over 40 years, anxiety, depression, arterial hypertension, lipodystrophy, multiple sexual partners and protease inhibitor therapy. **Conclusion:** ED concerns half of HIV-infected patients followed in the Internal Medicine department. It is therefore essential to provide more comprehensive care, both clinically and psychologically, in order to improve the quality of life of people living with HIV.

Keywords

Erectile Dysfunction, Associated Factors, HIV, Parakou, Benin

1. Introduction

Antiretrovirals have dramatically reduced mortality and morbidity, extended the duration and improved the quality of life for many people living with HIV (PLHIV). PLHIV are nevertheless faced with many chronic conditions such as high blood pressure, diabetes, and metabolic disorders but also sexual disorders such as erectile dysfunction (ED) in men. The prevalence of ED is higher in patients living with HIV than in the general population and can reach 50% [1] [2]. The pathogenesis of ED in these subjects is still not well defined and is multifactorial [3] [4]. Apart from the traditional factors associated with ED, HIV infection itself and its treatment contribute to it [5]. The impact of ED could be devastating because sexual function is an important index of quality of life [6] [7] and has a negative emotional, social, sexual and intellectual impact. ED is also increasingly recognized as a cardiovascular risk factor [8] [9]. It is therefore important to take an interest in this taboo health problem that is ED. In Benin, studies on ED in the general population and particularly in diabetics and hemodialysis patients exist. But no study has been done in the ED in PLHIV. The present study was therefore initiated to fill the gap. The results of this study will allow to assessing its extent and the associated factors with the aim of effective and comprehensive management of HIV-positive patients.

2. Study Framework and Methods

Study setting: the study took place in the Internal Medicine Service of the Departmental Hospital University of Borgou (DHU-B).

Type and period of study: this was a cross-sectional, descriptive and analytical study covering the period from March 1, 2017 to June 31, 2017.

Study population: this consists of all people living with HIV followed in the Internal Medicine department of DUH-B in 2017. All male patients, 18 years old and above, on antiretrovirals and who gave their consent were included in the study. Patients with trauma or pathology of the pelvis or spine and unable to answer the questions were not included in the study.

Sampling: an exhaustive census of people living with HIV positive patient on antiretrovirals was received for consultation in the Internal Medicine Department of DUH-B during the data collection period.

Variables: the dependent variable studied was ED. It had been evaluated on the basis of the IIEF5 score (International Index of Erectile Function) composed of 5 questions which evaluate erectile function. ED is defined according to the score below 21. ED is severe if the score is between 5 and 10 inclusive, moderate between 11 and 15 inclusive and mild if between 16 and 20 inclusive [10]. The independent variables concerned sociodemographic data, psychological status, lifestyle, clinic, biology, treatment and evolution. BECK's questionnaire enabled the diagnosis of depression to be made. The Hamilton Anxiety Rating Scale was used.

Technique and data collection tool: data collection was done by counting

the consultation register, face-to-face interview, clinical and anthropometric examination. A data collection sheet and other appropriate tools were used.

Data processing and analysis: The data collected had been recorded and processed with the EPI INFO software (Version 7.2). Microsoft Word 2010 software was used for entering the data and Excel 2010 for organizing the data in the form of tables and graphs. Quantitative variables were expressed as a mean plus or minus standard deviation and qualitative variables were expressed as a simple count and as a percentage. The means were compared with the Student test. The comparison of percentages and proportions was carried out with the Chi 2 test (or Fisher's exact test as the case may be). For these comparisons, a probability $p < 0.05$ was considered statistically significant. The analysis was bivariate then multivariate.

Ethical aspects: Data confidentiality was respected during the survey. After explaining to the patients the purpose of the study and their contribution, they were free to participate or not to participate in the survey and that once accepted, they were enrolled. The anonymity and privacy of the patients had been respected because the survey sheets were not nominal. Before carrying out our study, the common agreement of the administrative authorities and the head of the Internal Medicine department of DUH-B was obtained.

3. Results

A total of 280 patients were included in the study. The average age of patients was 42 ± 10.04 years with extremes of 23 and 67 years. The most represented age group was that of 40 - 49 years (37.14%). Diabetes was present in 32 (11.43%) patients; 56 (20%) patients had arterial hypertension; 58 (20.71%) presented lipodystrophy with respectively 56 (18.57%) presenting lipoatrophy and 6 (2.14%) lipohypertrophy. Peripheral neuropathies were present in 104 (40.71%) patients and 38 (13.57%) were malnourished. As for the way of life, the consumption of tobacco, alcohol and drugs were found respectively in 64 (22.86%), 104 (37.14%) and 4 (1.43%) patients; multiple sexual partners were found in 26.43% of patients and 56.43% were sedentary. The lipid profile was characterized by 10.71% of PLHIV having HDL hypocholesterolemia, 17.14% hypertriglyceridemia, 38.57% LDL hypercholesterolemia and 23.57% total hypercholesterolemia. Dyslipidemia was found in more than half of the patients (52.86%). Regarding ARV treatment, 17.14% of patients had a protease inhibitor in their treatment and 23.37% were non-compliant with ARVs. The average duration of ARV treatment was 4.26 ± 1.47 years. On the psychoaffective level, 23.57% had anxiety and 47.86% depression. ED was found in 146, a frequency of 52.14%. Of the 146 patients with erectile dysfunction, 41% had severe ED. ED appeared suddenly in 28% of patients; 46.67% of patients reported that ED had occurred before testing for HIV infection and 52.05% of patients reported having nocturnal erections (Table 1).

Factors associated with ED in people living with HIV in bivariate analysis were older, low CD4 count, long duration of antiretroviral treatment, high Hamilton scale and low Beck score for quantitative variables (Table 2) and arterial

Table 1. General characteristics of PLHIV followed in the internal medicine department of DUH-B in 2017 (n = 280).

	n	%
Age ≤ 40 years old	112	40
Diabetics	32	11.43
Hypertensives	56	20
Lipodystrophy	58	20.71
Peripheral neuropathy	114	40.71
Undernutrition	38	13.57
HDL hypocholesterolemia	30	10.71
Hypertriglyceridemia	48	17.14
LDL Hypercholesterolemia	108	38.57
Totale hypercholesterolemia	66	23.57
Alcohol consumption	64	22.86
Tobacco consumption	104	37.14
Use of other drugs	4	1.43
Multiple sexual partners	74	26.43
Sedentary lifestyle	158	56.43
Use of protease inhibitor	48	17.14
Adherence to antiretrovirals	214	76.43
Anxiety	66	23.57
Depression	134	47.86
Erectile dysfunction	146	52.14

Table 2. Bivariate analysis of factors associated with erectile dysfunction in people living with HIV followed in the internal medicine department, DUH-B in 2017 (quantitative variables).

	Erectile dysfunction				
	Yes		No		*p*
	A	SD	A	SD	
Age	45.04	10.16	39.70	9.19	*0.001*
Current CD4 count	348.05	28.95	420.29	190.85	*0.034*
Duration of ARV treatment	5.26	3.54	3.63	2.66	*0.002*
Hamilton scale	15.73	8.26	10.08	7.82	*p < 0.001*
Beck scale	6.60	5.21	3.56	11.28	*0.040*

A: Average SD: Standard Deviation.

hypertension, lipodystrophy, multiple sexual partners and the use of protease inhibitors for the qualitative variables (Table 3). In multivariate analysis, age over 40, anxiety, depression, hypertension, lipodystrophy, multiple sexual partners and use of protease inhibitors are associated with erectile dysfunction (Table 4).

Table 3. Bivariate analysis of factors associated with erectile dysfunction in people living with HIV followed in the internal medicine department, DUH-B in 2017 (qualitative variables).

	Erectile dysfunction (%)	*p*
Presence of high blood pressure	75	*0.012*
Absence of high blood pressure	46.43	
Presence of lipodystrophy	72.41	*0.024*
Absence of lipodystrophy	46.85	
Multiple sexual partner	72.97	*0.005*
Only one sexual partner	44.66	
Presence of protease inhibitor	83.33	*0.001*
Absence of protease inhibitor	45.69	

Table 4. Multivariate analysis of factors associated with erectile dysfunction in people living with HIV followed in the internal medicine department, DUH-B in 2017.

	Erectile dysfunction (%)	OR	CI (95%)	*p*
Age ≤ 40 years old	40.98	1		*0.020*
Age > 40 years old	60.76	2.22	1.12 - 4.40	
Presence anxiety	73.33	1		*0.009*
Absence anxiety	46.36	0.31	0.12 - 0.76	
Presence depression	73.13	1		*p < 0.001*
Absence depression	32.88	0.17	0.08 - 0.37	
Presence high blood pressure	75.00	3.46	1.36 - 8.79	*0.012*
Absence high blood pressure	46.43	1		
Presence lipodystrophy	72.41	2.97	1.21 - 7.29	*0.024*
Absence lipodystrophy	46.85	1		
Only one sexual partner	44.66	1		*0.005*
Multiple sexual partners	72.97	0.29	0.13 - 0.68	
Presence of protease inhibitor	83.33	5.94	1.91 - 9.12	*0.001*
Absence of protease inhibitor	45.69	1		

4. Discussion

This study focused on a taboo subject often hidden by patients. The diagnosis of ED was made by a method respecting international recommendations. At the end of this study, the following results were obtained. The prevalence of ED was 52.14%. Ouédraogo *et al.* [11] in Burkina Faso in 2015 reported a similar prevalence (55.8%). In the study by Bernal *et al.* [9] in Spain, 61.2% of HIV-infected subjects in their cohort had erectile dysfunction.

The study found that PLHIV over the age of 40 were at greater risk of having

ED. Fumaz *et al.* [12] in Spain in 2016 found the same association. In Camara's study [3] in Guinea on sexual disorders in PLHIV, age over 35 was associated with ED. Age was known to be the main risk factor for ED. This association is thought to be due to the improved life expectancy of people living with HIV linked to antiretrovirals, which exposes them to age-related diseases such as cardiovascular disease and ED. It should also be noted that the decline in testosterone with age explains ED in the elderly.

Multiple sexual partnerships were associated with ED. Dong *et al.* in China had reported the same association [13]. Multiple sexual partnerships could be considered as a means of satisfying sexual desire despite conflicts with spouses.

Lipodystrophy was associated with ED as reported by De Vincentis *et al.* [14]. Indeed, lipodystrophy promotes the elevation of fibroblasts and macrophages with the consequence of a conversion of testosterone into estrogen. This phenomenon would be favored by the high level of interleukin 6 and hydroxycorticosteroids related to lipodystrophy [15] [16].

Psychological disorders such as anxiety and depression were respectively observed in 23.57% and 47.86% of the subjects surveyed. These proportions were similar to those reported by Shumye *et al.* [17] with respectively a prevalence of 29% for anxiety and 43% for depression. Anxiety was significantly associated with ED. Fumaz *et al.* [12] and Schönesson *et al.* [6] in their respective works had found similar results. In the same order, depression was associated with ED. Similar results were reported by Ouedraogo *et al.* [11]. Moshfeghy [7] reported that the predictive factors of erectile dysfunction in PLHIV were stress, depression and anxiety. This could be explained by the fact that HIV infection, in addition to its physical effects, constitutes a heavy psychological burden for patients. In addition to feeling different from others, some infected people avoid blending in with the crowd for fear that their disease will be discovered with the risk of being stigmatized. Marital conflicts, professional difficulties, can be the cause of emotional instability. Erection being a psychoneurochemical phenomenon, psychic disorders thus prevent infected people from having an erection sufficient for a fulfilling sex life. Also in our study, more than half of our patients said that erectile disorders were sudden onset but also had nocturnal erections. From these different results, it appears that ED also has a significant psychogenic component in people living with HIV. It is therefore important to promote psychological care in order to improve the quality of life of people infected with HIV. Among the factors favoring depression are poverty and unemployment [4] frequently found among PLHIV.

Protease inhibitor use was associated with ED. Dijkstra *et al.* [18] and Jansen *et al.* [19] found similar results. This could be explained by the fact that protease inhibitors cause peripheral neuropathies but also a metabolic syndrome that could lead to ED. The role of protease inhibitors in the occurrence of ED continues to be controversial. It is therefore essential to carry out in-depth prospective studies in order to refine the link between protease inhibitors and ED, but

also to inventory possible ARV drugs, in particular protease inhibitors which could be origin of an ED.

This study has limits to the extent that it has been limited to the study of erectile function. It is necessary to assess sexual function in general to better understand the question. Also, testosterone is not measured in these patients in order to assess cases of hypogonadism known to be an important risk factor for ED.

5. Conclusion

The present study had made it possible to lift the taboo in order to know the extent of ED in people living with HIV. It shows that more than half of the people living with HIV followed in the Internal Medicine department of DUH-B suffered from ED. The risk factors for ED in these patients were both organic and psychogenic. The sexual health of people infected with HIV should be considered a public health issue. It is therefore essential to take care of them globally, both clinically and psychologically, in order to improve the quality of life of people living with HIV.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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Appendix: Questionnaire

1) Age (years)

2) Comorbidities

Hypertension:	Yes	No
Diabetics	Yes	No
Lipodystrophy	Yes	No
Peripheral neuropathy	Yes	No

3) Nutritional status

Weight (kgs)

Size (m)

Mass index (kg/m^2)

4) Way of life

Alcohol consumption	Yes	No
Tobacco consumption	Yes	No
Use of other drugs	Yes	No
Multiple sexual partners	Yes	No
Physical activity	Active	Inactive

5) Antiretroviral therapy

Use of protease inhibitor	Yes	No
Adherence to antiretrovirals	Yes	No
Current CD4 count		
Duration of ARV treatment		

6) Psychological status

Anxiety	Yes	No
Depression	Yes	No

7) Erectile dysfunction   Yes   No

8) Lipid profile

Total cholesterol level	Low	Normal	High
HDL cholesterol level	Low	Normal	
LDL cholesterol level	Normal	High	
Triglyceride level	Low	Normal	High