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Clinical and epidemiological profile of men who have sex with men with HIV/AIDS

Perfil clínico e epidemiológico de homens que fazem sexo com homens vivendo com HIV/AIDS

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ABSTRACT
To identify the clinical and epidemiological profile of Men who have Sex with Men (MSM) living with HIV/AIDS. Cross-sectional study carried out with 67 MSM living with HIV/AIDS. The collection of clinical and sociodemographic data was performed from clinical records of a health service. The age of the participants varied from 18 to 64 years, most of them used ART regularly, had initial and current CD4 + T lymphocytes <500 cells / mm³, initial viral load <100,000 copies / ml and current <50 copies / ml. A statistical difference was observed between patients who did not use ART regularly and those who used it regularly, as those who used it regularly had fewer opportunistic infections (p = 0.046). Patients who had an initial CD4 + T ≥500 cells / mm3 had fewer comorbidities (p = 0.007) and opportunistic infections (p = 0.003). Also, patients who had an initial viral load <100,000 copies / ml had fewer opportunistic infections (p = 0.021). Comorbidities (anemia, cachexia, diarrhea, smoking and depression), co-infections (syphilis, HPV and hepatitis B) and opportunistic infections (oral candidiasis, persistent dermatitis and persistent cough) were prevalent in MSM with HIV. In addition, it was observed that ART has an important protective effect in relation to protection against opportunistic infections.

Keywords: AIDS. Antiretroviral. Bisexuals. Homosexuals.

RESUMO
Identificar o perfil clínico e epidemiológico de Homens que fazem Sexo com Homens (HSH) que vivem com HIV/Aids. Estudo transversal realizado com 67 HSH que vivem com HIV/Aids. A coleta de dados clínicos e sociodemográficos foi realizada a partir de prontuários clínicos de um serviço de saúde. A idade dos participantes variou de 18 a 64 anos, a maioria fazia uso regular da TARV, apresentou linfócitos T CD4+ inicial e atual <500 células/mm³, carga viral inicial <100.000 cópias/ ml e atual <50 cópias/ml. Foi observada uma diferença estatística entre pacientes que não faziam uso regular da TARV e os que faziam uso regular desta, pois os que faziam uso regular apresentaram menos infecções oportunistas (p=0,046). Pacientes que apresentaram T CD4+ inicial ≥500 células/mm^3 tiveram menos comorbidades (p=0,007) e infecções oportunistas (p=0,003). Também, pacientes que apresentaram carga viral inicial<100.000 cópias/ml tiveram menos infecções oportunistas (p=0,021). As comorbidades (anemia, caquexia, diarreia, tabagismo e depressão), coinfecções (sífilis, HPV e hepatite B) e infecções oportunistas (candidose oral, dermatite persistente e tosse persistente) foram prevalentes em HSH com HIV. Também, foi observado que a TARV tem um efeito protetor importante em relação a proteção contra infecções oportunistas.

Palavras-chave: Antirretroviral. Bissexuais. Homossexuais. SIDA.

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INTRODUCTION

Although Acquired Human Immunodeficiency Syndrome (AIDS) affects several groups of people, regardless of gender, infection risks by Human Immunodeficiency Virus (HIV) attacks approximately 27 times more men that have sex with other men (MSM)[1].

In Brazil, 966,058 AIDS cases have been registered since the start of the AIDS epidemic (1980) up to June 2019, of which 633,462 (65.6%) were males.[2] During the last ten years, AIDS detection rate in men in the 35-39-years-old group increased from 24.8 to 28.3 cases/100,000 inhabitants.[2] The homo/bisexual category was predominant (40.3%), exceeding the number of cases notified as heterosexual exposure for the first time in the last decade[2].

One hypothesis suggests that HIV epidemic is increasing among MSM due to stigma and discrimination related to the disease and to these men´s sexual behavior[3]. Such factors as low care demand and adhesion to treatment and prevention methods coupled to the high probability of transmission through unprotected receptive anal sexual relationship contribute towards high infection rates in the group[4].

HIV virus infects lymphocytes T $CD4_+$, responsible for the body´s defense, with a subsequence depression of the immunological system, causing the person to be more vulnerable to clinical complications, particularly opportunistic infections[5]. Consequently, people with HIV (PVHIV) without adequate Antiretroviral Therapy (ART) develop a progressive immunosuppression syndrome characterized by the emergence of opportunistic infections and high risk of acquiring co-infections[6]. Current investigation identifies the clinical and epidemiological profile of MSM with HIV/Aids and the influence of ART within the patients´ clinical conditions.

METHODOLOGY

Current observational, transversal and descriptive study was undertaken at the specialized Care Service in STD/HIV/Aids (SAE) of Cruz Alta in the northwestern region of the state of Rio Grande do Sul, Brazil. Sample comprised all men (totaling 67 men) with HIV/Aids who claimed to be homosexuals or bisexuals and duly enrolled at the service during data collection between August 2018 and February 2019. Social and demographic data (schooling, ethnicity and profession) and clinical data (age, data on diagnosis of HIV infection, ART, initial lymphocyte T $CD4_+$ count, current lymphocyte T $CD4_+$ count, initial virus load, current virus load, epidemiological conditions of contagion, co-morbidities, co-infections and opportunistic infections) were retrieved from the service´s clinical charts.

Co-morbidities were foregrounded on the Clinical Protocol and Therapeutic Guidelines for the Management of HIV Infection in Adults[8]. Other co-morbidities not listed in the protocol were retrieved from the patients´ clinical charts. Co-infections and opportunistic infections were listed according to Clinical Protocol and Therapeutic Guidelines for the Management of HIV Infection in Adults, Criteria CDC Adapted Rio de Janeiro/Caracas[6].

Data were tabulated and analyzed by SPSS® 23.0 (Chicago, IL Statistical Package for the Social Sciences). Assessment of possible statistical differences between qualitative variables were verified by Pearson´s chi-square test or Fischer´s test, when applicable. All analyses were bilateral at 5% significance level ($p < 0.05$).

Current study was approved by the Committee for Ethics in Research (CAAE 92282518.4.0000.5322; approval n. 2.770.634).

RESULTS

Age of MSM in current study ranged between 18 and 64 years old, average 34.7 years old (±11.7). Most participants were white, employed and had a schooling level equal to or higher than high school (Table 1).

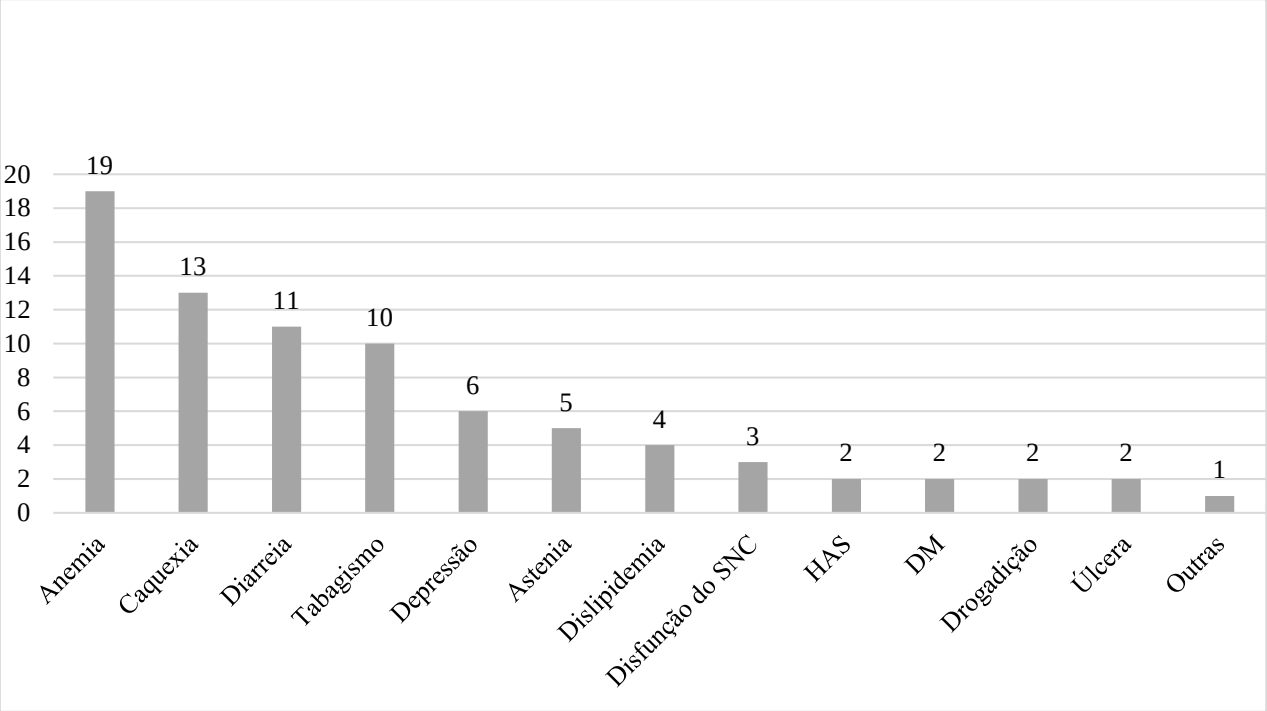
With regard to clinical characteristics, men with a diagnosis of HIV infections within a period of five years or less, regular ART usage, featuring lymphocytes T $CD4_+$ <500 cells/mm^3 on the first and last exams, were predominant. In the case of virus load, men with initial virus load <100.000 copies/ ml and current virus load <50 copies/ml were predominant (Table 1).

Table 1. Clinical and socio-demographic characteristics of men who have sex with men with HIV (n=67)

Variables	n (%)
AGE GROUP (years)	
18 – 24	16(23.9)
25 – 39	30(44.8)
40 – 59	19 (28.3)
≥ 60	2 (3.0)
SCHOOLING LEVEL	
Illiterate	3 (4.5)
≤ Fundamental Education	19 (28.4)
≥ Higher school	44 (65.7)
ETNICITY	
White	49 (73.1)
Non-White	18 (26.9)
PROFESSION	
Employed or self-employed	55 (82.1)
Not employed	12 (17.9)
DIAGNOSIS TIME HIV	
≤ 5 years	45 (67.1)
>5 years	22 (32.9)
ART[1]	
Regular usage	31 (46.3)
Irregular usage	26 (38.8)
Non usage	4 (6.0)
No information	6 (9.0)
LYMPHOCYTES T CD4+ INICIAL[2] (cells/mm³)	
<500	34 (50.7)
≥500	33 (49.3)
LINFÓCITOS T CD4+ ATUAL[3] (cells/mm³)	
<500	34 (50.7)
≥500	33 (49.3)
INITIAL VIRAL LOAD[4] (copies/ml)	
<100.000	52 (77.6)
≥100.000	15 (22.4)
CURRENT VIRAL LOAD[5](copies/ml)	
<50	64 (95.5)
≥ 50	3 (4.5)
EPIDEMIOLOGICAL SITUATION[6]	
Homosexual relationship	39 (58.2)
Bisexual relationship	23 (34.3)
Other types[7]	5 (7.5)
COMORBIDITIES[8]	
Yes	36 (53.7)
No	31 (46.3)
CO-INFECTIONS	
Yes	22 (32.8)
No	45 (67.2)
OPPORTUNISTIC INFECTIONS	
Yes	31 (46.2)
No	36 (53.8)

[1] Usage of antiretroviral therapy – ART at the moment of data collection; [2] Comprises result of the first test on lymphocytes T CD4+ after enlistment of patient; [3] Comprises result of last test. Reference value lymphocytes TCD4+ >500 cells/mm³ (BRASIL. 2018b); [4] Comprises result of first test of viral load after enlistment of patient; [5] Comprises last test. Reference value: viral load <50 copies/ml, following Clinical Protocol and Therapeutic Guidelines for the Management of HIV Infection in Adults, 2018 (BRASIL. 2018b); [6] Comprises HIV contagion types; [7] Includes 1 case of homosexual relationship and injectable illicit drug user; 1 case of homosexual relation, injectable illicit drug user and sex professional; 3 cases of homosexual relationships and sex professionals; [8] Includes diagnosis of pathologies in patient´s chart or, at least, one of the AIDS-defining pathologies, according to Clinical Protocol and Therapeutic Guidelines for the Management of HIV Infection in Adults, 2018 (BRASIL. 2018b).

The probably contagion situation for the greater part of the sample occurred through sex in homosexual relationships and the prevalence of comorbidities, co-infections and opportunistic infections reached respectively 53.7%, 32.8% and 46.2% (Table 1). The most prevalent comorbidities were respectively anemia (28.4%), cachexia (19.4 %), diarrhea (16.4 %), smoking (14.9 %) and depression (8.9%) (Figure 1).



Note: CNS- Central Nervous System; SAH- Systemic Arterial Hypertension; DM-Diabetes Mellitus
Others: Include 1 case of ascaridiasis; 1 case of anxiety; 1 case of scabiosis; 1 case of ethilism; 1 case of o de gout; 1 case of impetigo; 1 case of kidney deficit; 1 case of lipodystrophy; 1 case of billiar lithiasis; 1 case of pyelonephritis; 1 case of sepsis; 1 case of *Tinea capitis;* 1 case of thrombosis.
Figure 1- Comorbidities in men who have sex with men with HIV (n=67)

Syphilis (20.9%), HPV (9.0%) and hepatitis B (4.5%) were the predominant coinfections (Figure 2), whilst oral candidiasis (32.8%), persistent dermatitis (32.8%) and persistent cough (26.9%) were among the predominant opportunistic infections (Figure 2).

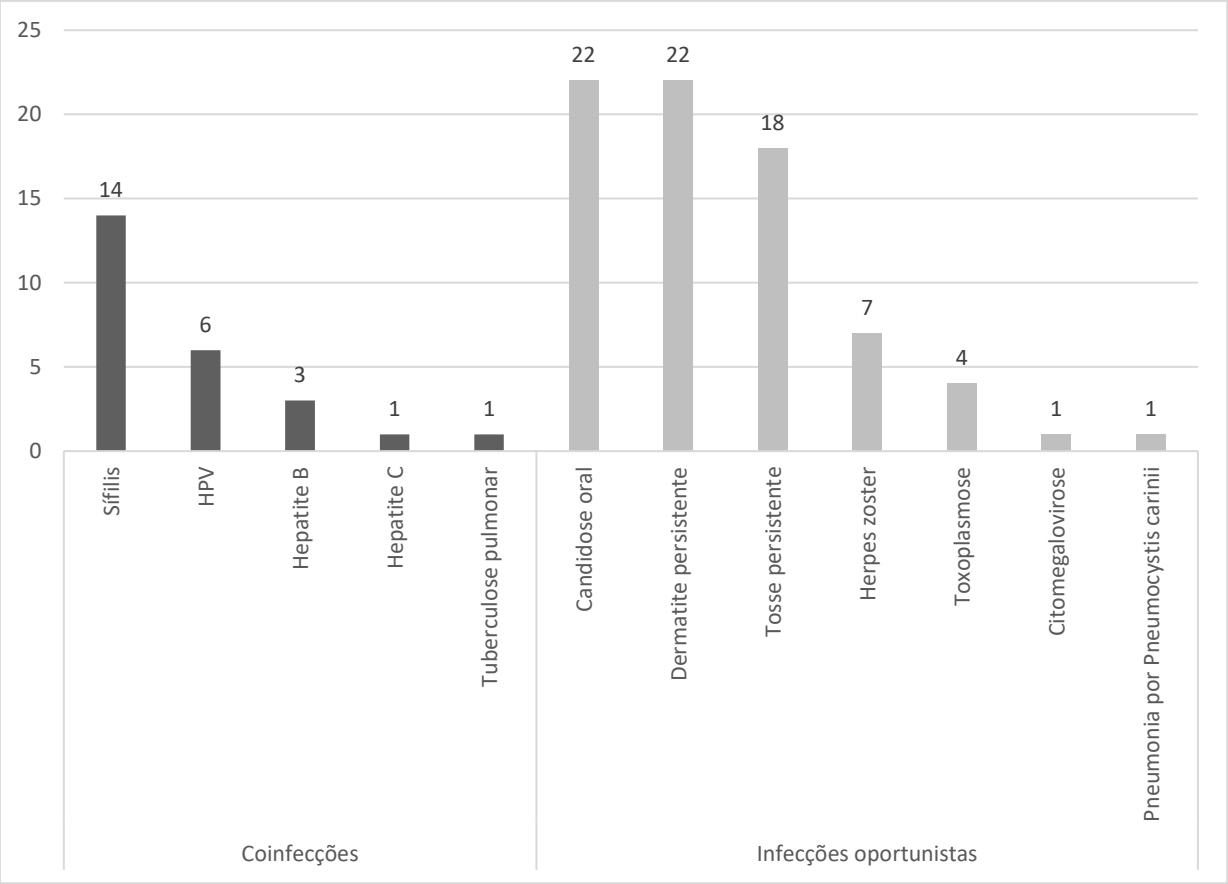


Figure 2. Co-infection and opportunistic infections in men who have sex with men with HIV (n=67)

According to Table 2, there was a statistically significant difference between patients who did not regularly use ART and those who did. In fact, the latter has fewer opportunistic infections (p=0.046). Likewise, men with initial lymphocytes T $CD4_+$ ≥500 cells/mm^3 had lower comorbidity cases (p=0.007) and opportunistic infections (p=0.03) when compared to men who did not present such results for initial lymphocytes T $CD4_+$ rates. Further, patients with initial virus load <100.000 copies/ml had less opportunistic infections when compared to those that did not have such a virus load (p=0.021) (Table 2).

Table 2. Relationship between clinal característics and comorbidities, co-infections and opportunistic infections in men who have sex with men with HIV (n=67)

	Comorbidities			Co-infections			Opportunistic infections		
Variables	**YES**	**NO**	**p-value**	**YES**	**NO**	**p-valor**	**YES**	**NO**	**p-value**
ART									
Regular usage	20 (29.9%)	11 (16.4%)		9 (13.4%)	22 (32.8%)		14 (20.9%)	17 (25.4%)	
Irregular usage	14 (20.9%)	12 (17.9%)	0.07[1]	10 (14.9%)	16 (23.9%)	0.87[2]	16 (23.9%)	10 (14.9%)	**0.04**
No usage	0 (0.0)	4 (6.0%)		1 (1.5%)	3 (4.5%)		0 (0.0)	4 (6%)	
Lymphocytes Initial T CD4$_+$ (cells/mm^3)									
<500	24 (35.8%)	10 (14.9%)	**0.00**	12 (17.9%)	22 (32.8%)	0.79	22 (32.8%)	12 (17.9%)	**0.03**
≥500	12 (17.9%)	21 (31.3%)		10(14.9%)	23 (34.3%)		9 (13.4%)	24 (35.5%)	
Lymphocytes current T CD4$_+$ (cells/mm^3)									
<500	12 (17.9%)	7 (10.4%)	0.41	7 (10.4%)	12 (17.9%)	0.77	10 (14.9%)	9 (13.4%)	0.59
≥500	24 (35.8%)	24 (35.8%)		15 (22.5%)	33 (49.3%)		21 (31.3%)	27 (40.3%)	
Initial viral load (copies/ml)									
<100.000	27 (40.3%)	25 (37.3%)	0.77	16 (23.9%)	36 (56.7%)	0.54	20 (29.9%)	32 (47.8%)	**0.02**
≥100.000	9 (13.4%)	6 (9.0%)		6 (9.0%)	9 (13.4%)		11 (16.4%)	4 (6.0%)	
Current viral load (copies/ml)									
<50	34 (50.7%)	30 (44.8%)	0.99	21 (31.3%)	43 (64.2%)	0.99	28 (41.8%)	36 (53.7%)	0.09
≥ 50	2 (3.0%)	1 (1.5%)		1 (1.5%)	2 (3.0%)		3 (4.5%)	0 (0.0)	

*All analysis for p-value in the table were undertaken by Fischer´s exact test.

DISCUSSION

Knowledge on epidemiology and the clinical characteristics of HIV infection is an important factor for patients´ care and control of new infection cases. The characteristics of each region help establish more efficacious care and prevention,[7] which is even more relevant when related to MSM since discrimination of people who have sexual relations with people of the same sex impairs access of services for HIV prevention and increases risk behavior[8]. It even hinders MSM not to undertake testing and prevention and lower treatment adhesion rates[8].

Current analysis showed that the most affected age group among MSM was the 25-39-year-old group, with schooling equal or higher than high school, employed and white. The predominant clinical characteristics occurred in people infected by HIV less than five years, regularly using ART, with in a less than lymphocytes T CD4$_+$ <500 cells/mm³ and viral load < 50 copies/mL.

Results are close to those by Brown et al. (2019) whose study detected that most MSM averaged 40.6 years old, high school or tertiary education, employed, regularly using ART and had a viral load of < 50 copies/ml[9].

Young adults were within the age bracket with the highest prevalence rate by HIV infection, occurring during adolescence, due to young people´s

socialization process, including the exercise of sexuality and possibilities of exposure, such as change of partner; low usage rates of condoms during sex; frequent intake of alcoholic beverages and other psychoactive substances. The above contributes towards an increase in HIV contamination indexes within this age group[10].

Participants´ ethnicity in current study slightly varies with regard to data retrieved in Brazil. In fact, in 2019, Brazil featured 40.9% of infection cases among white people and 49.7% among negroes (blacks and brown, with 10.6% and 41.5%, respectively). Further, 42.6% of cases occurred in white men and 48.1% among negroes (blacks, 9.6% and brown, 38.4%) [2].

Since most patients regularly used ART, their social and demographic profile may have contributed for a better understanding of patients with regard to ART and to tests. Several evidences show that low schooling contributes for a lower understanding of the disease, even though the patient receives correct and reliable information[11].

Anemia was the most prevalent comorbidity in the population under analysis, occurring in 19 (28.4%) patients (Figure 1). Anemia is an important clinical issue in PVHIV, since its seriousness increases as lymphocytes T $CD4_+$ decrease[12]. Further, anemia alone also increases HIV progression regardless of lymphocyte T $CD4_+$ count and viral load.[12] Anemia in PVHIV may also occur through antiretroviral-caused hematological toxicity[6]. The prevalence of the comorbidity is similar to that (34.6%) reported by Gebremedhin et al. (2019)[13].

Cachexia and diarrhea in 13 (19.4%) and 11 (16.4%) of patients analyzed had other prevalent comorbidities. A rather lower rate was identified by Da Silva, Lemos and Guimarães (2018), who reported a prevalence of 27% for cachexia and 40.5% for diarrhea in adults with HIV[14].

Similar to other acute viral infections, infection by HIV is followed by a series of clinical manifestations called Acute Retroviral Syndrome (ARS),[6] whose main clinical factors comprise fever, headaches, asthenia and cachexia[6]. Digestion symptoms such as nauseas, vomits and diarrhea may also occur[6].

Smoking and depression were detected in the group, with 14.9% and 8.9% prevalence, respectively. Irwin et al. (2018) showed that depression and smoking were associated with a lower ART adhesion rate and high viral load[15]. Due to social stigma and discrimination related to HIV, PVHIV tend to develop depression which may negatively impact the patients´ life quality[16].

PVHIV with depression and illicit drug use have a slight trend for ART adhesion when compared to PVHIV without such conditions. Consequently, without virus suppression, the disease will make great progress, resulting in deterioration characterized by a worsening of the patient´s clinical stage[17]. Moreover, depression contributes towards exposure to risk factors, such as not using condoms,

causing this population to be more vulnerable to other infections[18].

In current study, syphilis in 14 (20.9%) males is the most prevalent co-infection analyzed in MSM with HIV (Figure 2). The same coinfection is also reported as prevalent in a study by Chen et al. (2019), in 407 (11.3%) of MSM with HIV[19]. After diagnosed with primary and secondary syphilis, patients with HIV become clinically worse since the disease increases viral load and transitorily decreases T CD4+ cell count[20].

In current study, coinfection by HPV occurred in 6 (9.0%) patients. Somia et al. (2018) reported that infection by HPV was more prevalent in MSM infected by HIV[21]. The authors also reported a higher prevalence rate of high risk HPV in this population[21]. Immunosuppression is associated with persistent infection by cancer HPV which may enhance the development of squamous intraepithelial lesions and anal neoplasia[22]. Consequently, anal cancer risks are high in PVHIV, especially among MSM[22].

The prevalence of hepatitis in PVHIV was reported in 15 (30%) of patients in a study by Shata et al. (2019)[23]. Current analysis revealed that prevalence of hepatitis B reached 4.5% (n=3). Patients co-infected by HBV / HIV experience a greater progression speed in immunological decline and clinical complications of infections by HIV with an increased risk in hepatotoxicity[24]. Further, infection by HIV increases hepatitis, cirrhosis and hepatic disease risks in the terminal stage related to chronic HBV[23].

In current study, oral candidiasis occurred in 22 (32.8%) of patients, persistent dermatitis occurred in 22 (32.8%) and persistent cough in 18 (26.9%). The opportunistic infections mentioned by Ashraf et al. (2019), who reported dermatitis in 51 (30%) and oral candidiasis in 16 (28%) patients, are similar to the opportunistic infections detected in current study[25].

Although *Candida* spp is a commensal fungus which may develop pathogenic characteristics when it is associated with immunosuppression. Consequently, oral candidiasis is common in HIV patients[26].

Furthermore, in HIV-caused immune-depressed patients, due to decrease in the levels of lymphocytes T CD4+, the organism becomes more vulnerable to opportunistic infectious agents, favoring the development of dermatitis and lung disease[6,27]. A recent study has revealed that HIV´s inflammation mechanisms may also contribute towards lung disease which includes the replication of HIV in cells T CD4+ and alveolar macrophages, causing their deregulation and the development of pneumonia[28].

Current study also showed that ART may decrease opportunistic infections since patients who make regular use of it had fewer infections (Table 2). The hypothesis is related to a recent study which demonstrated that early administration of ART, or rather, when lymphocytes T CD4+

are less than 350 cells/mm³, reduced the occurrence of opportunistic infection when compared to a late administration (levels of lymphocytes T CD4+ less than 200 cells/mm³)[29]. The use of ART for more than 180 days contributes towards the adjustment of lymphocytes T CD4+ and the decrease of viral load, which is a help in the prevention of opportunistic infections[30].

It has also been reported that men with initial lymphocytes T CD4+ ≥500 cells/mm³ had less comorbidities (p=0.007) and opportunistic infections (p=0.03) when compared to men with different results in initial lymphocytes TCD4+ (Table 2). The above is due to the fact that lymphocytes T CD4+ act directly on the organism´s immunity since they help in perceiving the micro-organism´s antigens and help phagocytes destroy infected micro-organisms or cells[31]. Consequently, the greater the levels of lymphocytes T CD4+, the greater will be their performance in protecting against comorbidities and opportunistic infections[6,30].

Patients with initial viral load <100.000 copies/ml had less opportunistic infections when compared to those who did not have the same initial viral load (p=0.021) (Table 2). Since HIV causes a depression in the immunological system, PVHIV becomes more vulnerable to the development of opportunistic infections[6]. Further, high viral load shows a scenario of late HIV diagnosis, which, in its turn, favors still more infections[6].

CONCLUSION

The authors could detect that comorbidities (anemia, cachexia, diarrhea, smoking and depression), co-infections (syphilis, HPV and hepatitis B) and opportunistic infections (oral candidiasis, persistent dermatitis and persistent cough) were prevalent in MSM with HIV. Consequently, they require better detailing when planning patients´ follow-up guidelines and care. The association of clinical variables with the occurrence of comorbidities, co-infection and opportunistic infections has been relevant to identify in which clinical conditions they occur and observe the importance of ART protection with regard to opportunistic infections.

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