

Evaluation of the Effectiveness of the Cotrimoxazole and Antiretrovirals Association among Adult People Living with HIV: Case of Pilot Health Center and Maternity of Masina/Kinshasa from 2011 to 2016

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Abstract

Context

The Human Immunodeficiency Virus (HIV) is the causal agent of Acquired Immunodeficiency Syndrome, known as AIDS. Cotrimoxazole (CTX) is a drug in a fixed combination of 2 antimicrobials: sulfamethoxazole and trimethoprim.

Objective

The aim of this study was to evaluate the management of CTX and Antiretroviral in People Living with HIV (PLHIV) in Kinshasa.

Methods

This study was conducted at Pilot Health Center and Maternity of Masina/Kinshasa (CSPM/M) from 2011 à 2016. It was retrospective cohort, to evaluate the efficacy of CTX and ARV in PLHIV on followed in the center from January 1st, 2011 to December 31st, 2016. Files that were not well maintained were not included in the study. The parameters of interest were: Clinical stage, Body Mass Index, Opportunistic Infections, and CTX prophylaxis.

Results

A total of 100 files were collected with a female predominance (68%) against 42% of men. The most represented age group was that over 42 years (64%). The most presented clinical stage was stage 3 (30%). Mean BMI in patients before treatment was 21.4 ± 5 and 23 ± 5 after treatment. Malaria was the most represented OI (26.8%). The data collected reported a sex-specific representation of PLHIV with OI under CTX for 5 years, with persistence of baseline OI in 5% of cases overall with female predominance.

Conclusion

The CTX prophylaxis is highly effective in achieving a better outcome in the management of PLHIV, although 5% of our patients presented persistence of OIs.

Keywords

Efficacy; Cotrimoxazole; Antiretroviral; HIV; Kinshasa

Introduction

Cotrimoxazole (CTX) is a cost-effective, well-tolerated combination drug that consists of 2 antimicrobials: sulfamethoxazole and trimethoprim. It prevents and treats various bacterial infections, mycoses and protozooses. CTX is a drug that is no longer protected by a patent and is widely available in situations where resources are limited [1].

New evidence shows that in addition to its known benefits in terms of morbidity and mortality,

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CTX prophylaxis can prevent malaria and many bacterial infections in adults and children on AntiRetroViral Therapy (ART) [2]. Based on the new data, the World Health Organization (WHO) recommends integrating CTX prophylaxis into HIV care in resource-limited settings [2].

Not to mention its advantages in many resource-limited countries, CTX is widely used in the treatment of infections resulting in increased resistance to the different drugs [2]. Resistance of non-typhoid Salmonella and Pneumococcus isolates to CTX has been reported in 44% to 52% of cases in Uganda and approximately 80% to 90% in Malawi [2].

In DRC, the situation of war has aggravated this condition. Many patients as well as some members of the medical profession benefit from incomplete or inaccurate information on ART. Thus, the many problems related to this treatment, such as the emergence of resistance and side effects which are often ignored.

The objective of this study was to evaluate the efficacy of the ARV-CTX association in the city of Kinshasa.

Methods

Frame

This study was conducted at Pilot Health Center and Maternity of Masina/Kinshasa (CSPM/M), Democratic Republic of Congo (DRC). It was a retrospective cohort to evaluate the effectiveness of the association Antiretroviral-Cotrimoxazole (ARV-CTX) in adults People Living with HIV (PLHIV) followed at the center from January 1st to December 31st 2018.

Table 1: Sociodemographic Data of Patients Initiating Treatment

Characteristics	Patients (n=100)
Sex	
Women	68 (68%)
Men	32 (32%)
Age interval (years)	
18-22	3 (3%)
23-27	0
28-32	7 (7%)
33-37	8 (8%)
38-42	18 (18%)
>42	64 (64%)

Patient

Patients' files that were not well kept were not included in the study. The main parameters of interest were: Age, Sex, clinical stage, Body Mass Index (BMI), Opportunistic Infections (OI), ARV and CTX prophylaxis.

Data Analysis
The data were collected in the files prepared for the attached work. The data collected century were seized on Microsoft Windows 2013 and transcribed Excel for analysis.

Results

A total of 100 patients' files were collected with a female predominance, for 68% of female patients against 42% of men's. The most represented age group at the beginning of treatment was that of over 42 years (64%). The most represented clinical stage at the inclusion was stage 3 (30%) according to the World Health Organization (WHO). The average Body Mass Index (BMI) of patients before starting treatment, at baseline, was 21.4 ± 5 and 23 ± 5 after 5 years of ART. Malaria was the Opportunistic Infection (OI) most represented in the cohort with 26.8% of cases, followed by pneumonia and intestinal parasitizes with 16.9% of cases for each at the baseline; and with 28.0%, 16.5% and 15% respectively in the same cohort of patients 5 years under treatment. The data collected reported a sex-specific representation of PLHIV with OI under ARV-CTX after 5 years, with persistence of baseline OI in 5% of cases overall with female predominance. All these data are presented in details in the annexed tables 1, 2, 3, 4.

Table 2: Characteristics of Patients at Baseline (Day 0)

Characteristics	Patients
Clinical stage	
Stage 1	29 (29%)
Stage 2	18 (18%)
Stage 3	30 (30%)
Stage 4	23 (23%)
Body Mass Index (BMI)	
<18.5	25 (25%)
18.5-24.9	45 (45%)
25-30	23 (23%)
>30	7 (7%)
Opportunistic Infections (n=71)	
Malaria	19 (26.8%)
Pneumonia	12 (16.9%)
Intestinal parasites	12 (16.9%)
Sexual transmitted diseases	9 (12.7%)
Tuberculosis	6 (8.5%)
EEP	5 (7.0%)
Cycled skin	5 (7.0%)
Skin candida's	3 (4.2%)

Table 3: Characteristics of Patients after 5 Years of Follow-Up

Characteristics	Patients
Body Mass Index (BMI)	
<18.5	31 (31%)
18.5-24.9	54 (54%)
25-30	12 (12%)
>30	3 (3%)
Opportunistic Infections (n=66)	
Malaria	18 (28.0%)
Pneumonia	11 (16.5%)
Intestinal parasites	10 (15%)
Sexual transmitted diseases	9 (13.5%)

Tuberculosis	5 (7.5%)
EEP	5 (7.5%)
Cycled skin	5 (7.5%)
Skin candida's	3 (4.5%)

Table 4: Persistency of Opportunistic Infections

Opportunistic Infections	Patients (n=5)
Malaria	2 (40%)
Pneumonia	1 (20%)
Intestinal parasites	1 (20%)
Sexual transmitted diseases	1 (20%)

Discussion

The objective of this study was to evaluate the efficacy of the ARV-CTX association in Kinshasa. Based on the inclusion criteria, 110 files were consulted and 100 were selected for the study. This was justified by the fact that there have been poorly maintained records and unidentified ones.

The female population was the most represented with 68%. This corroborates the literature data reported by the national guidelines for management of HIV infection in adolescents and adults [3] as well as in the majority of works published in our community [4, 5]. This can be justified by the fact that screening for HIV infection is systematized in women during prenatal consultations, childbirth and also during prenuptial consultations [2].

The most represented age group was that over 42 years with 64%, which is the age group in which most chronic complications occur. Indeed, most of the complications associated with HIV and ART occur after the age of 50 [6]. This can be explained by the fact that aging is a factor favoring the decrease of the human immune system.

Clinical stage 3 was represented the most with 30% of cases. These results are similar to that reported by Kamangu NE in 2015, where most of the patients were classified at clinical stage 3 of the infection [7]. This could be explained by the fact that an important number of PLHIV in third-world countries come for HIV testing only very late in the evolution of the infection, with clinical signs showing a very advanced stage of the HIV infection [2]. This could become a problem later in the management of the infection.

The average BMI in patients before starting treatment, at baseline, was 21.4 ± 5 and came up to 23 ± 5 after 5 years of treatment. Based on BMI values, patients had a BMI in the range of 18.5 to 24.9, which is the normal value. This corroborates with literature data reported by Bulanda BI in PLHIV initiating traditional treatments or the majority also had an average BMI in the range of 18.5 to 24.9 [5]. The data reported by the national program in its guidebook states that the Zidovudine-Lamivudine-Nevirapine (AZT/3TC/NVP) treatment is active when the PLHIV BMI increases progressively during treatment [8]. This is elucidated by the fact that the off-target therapeutic regimen has a negative effect on the PLHIV BMI by metabolic intolerance to ARV and precarious dietary management. Overweight and obesity may be due to lipid abnormalities related to ART or a metabolic complication [9].

This study shows a higher number of PLHIV (71 patients) who had OI during their first consultation before ARV-CTX regimen. The presence of the OI justifies the use of the combined regimen. It shows that malaria was the most represented OI at baseline with 26.8% case. This was in line with different studies that stated that malaria is more common and more severe in HIV-infected patients in whom it increases HIV replication and immune suppression [10, 11]. In the context of the DRC, a study conducted by Bongenia in 2014, malaria was ranked fifth in the seven OI surveyed with a prevalence estimated at 7.76% in a sample of 50 PLHIV [4]. This study differs from this one, most likely because of the mode of recruitment of the patients, the type of institution and the environment of study. The prevalence of malaria and HIV infection and their degree

of geographical overlap vary considerably in each region. Even in countries with a high prevalence of these two diseases, there may be differences in the local distribution of these two diseases [11].

After 5 years of treatment, of these 71 PLHIV with Opportunistic Infection at inclusion, 66 % experienced an improvement in the non-appearance of OI, and an increase in their BMI. An observational study in Uganda assessed the impact of cotrimoxazole daily prophylaxis on malaria, diarrhea, of hospitalization and death rates [10]. This corroborates the literature data reported by WHO, which states that CTX prophylaxis is a simple, well-tolerated and cost-effective intervention for people living with HIV and should be included in the program. Integral to chronic HIV care and a key component of pre-treatment management with antiretroviral [2].

The data collected showed a sex representation of the 5 PLHIV with OI under CTX for 5 years and having a persistence of the starting OI in 5% of cases overall with a female predominance. This persistence is explained by the fact that during the survey, the majority of patients observed who presented an OI at the beginning of the treatment at an advanced stage of the infection (clinical stage 3 and 4 of the infection). This was consistent with the literature data reported by the WHO that more recent evidence supports the use of cotrimoxazole prophylaxis in people with higher CD4 counts and lower HIV infection [2].

Conclusion

Although 5% of patients had persistence of Opportunistic Infections on the 30% of PLHIV who initiated the treatment at an advanced stage. This proves that CTX prophylaxis is well tolerated and effective; it should be encouraged in any PLHIV initiating treatment and this early.

Conflict of Interest

The authors declare that they have no conflict of interest in publishing these data.

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