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THE RELATIONSHIP BETWEEN TOTAL LYMPHOCYTE COUNT AND VIRAL LOAD EXAMINATION RESULTS IN HIV ON ARV PATIENTS AT UPTD PUSKESMAS PUTRI AYU JAMBI CITY

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ABSTRACT

Background: Human Immunodeficiency Virus (HIV) infection causes destruction of the body's immune system in humans, causing AIDS (Acquired Immunodeficiency Syndrome). The total number of lymphocytes is one of the parameters used as an initial screening to assess the cellular immune response in people with HIV. One of the causes of the decrease in the total number of lymphocytes is the presence of the effect of taking antiretrovirals (ARVs)
Method: The research design is quantitative research with a cross sectional approach. The data in this study used 39 samples of HIV patients who received ARV therapy for more than 6 months in the form of the total number of lymphocytes and viral load at the Putri Ayu Health Center. Patients with HIV were selected according to inclusion and exclusion criteria and then the data were analyzed univariately and bivariately with chi-square tests.
Result: Most respondents had a normal total lymphocyte count of 26 people (66.7%) and most respondents had an undetectable viral load of 26 people (66.7%). Based on the Statistical Test Results, a p-value of 0.000 (p, <0.005) was obtained. These results show that there is a significant relationship between the total lymphocyte count and the results of viral load examination.
Conclusion: there is a relationship between the total number of lymphocytes and viral load in HIV patients who received ARV therapy at Putri Ayu Health Center.

Keywords: HIV, Total Number of Lymphocytes, Viral Load, ARV

INTRODUCTION

Human Immunodefiency Virus (HIV) is a virus that attacks the human immune system. Based on data from the Indonesian Ministry of Health, there is a rapid increase in new HIV cases (Noviana, 2016). This disease is transmitted through the body fluids of sufferers that occur through the process of sexual intercourse, unsafe blood transfusions, alternate use of needles contaminated with HIV and can also be transmitted from HIV/AIDS (Acquired Immune Deficiency Syndrome) infected mothers to children in the womb (Kemenkes RI, 2019).

HIV is a major problem that threatens Indonesia and many countries in the world. According to data obtained from the Joint United Nations Program on HIV and AIDS, or UNAIDS, there are 38.4 million (33.9 million-43.8 million) people in the world living with HIV in 2021. Meanwhile, in Indonesia, based on data obtained from the Ministry of Health, until June 2022, the total number of people with HIV spread across all provinces reached 519,158 people. Currently, no country is free from HIV (Sudoyo, 2017). HIV cases in Indonesia were first reported in 1987 in Bali, and until 2014 the third quarter of HIV cases amounted to 22,869 people (Noviana, 2016). According to data from the Jambi Provincial Health Office, the number of PLWHA who received ARVs in Jambi province was 1015 people. Data on PLWHA on ARVs in Jambi City were 798 people (SIHA, 2023). One of the health centers that implement the HIV disease management program is the Putri Ayu Health Center.

Puskesmas Putri Ayu Jambi City has a VCT (Voluntary Counseling Test) clinic that has been running since 2013. Currently, Putri Ayu Health Center serves 127 patients on ARVs (Puskesmas Putri Ayu Jambi City, 2023).

Antiretroviral drugs (ARVs) are part of HIV and AIDS treatment to reduce the risk of HIV transmission, inhibit the worsening of opportunistic infections, improve the quality of life of people with HIV, and reduce the amount of virus (viral load) in the blood to undetectable. Patient compliance is needed in the successful management of HIV infection which is monitored by checking viral load and lymphocyte counts, where viral load is inversely proportional to the number of lymphocytes (Nasronudin, 2014).

The results of Antoxida's research (2021) showed that the relationship between total lymphocyte count and viral load in HIV / AIDS patients who received zidovudine. The results showed that the average lymphocyte level of the subjects of this study was 1835.37 per mL and had a viral load < 40 copies / mm3 was 72.5% and those with a viral load > 40 copies / mm3 were 27.5%. The results of the correlation analysis showed that there was a relationship between the total number of lymphocytes and viral load (p value = 0.030; p> 0.05). The results of research by Sanjaya (2014) correlation between the number of lymphocytes with CD4 lymphocytes in adult HIV patients at Ulin Banjarmasin Hospital obtained the highest number of lymphocytes was 3500 cells/µL, the lowest was 1000 cells/µL, and the average number of lymphocytes was 1941 cells/µL in adult HIV patients at Ulin Banjarmasin Hospital.

Based on preliminary data conducted at the Putri Ayu Health Center in Jambi City from January to December 2022, there were 92 people with HIV and 85 people who took ARV therapy and 30 people who took viral load tests. UPTD Puskesmas Putri Ayu is one of the health care facilities that is one of the referrals of HIV infection patients in Jambi City which serves the treatment and services of HIV infection from various cities in Jambi.

Based on the description above, it is necessary to conduct research on the relationship between total lymphocyte count and viral load examination results in HIV patients on ARVs at UPTD Puskesmas Putri Ayu Jambi City so that optimal management can be carried out.

METHODS

This study is a quantitative study with a cross sectional design. The sample in this study was a total of PLWHA on ARV for more than 6 months who were registered at the Putri Ayu Health Center, Jambi City and were selected based on the inclusion criteria in accordance with the specified sample size. The sample size in this study was 30 respondents. The research conducted from January to April 2023, this research sample uses total sampling technique. Perform complete blood tests with the Sysmex Xp-100 Hematology Analyzer. This research has obtained ethical approval from the Ethics Committee at the Jambi Ministry of Health Poltekkes.

RESULTS AND DISCUSSION

Based on research conducted from January to April 2023 with a total of 39 respondents in patients on ARV who performed viral load checks and total lymphocyte checks, several characteristics of the respondents were obtained as follows:

Table 1. Characteristics of Respondents of HIV Patients on ARVs at UPTD Puskesmas Putri Ayu Jambi City Year 2023

Of the 39 samples obtained, the results in table 1 are the characteristics of the research subjects which show that the majority of the subjects of this study are aged between 25-49 years, namely 79.5%, most of them are male, namely 26 people (66.7%), most of them have a high school education as many as 34 people (87.2%), most of them work as private employees, namely 23 people (59%) and on average have risk factors from Anal Sex, namely 20 people (51.3%).

Charateristic	Total Person	Presentation
Age		
20-24 years	6	15,4%
25-49 years	31	79,5%
> 50 years	2	5,1%
Total	**39**	
Gender		
Man	26	66,7%
Woman	13	33,3%
Total	**39**	
Education		
Elementary School	0	0%
Junior High School	4	10,3%
Senior High School	34	87,2%
Collage	1	2,6%
Total	39	
Job		
Self-employed	9	23%
Self-employed employee	23	59%
Not working/ Housewife	6	15,4%
Students	1	2,6%
Total	**39**	
Risk Factors		
Anal Sex	20	51,3%
Vaginal Sex	15	38,5%
IDUs	4	10,3%
Total	39	

1. Univariate Analysis Results

Table 2. Number of Respondents Based on Total Lymphocyte Count in HIV Patients on ARV at UPTD Puskesmas Putri Ayu Jambi City in 2023

Lymphocyte Counts	Total Person	Presentation (%)
Normal	24	61,5
Abnormal	15	38,5
Total	**39**	**100**

Table 3. Number of Respondents Based on Viral Load in HIV Patients on ARV at UPTD Puskesmas Putri Ayu Jambi City Year 2023

Viral Load	Total Person	Presentation (%)
Detected	26	66,7
Non Detected	13	33,3
Total	**39**	**100**

Table 4. Relationship between Total Lymphocyte Count and Viral Load Examination Results in HIV Patients on ARV at UPTD Puskesmas Putri Ayu Jambi City in 2023

Total Lymphocyte Counts	Viral Loud				Total		P-Value
	Detected		Non-Detected				
	N	%	N	%	N	%	
Normal	1	4,2	23	95,8	24	100	0,000
Abnormal	12	80	3	20	15	100	
Total	13	33,3	26	66,7	39	100	

Table 2. Shows that most respondents had a normal total lymphocyte count as many as 24 people (61.5%). Table 3. shows that most respondents had undetectable viral load results as many as 26 people (66.7%).

2. Multivariate Analysis Results

Table 4 from the examination results, 15 respondents had abnormal lymphocyte counts and 12 respondents (80%) with detectable VL results. while 24 respondents who had normal lymphocyte counts, most of the 23 respondents (95.8%) had undetectable VL results. Based on Table 4 above it can be

seen that there are still examination results that do not match the results of the viral load with the results of the total lymphocytes, namely there are still 1 respondent with normal total Lymphocyte results viral load is still detected (4.2%) and vice versa. The total lymphocyte results are not normal but the viral load results are not detected, namely as many as 3 people or (20%), This could have been caused by several factors, among which are factors of young age and good nutritional intake so that the respondent's immunity is still maintained even though the HIV virus is still detected in his blood but does not affect his body's immunity or vice versa wh en the respondent is examined the state of his body is unhealthy such as flu or because of other diseases so that the total lymphocyte results are found to be low but the viral load results are not detected.

The results showed that the higher the viral load, the lower the total lymphocyte count value. Therefore, it is necessary to educate patients regarding the patient's condition from the results of laboratory tests on the success of ARVs so that HIV patients on ARVs pay more attention to drug compliance and want to monitor treatment by routinely.

CONCLUSION

From the results of the study, there is a significant relationship between the number of total lymphocytes and the results of viral load examination in HIV patients on ARV at UPTD Puskesmas Putri Ayu Jambi City in 2023 with a P-value of 0.000 (P <0.05).

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CONFLICT OF INTEREST

The author affirms the absence of any conflict of interest.

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