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ORIGINAL

Characterization of antiretroviral treatment in patients with Human Immunodeficiency Virus

Caracterización del tratamiento antirretroviral en pacientes con Virus de la Inmunodeficiencia Humana

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ABSTRACT

Introduction: human immunodeficiency virus infection, which causes acquired immunodeficiency syndrome (AIDS), continues to be a global health problem. Highly active antiretroviral therapy has been the most efficient public health intervention strategy for improving survival and reducing morbidity and mortality in patients with human immunodeficiency virus.
Objective: to characterize the antiretroviral treatment prescribed for patients diagnosed with Human Immunodeficiency Virus in the municipality of Manzanillo.
Method: a descriptive, observational, cross-sectional study was conducted between July and November 2025. A simple random sampling method yielded a sample of 158 patients.
Results: 75,3 % of the patients were male (n=119); homosexual sexual orientation was the most frequent, and all these individuals were male. The most representative treatment regimen was Tenofovir/Lamivudine/Dolutegravir; 67,09 % of patients had an intermediate viral load.
Conclusions: male sex, homosexual orientation, and intermediate-range laboratory results predominated.

Keywords: Viral Load; Sexually Transmitted Infection; CD4+T Lymphocytes; Antiretroviral Therapy; Human Immunodeficiency Virus.

RESUMEN

Introducción: la infección por el virus de la inmunodeficiencia humana, causante del síndrome de inmunodeficiencia adquirida, continúa siendo un problema de salud mundial. La terapia antirretroviral de gran actividad ha sido la estrategia de intervención de salud pública más eficiente en la mejora de la sobrevida y reducción de morbimortalidad en los pacientes con virus de la inmunodeficiencia humana.
Objetivo: caracterizar el tratamiento antirretroviral indicado en pacientes diagnosticados con el Virus de la Inmunodeficiencia Humana en el municipio Manzanillo.
Método: se realizó un estudio descriptivo, observacional, de corte transversal, entre los meses de julio a noviembre del año 2025. A través de un muestreo probabilístico aleatorio simple la muestra del estudio quedo conformada por 158 pacientes.
Resultados: 75,3 % de los pacientes eran del sexo masculino (n= 119); la orientación sexo-erótica homosexual fue la más frecuente, los cuales en su totalidad pertenecen al sexo masculino; el esquema de tratamiento más representativo es el esquema Tenofovir/Lamivudina/Dolutegravir; el 67,09 % de los pacientes tenían una carga viral de rango intermedio.
Conclusiones: predominó el sexo masculino, la orientación sexual homosexual y los resultados de laboratorio con rango intermedio.

Palabras clave: Carga viral; Infección de transmisión sexual; Linfocitos TCD4+; Tratamiento Antirretroviral; Virus de Inmunodeficiencia Humana.

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INTRODUCCIÓN

Infection with human immunodeficiency virus (HIV), which causes acquired immunodeficiency syndrome (AIDS), remains a global health problem. Data from the United Nations reveal that approximately 38 million people worldwide are living with this disease, of whom 36,2 million are adults, and nearly 700,000 die each year from AIDS-related illnesses.[1]

While globally, new HIV cases decreased by 39 % between 2010 and 2023, in Latin America, they increased by 9 %, reaching 2,3 million people living with HIV during the same period. Unfortunately, Latin America also stands out for a high percentage of diagnoses in advanced stages of the disease.[2]

The populations identified as having the highest probability of acquiring STIs and HIV are sex workers and their clients; men who have sex with men; transgender people; individuals who already have another STI; and other groups considered particularly vulnerable, such as youth and adolescents, nomadic populations, homeless children and youth, prisoners, drug users, and people affected by conflict.[3]

Antiretroviral therapy (ART) has been the most effective strategy for improving survival and reducing morbidity and mortality in patients with HIV. However, to achieve a complete clinical and immunological response that reduces the development of drug resistance, strict adherence to antiretroviral therapy (ART) is necessary. Several authors argue that to ensure the efficacy of ART, adherence levels must exceed 90 %.[4]

Among the combinations currently available are Rilpivirine/Emtricitabine/Tenofovir alafenamide (Odefsey®), Dolutegravir/Rilpivirine (Juluca®), Abacavir/Dolutegravir/Lamivudine (Triumeq®), Emtricitabine/tenofovir disoproxil fumarate + Raltegravir (Truvada®/Isentress®), and Emtricitabine/tenofovir disoproxil fumarate + Darunavir + Ritonavir (Truvada®/Prezista®/Norvir®); these combinations work by blocking different enzymes, thereby preventing HIV replication.[5]

In Cuba, the first patient diagnosed with HIV was in 1985. Owing to the strength of the public health system, the achievements of the Cuban medical school, and the quality of the human capital it produces, the number of new cases of infection has steadily declined. It is estimated that more than 31,000 people are living with HIV in Cuba and that approximately 5,000 are carriers and unaware of their serostatus.[6]

Cuba's approach was comprehensive; as soon as the first reports of HIV emerged in the United States, the health system began to take action; however, it was not without obstacles, such as cultural taboos and limited resources.[7]

Although Cuba is among the countries least affected by HIV, the Latin American context—in which new infections are increasing slowly but steadily—in combination with the lack of resources for infection prevention faced at the national level by the public health system make this reality a cause for concern.

Despite the benefits of the therapy and the extensive national and international documentation, there is no characterization of ART at the local level in Manzanillo, Granma; therefore, this study was conducted with the objective of characterizing the antiretroviral treatment prescribed for patients with human immunodeficiency virus in the municipality of Manzanillo.

METHOD

An observational, descriptive, cross-sectional study was conducted between July and November 2025, involving a population of 165 patients diagnosed with HIV who are receiving antiretroviral treatment and who reside in the municipality of Manzanillo. Through simple random probability sampling, the study sample was ultimately composed of 158 patients.

Inclusion criteria

- Patients aged 18 years or older
- Patients with clinical and laboratory data were followed up for at least 6 months from the start of treatment.

Exclusion criteria

- Pregnant patients.
- Incarcerated patients.
- Patients who were not receiving treatment.
- Patients who changed their address to a different municipality, province, or country during the study.

Techniques and procedures:

Empirical methods, including interviews, surveys, observation, and document analysis, were used. The medical records of patients at the Celia Sánchez Manduley Clinical-Surgical Hospital, stored in the database of the STI/HIV-AIDS Program at the Center for Hygiene, Epidemiology, and Microbiology in the municipality of Manzanillo, were reviewed. The study results were collected manually and processed using Microsoft Office 2019 Word and Excel.

The variables studied were as follows:

Age group: Patients were grouped into the following age groups: 18–20 years; 21–35 years; 36–50 years; and 50+ years.

Gender: Participants were grouped into two categories: male and female.

Sexual orientation: Participants were grouped into the following categories: heterosexual; bisexual; and homosexual.

Treatment regimen: The current antiretroviral treatment regimens in Manzanillo are: Tenofovir/Lamivudine/Dolutegravir (TLD); Atazanavir/Ritonavir + Truvada; Tenofovir/Alafamide + Dolutegravir; and Tenofovir/Alafamide + Lamivudine.

Viral load: Organized into the following ranges: 0 (undetectable); 1–100; and >100.

CD4 T-cell count: This was grouped according to the following ranges: <199; 200–500; and >500 cells/mm³

Ethical parameters

Cuban ethical standards for health sciences research were followed, and approval was sought from the Scientific Council of the Celia Sánchez Manduley Clinical-Surgical Hospital. The data obtained was handled in accordance with the ethical standards established in the Declaration of Helsinki; therefore, the first and last names, as well as the medical record numbers of each patient in the study sample, will not be disclosed under any circumstances.

RESULTS

No patients received treatment in the 18- to 20-year-old age group. Among the patients who received treatment, 119 were male, outnumbering the 39 female patients, and the age group with the most patients across both sexes was 36 to 50 years old, representing 67,72 % of the total patients (table 1).

Table 1. Distribution of total patients

Age groups	Male		Female		Total	
	No.	%	No.	%	No.	%
21–35 years	16	10,12	11	6,96	27	17,09
36–50 years	87	55,06	20	12,66	107	67,72
50+ years	16	10,12	8	5,06	24	15,19

The sexual orientation most reported by patients was homosexual, accounting for 48,10 % of the total patient population, all of whom were male (table 2).

Table 2. Distribution of patients by sexual orientation

Gender	Sexual orientation					
	Heterosexual		Bisexual		Homosexual	
	No.	%	No.	%	No.	%
Male	15	9,49	28	17,72	76	48,10
Women	39	24,68	-	-	-	-
Total	54	34,18	28	17,72	76	48,10

The most common treatment regimen was tenofovir/lamivudine/dolutegravir (TLD), which was used in 154 patients (table 3).

Table 3. Distribution of the indicated treatment regimens

Treatment regimen	Patients	
	No.	%
Tenofovir/Lamivudine/Dolutegravir	154	97,47
Atazanavir/Ritonavir + Truvada	1	0,63
Tenofovir/Alafamide + Dolutegravir	2	1,27
Tenofovir/Alafamide + Lamivudine	1	0,63

Most patients (67,09 % of the total) had an intermediate viral load, which in turn corresponded to an intermediate range of CD4 T-cell counts (table 4).

Table 4. Laboratory Results

Viral load (copies)	Patients		CD4 T-cell count	Patients	
	No.	%	(cells/mm^3)	No.	%
0	39	24,68	>500	39	24,68
1–100	106	67,09	200–500	106	67,09
>100	13	8,23	<199	13	8,23

DISCUSSION

The results of this study provide insight into the current status of antiretroviral treatment in the municipality of Manzanillo and demonstrate that the local program maintains adequate adherence to WHO recommendations.

The marked presence of male patients with a homosexual sexual orientation is consistent with what has been widely reported in the international literature. A study conducted by González et al.[8] in Uruguay revealed that 70 % of patients were men, and regarding the men's sexual orientation, 47,5 % were homosexual, which is consistent with the findings of the present study and with the stigma that HIV infection is characteristic of homosexual men. This prevalence may be largely due to anal sex being the sole form of penetration among homosexual men, which, when unprotected, is even riskier and constitutes a source of transmission in this population.[9]

Abreu et al.[10] at the Viral Load Laboratory of the Provincial Center for Hygiene, Epidemiology, and Microbiology in Villa Clara, conducted a study in which treatment with TLD was predominant in 66,8 % of patients, which is consistent with the findings of this article. On the other hand, by characterizing patients diagnosed with HIV/AIDS, Castellano et al.[11] reported that the greatest percentage of patients used the Dolutegravir + Trubada regimen (56,5 %), demonstrating therapeutic diversity in antiretroviral treatment.

The prevalence of patients with intermediate viral load constitutes one of the most relevant findings for the authors of this study, as it differs from the clinical trial by González et al.,[12] in which a trend toward undetectable levels was demonstrated. This could be due to factors such as irregular adherence, sporadic treatment interruptions, relatively recent initiation, or sometimes underestimated psychosocial factors such as family instability and social discrimination.

Abreu et al.[10] reported an intermediate viral load with a tendency toward values close to 0, which was suppressed in 91,1 % of patients on TLD treatment, as well as a lymphocyte count between 400 and 500 cells/mm³. Similarly, Pinzón et al. [13], in their study conducted in the Department of Meta in Colombia, reported that the median CD4 T-cell count was 61,5 cells/mm³, and only 3,7 % of the patients had an undetectable viral load.

In contrast to the present study, González et al.[8] reported a high viral load in the majority of patients still receiving treatment (>50,000 copies/mL). The infection gradually reduces the number of CD4+ T lymphocytes in tissues and blood, leading to a severe state of cellular immunosuppression and, in turn, the onset of opportunistic infections, with pneumonia being the most common.[14,15]

In a case–control study conducted by Vargas et al.,[16] a significant association was found between the variable of adherence to antiretroviral treatment and the variables of depression, alternative antiretroviral therapy regimens, side effects, and changes in adherence during the state of emergency, independent of other confounding variables. This finding shows that the effectiveness of antiretroviral therapy depends not only on the drug but also on the patient's consistency and social context.

From a theoretical and practical standpoint, this study provides an updated description of antiretroviral therapy administered to patients diagnosed with human immunodeficiency virus in Manzanillo. The descriptive and cross-sectional design constitutes the main limitation of the study, as it does not allow for the evaluation of temporal evolution and causal relationships. Based on these findings, the authors of this study recommend that studies using a similar methodology be conducted in the remaining municipalities of Granma Province, with the potential to evaluate other aspects that may be of interest.

CONCLUSIONS

Most participants were male and in the 36–50 age group. The predominant sexual orientation was homosexual. The most used treatment regimen was tenofovir/lamivudine/dolutegravir. Laboratory results revealed a predominance of viral loads between 1 and 100 and CD4 T-cell counts between 200 and 500 cells/mm³.

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The authors declare that they have no conflicts of interest.

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