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Short Communication

Clinical and epidemiology evaluation of Aids-infected patients hospitalized between 2011 and 2016 in the Santos region of Brazil

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Abstract

Introduction: We assessed the clinical-epidemiological profile of acquired immune deficiency syndrome (AIDS) patients in the Santos region (São Paulo state) with the highest AIDS prevalence in Brazil. **Methods**: Information was extracted from records of 409 AIDS-infected patients hospitalized between 2011 and 2016. **Results:** Human immunodeficiency virus (HIV) was diagnosed in 24.7% of patients during admission, and 39.6% of already diagnosed patients received highly active antiretroviral therapy (HAART) irregularly. The mortality rate was 19.1%, and the main secondary manifestations were neurotoxoplasmosis and tuberculosis. **Conclusions:** AIDS patients in the Santos region had high rates of late diagnosis and low treatment adherence.

Keywords: Acquired immune deficiency syndrome. Epidemiology. Human immunodeficiency virus. Santos region.

The United Nations Programme on human immunodeficiency virus (HIV) and acquired immune deficiency syndrome (AIDS, UNAIDS) estimated that according to the latest available data, 36.9 million people (range: 31.1-43.9 million) globally were living with HIV in 2017[1]. The Health Ministry in Brazil reported 882.810 AIDS cases since the beginning of data colletion in the 1980s until June 2017, with na anual average of about 40.000 cases showing stabilization since 2011[2]. According to the Health Ministry´s Department for Sexually Communicable Diseases, Aids, and Viral Hepatitis, 577 cases of AIDS were reported in the Santos Region between 201 and 2016, rending this area the one with the highest prevalence of AIDS in Brazil[3]**.** Notifications made to the National Medical Assistance System (SINAN) confirmed by the Laboratory Exams Control System (SISCEL) and by the Medication Logistic Control (SICLOM) show 557 new cases of AIDS and 191 AIDS-associated deaths in the Santos region between 2011 and 2014, yielding an average lethality rate of 37%[4]. The Santos region exhibited the highest death rate in São Paulo (10.0/100,000 inhabitants) in 2014 and the second highest in 2015 (9.7/100,000 inhabitants)[2].

The cities in the Santos region have a combined population of 1.8 million inhabitants and over a million visitors per year as estimated by the Brazilian Institute of Geography and Statistics (IBGE). It is the area with the highest prevalence of AIDS in the state of São Paulo. Santa Casa de Misericordia de Santos (SCMS) is the reference hospital for AIDS-related

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hospitalization in the region. We did not find any reports in the medical literature on AIDS patients hospitalized in the Santos region and we therefore aim to contribute to the characterization of the disease with our study and allow for the development of intervention strategies, improvement of preventive assistance, and appropriate attribution of resources.

We included medical records of 409 patients hospitalized in SCMS between 2011 and 2016 in this cross-sectional, observational, and retrospective study. Data was collected from the Statistic and Medical Archives Service (SAME) that is responsible for the organization, administration, storage, and safeguarding of all medical records in Brazil. Patient data were collected in a standard form (see supplemental file) and included several clinical and epidemiological variables such as gender, date of birth, ethnicity, education level, origin (**Table 1**), occupation, exposure category, diagnosis year, clinical evolution, and outcome. All SAME records from 2011 to 2016 were sequentially examined for meeting the inclusion criteria. Records of patients with HIV/AIDS diagnosis not confirmed by laboratory exams, duplicate records, or unreliable records were excluded from the study. Patients with the same name were identified by their mother's name and date of birth. All patients were de-identified by assigning numbers to confirm with the ethics standard. The clinical and epidemiological variables collected were transferred to EXCEL spreadsheets and organized for statistical analysis. This study was approved by the Metropolitan University of Santos (UNIMES) Ethics and Research Committee under the protocol number 2.250.945.

A total of 409 medical records of AIDS patients hospitalized in SCMS between 2011 and 2016 were analyzed. The male/female ratio was 1.5 (60.9% male, 249/409). The predominant self-proclaimed ethnic background was "white" (60.1%, 246/409), followed by "brown" (34%, 139/409) and "black" (5.9%, 24/409).

Tuberculosis was the most prevalent secondary manifestation (17.1%), followed by neurotoxoplasmosis (15.9%) and bacterial pneumonia (13.2%). The prevalence of AIDS was highest in the age groups 31-40 and 41-50 (257/409, 61.2%) and lowest in the age group 10-20 (11/409 patients, 2.7%; (**Table 2**). Available information on infection routes was scarce and only vertical infection could be verified in 2% of cases (8/409) and confirmed by the information that the patient's mother was also infected with HIV/AIDS. Illegal drug use was listed in 210 records (4.6%, 19/409). The average hospitalization time was 51 days, with most patients (68.7%, 281/409) staying for at least 20 days and only a few patients (2.2%, 9/409) for more than 101 days. Oral candidiasis-compatible lesions were the main reason (7.8%, 32/409) for patients to visit the SCMS emergency room, followed by constant diarrhea (6.1%, 25/409), intense weakness with adynamia (2.4%, 10/409), sudden onset of adenomegaly (2%, 8/409), and sudden dyspeptic syndrome (0.2%, 1/409). The secondary diseases with the highest prevalence were pulmonary (36%) and neurological (19.8%) diseases (**Table 3**).

One hundred and one patients (24.7%) were diagnosed with HIV upon hospital admission and 308 patients (75.3%) had been diagnosed previously. The average number of years since the initial diagnosis was 11. The death rate during the hospitalization period was 19.1% (78/406), of which 29.5% were women (23/78) and 70.5% men (55/78). Fourteen of these patients had been diagnosed during hospital admission. The average age of the deceased patients was 43 years. Antiretroviral medication was taken by 39.6% of patients (162/409) irregularly

TABLE 1: Origin of patients with AIDS hospitalized in Santa Casa de Misericórdia de Santos between 2011 and 2016.

City	N	%
Santos	239	58.4
São Vicente	90	22.0
Praia Grande	40	9.8
Guarujá	19	4.7
Cubatão	16	3.9
Litoral Sul	5	1.2

TABLE 2: Prevalence of AIDS patients hospitalized at Santa Casa de Misericórdia de Santos hospital between 2011 and 2016 presented by age group.

Age (years)	n	%
10-20	11	2.7
21-30	48	12.3
31-40	123	26.7
41-50	134	34.5
51-60	69	17.7
>60	24	6.1
TOTAL	409	100.0

TABLE 3: Prevalence of most commonly diagnosed secondary diseases in AIDS patients hospitalized in the Santa Casa de Misericórdia de Santos hospital between 2011 and 2016.

Etiology	n	%
Pulmonary	150	36.7
Tuberculosis	70	17.1
Bacterial pneumonia	54	13.2
Pneumocystis	23	5.6
Non-diagnosed pulmonary impairment	3	0.7
Neurological	81	19.8
Neurotoxoplasmosis	65	15.9
Neurotuberculosis	6	1.5
Neurocryptococcosis	6	1.5
Neurosyphilis	4	1.0
Hepatic	23	5.6
Hepatitis C	12	2.9
Hepatic cirrhosis	6	1.5
Hepatitis B	4	1.0
Hepatocarcinoma	1	0.2
Other		
Kaposi sarcoma	8	1.9
Herpesvirosis	28	6.8
Herpes simplex	13	3.2
Herpes zoster	10	2.4
Cytomegalovirus	4	0.9

at the time of admission and 17.3% (71/409) did not take these medications or there was no medical history because they came from other canters.

The current AIDS situation in Brazil is a result of the profound inequality of the society, revealing a multiple dimension epidemic with a significantly changing profile in recente years. The Santos region has always been among the areas with the highest prevalence of diseases like HIV and AIDS and of AIDS-associated deaths in the state of São Paulo but always remained within the national average. Certain aspects of this region deserve consideration in the present data analysis. Santos harbor represents the biggest port in Latin America, extending from Santos, Guarujá, and São Vicente to Cubatão, and this area is historically associated with a high level of prostitution due to the high number of sailors arriving after trips at sea. This environment has also attracted extensive illegal drug trade. Furthermore, the numerous communities with low socioeconomic standards in the outskirts of the biggest cities in the region (Santos, Guarujá, São Vicente, Cubatão) render the Santos region as the area with the highest prevalence of tuberculosis and syphilis in the state of São Paulo[5-6]. In addition, an estimated 1 million visitors from all of São Paulo state and the rest of the country come to this region during high season and increase the risk of contracting sexually transmitted diseases. It should be noted that AIDS patients from Guarujá were underrepresented in this study because most of these patients are hospitalized in local units.

Accurate analysis of the probable means of infection was hindered by the lack of respective information in the medical records. We could establish with certainty that only 8 patients contracted the disease vertically, which agrees with reports that this route of infection is practically extinct in the region[7]. 37 records contained information on sexual relations between men and hence we could not assess this aspect in detail. It should be noted that curiously there are no male sex professionals in the region according to the Santos Infectious Diseases Municipal Secretary coordinator (personal communication). The male gender prevailed in HIV infections in our study in agreement with the national average.

AIDS-related hospitalizations have been increasing in several communities of the area. We observed in our study that 40% of the patients did either not take antiretroviral medications correctly or did not take such medication at all, creating an important obstacle for the treatment and outcome of HIV patients. Nearly half of the HIV patients visiting SCMS are from municipalities of the Santos region, an area with a low human development index and limited primary health care explaining the high number of patients with late diagnosis. These data agree with those of previous studies conducted in less developed parts of Brazil[7] Therefore, strategies to increase the number of diagnoses, particularly those issued early, need to be urgently developed. Late HIV diagnosis persists particularly in vulnerable populations as indicated by a meta-regression analysis of 44 different studies assessing temporal trends in developed countries over the last 20 years[1]. Diagnosing HIV infection late has a profound impact on this epidemic as it is associated with an increasing number of transmitters and higher death rates[8].

The high percentage of patients not following the highly active antiretroviral therapy (HAART) in the studied population probably reflects individual cognitive factors and cultural factors of the patients' communities. Adherence to this therapy may delay disease progression and minimize the risk of drug resistance and is therefore important for a reduction of the infection rate. Nevertheless, HIV-infected teenagers and young adults have to endure a lifetime of HAART treatment and patients struggling to maintain adherence to the treatment often battle multiple obstacles including state of mind, cognitive and/or cultural deficits, efficiency of antiretroviral drugs, and outcome expectations. A study by Horne et al.[9] found that 25% of patients did not adhere to the treatment; validated questionnaires revealed that the low adherence resulted from worries about the drug's side effects and the need to undergo treatment and the respective ways of dealing with such worries. The level of adhesion was not related to CD4 levels in this study. The authors suggested that continuous counselling by medical professionals and family members could improve adherence to the treatment. The conditions that led HIV-infected patients to seek medical assistance were not severe, possibly a result of previous advice received in a clinic.

The most prominent ethnic background in this study was Caucasian (60.2%), which likely reflects the predominance of Caucasian individuals in the South-eastern region of Brazil. The prevalence of pulmonary and neurological infections agrees with that reported by the Brazilian Health Ministry[2,3,4].

Co-infection with hepatitis virus B or C is predominant in the younger age group that is prone to illegal drug use and is one of the main causes of death in this population due to the fast progression of liver disease[10]. In our study, the frequency of hepatitis co-infection was low in agreement with recent reports from the Brazilian Health Ministry[11].

This study provides data on the clinical and epidemiological reality of AIDS patients in the Santos region and hopefully contributes to the development of regional clinical management and rehabilitation strategies by directing public policy toward prevention and health promotion.

It should be noted that this retrospective search through the medical records of SCMS revealed several errors in the records that unfortunately occur in most Brazilian hospitals, hindering exact collection of data and accurate notification of the sanitary and epidemiological departments. Therefore, accurate data collection and documentation in medical forms or digital systems should be emphasized in the medical curriculum. The bulletins of the Brazilian Health Ministry frequently report that high proportions of data are being ignored in the medical documentation, supporting the need for a teaching reinforcement in the medical schools in Brazil.

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Conflict of interest: The authors have no conflicts of interest to declare.

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