The Characteristics of Opportunistic Infections Among AIDS Patiaents in BRSU Tabanan in 2019

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Abstract

According to WHO and UNAIDS report, there has been dramatic increase of HIV/AIDS cases in Indonesia. The objective of the study was to determine the distribution of opportunistic infections in people with HIV / AIDS and the use of antiretroviral drugs in the BRSU Tabanan from April to June 2019. Data revealed that the number of cases was as many as 126 patient which 55.6% were men and 44.4% were women. The highest age group was 30-39 years (39.4%), and 60.3% of patients still actively working , while the level of education mostly (58.7%) was moderate. Most of the patient (68.2%) were married and 79.3% of patients had CD4 levels <200 when starting therapy. The study also showed stage III (WHO) as the most diagnosed clinical stage at 57.1%. More than half of patients have lost weight (67.5%) and have been or were being diagnosed with opportunistic infections (71.4%). Oral Candidiasis was the top Oportunistic Infection (OI) found in the study (40.5%). Almost all patients have good compliant of ARVs (95.2%) and the most use regimen was a combination of AZT + 3TC + NVP which was 73.8%.

Keywords: HIV / AIDS, Opportunistic Infection, ARV,

Abstrak

Menurut laporan WHO dan UNAIDS belum ada satu negarapun yang benar-benar terbebas dari masalah HIV/AIDS. Indonesia menunjukkan kecenderungan peningkatankasus HIV/AIDS baru yang berbahaya sejak Desember 2002. Penelitian ini adalah untuk mengetahui gambaran distribusi infeksi oportunistik pada penderita HIV/AIDS dan penggunaan obat ARV di BRSU Tabanan dari April hingga Juni 2019. Didapatkan data sebanyak 126 pasien terbagi atas pasien laki- laki sebanyak 55,6% dan perempuan sebanyak 44,4%. Kelompok umur terbanyak adalah 30-39 tahun yaitu 39,4%. Sebanyak 60,3% pasien bekerja, dengan tingkat pendidikan terbanyak yaitu menengah (58,7%). Sebagian besar pasien (68,2%) dengan status menikah, memiliki kadar CD4 <200 saat memulai terapi sebanyak 79,3% pasien. Penelitian juga menunjukkan stadium III sebagai stadium klinis terbanyak yaitu 57,1%. Lebih dari setengah pasien mengalami penurunan berat badan (67,5%) dan pernah atau sedang terdiagnosis dengan infeksi oportunistik (71,4%). Infeksi Oportunistik (IO) terbanyak yang terdata adalah Oral Candidiasis dimana IO tersebut terdiagnosis pada 40,5% pasien yang berkunjung ke poli. Pasien yang teratur dalam menggunakan obat ARVsebanyak 95,2% dan penggunaan regimen terbanyak adalah kombinasi AZT+3TC+NVP yaitu 73,8%.

Kata Kunci:, HIV/AIDS, Infeksi Oportunistik, ARV

INTRODUCTION

Acquired Immunodeficiency Syndrome (AIDS) is the final stage of Human Immunodeficiency Virus (HIV) which no countries are free of the issue. In 2012, United Nations Programme on HIV/AIDS (UNAIDS) reported that the number of HIV/AIDS cases was as many as 35.3 million, the mortality of HIV/AIDS was 1.6 million and 2.3 million of new cases of HIV occured during the same year.[1,2].

According to WHO and UNAIDS report, Indonesia showed a new threatning tendency since December of 2002[2,3] as the increasing number of HIV/AIDS cases which were not only transmitted by sexual transmission but also the increase of needle use among the drug addicts. The number of AIDS cases reported from 2005 to December 2017 was 102.667 cases, with case fatality rate (CFR) of HIV/AIDS slightly increased from 1.07% in 2015 to 1.08% in December 2017 (Laporan Direktorat Jenderal Pengendalian Penyakit dan Penyehatan Lingkungan, 2017).

Cummulative number of people diagnosed with AIDS in Provinsi Bali was 7.441, which was the 5th place in Indonesia following Papua (19.729),

East Java (18.243), DKI Jakarta (9.215), and Central Java (8.170). Bali has showed a propensity of increasing cases of AIDS throughout the year until 2007, and occupied the 3rd place for case rate which was 17.723.[5]

Opportunistic infection (OI) is an infection caused by organisms which normally will not occur in people with healthy immune system but can infect people with weakened immune system [1,7,8]. Opportunistic infections are the direct causes of mortality in HIV/AIDS patients. The value of Cluster of Differentiation 4 ($CD4^+$) is normally used to assess the level of severity of AIDS. Opportunistic infections will develop at CD4<200 sel/mL or at lower level.[1]

World Health Organization (WHO) reported that OI proportion in various countries were different. In United State of America, the predominant OI was Kaposi Sarcoma (21%), followed by Oral candidiasis (13%), Cryptococcosis (7%), Cryptosporidiosis – Isosporiasis (6.2%), Cytomegalovirus (5%), as well as Toxoplasmosis and Pulmonary TB which are 3%, repectively.[3]

The Health Department of Republic of Indonesia (2013) reported that proportion of OI cases in AIDS patiens in Indonesia were Oral Candidiasis (80.8%), Tuberculosis (40.1%), Cytomegalovirus (28.8%), Toxoplasmic encephalitis (17.3%), PCP (13.4%), Herpes Simplex (9.6%), Mycobacterium Avium Complex (4.0%), Cryptosporodiosis (2.0%), and Lung Histoplasmosis (2.0%)[4,5]. Study by Lubis (2011) in Sulianti Saroso Hospital of Infectious Diseases showed OI in AIDS patients were mostly Tuberculosis (67.4%), Toxoplasmosis (22.8%), Candidiasis (5.4%), Chronic diarrhea (3.3%), and Hepatitis C (1.1%)[9].

The characteristics of HIV/AIDS patients and opportunistic infections in Badan Rumah Sakit Umum Tabanan have never been reported. The aim of this study is to determine the distribution of opportunistic infections in people with HIV/AIDS based on sociodemography (age, gender, education, employment status, marital status), and also to describe the clinical stage and CD4+ count in HIV/AIDS patients as well as the distribution of ARV use in BRSU Tabanan in 2019.

METHOD

This study was descriptive observational study to determine the characteristics of HIV/AIDS patients based on sociaodemography, including age, gender, marital status, distribution of opportunistic infections and distribution of ARV use among AIDS patients.

This study was conducted in February 2019 at Badan Rumah Sakit Umum Daerah Tabanan. Sample of the study was obtained from medical records of HIV/AIDS patients who has visited VCT BRSU Tabanan. The inclusion criteria was AIDS patiens aged $\geq$ 15 years old whose records were complete. Low education was defined as only completing elementary school; patients with moderate education were those who graduated junior high school or high school, and patients with high education were those who have completed diploma or higher education

The number of sample was 126 patients, selected by simple random sampling technic. The instrument was secondary data obtained from medical records. The data were analyzed by SPSS software and displayed as frequency tables.

RESULTS
Distribution of AIDS patients based on age

The average age of the 126 HIV/AIDS patients at VCT BRSU Tabanan was 39.98 years old. The patients mostly 36 years old, the youngest was 19 years old and the oldest patients was 71 years old.

Table 1. Distribution of AIDS patients based on age

Age groups	Frequency	Proportion (%)
15-19 years old	1	0.8
20-29 years old	22	17.5
30-39 years old	44	34.9
40-49 years old	37	29.3
>50 years old	22	17.5
Total	126	100

Distribution of AIDS patients based on gender

This study found that the AIDS patients who visited VCT BRSU Tabanan were mostly men with proportion of 55.6% compared to women (44.4%).

Table 2. Distribution of AIDS patients based on gender

Gender	Frequency	Proportion (%)
Men	70	55.6
Women	56	44.4
Total	126	100

Distribution of AIDS patients based on employment status

Table 3. Distribution of AIDS patients based on employment status

Employment status	Frequency	Proportion (%)
Employed	76	60.3
Unemployed	50	39.7
	126	100

Distribution of AIDS patients based on education level

The highest proportion of HIV/AIDS patients who visited VCT BRSU Tabanan had moderate education level which was 74 patients (58.7%), followed by group of patients with low level of education (30.2%) and lastly the smallest proportion was those with high education level (11.1%).

Table 4. Distribution of AIDS patients based on education level

Education levels	Frequency	Proportion (%)
Low	38	30.2
Moderate	74	58.7
High	14	11.1
	126	100

Distribution of AIDS patients based on marital status

Most of the AIDS patients who visited VCT polyclinic for control were married patients (86 patiens, 68.2%). Data also showed that 17.5% of the patients were single and 14.3% were divorcee.

Table 5. Distribution of AIDS patients based on marital status

Marital status	Frequency	Proportion (%)
Single	22	17.5
Married	86	68.2
Divorced	18	14.3
	126	100

Distribution of CD4 count at the start of ARV treatment

This study showed that all the patients controlling at VCT BRSU Tabanan during June 2019 have been undergoing treatment for more than 4 months and have sexual transmission factor. There were no patients contracted HIV through needle/ *intravenous drug user* (IDU). Most of the patients visited VCT polyclinic had CD4 <200 at the first ARV therapy (79.3%). Some patients had CD4 level between 200 and 500 (17.5%) and only small number of patients had CD4 >500 (3.2%) at their first ARV treatment.

Table 6. Distribution of CD4 count at the first ARV treatment

CD4 Count	Frequency	Proportion (%)
<200	100	79.3
200-500	22	17.5
>500	4	3.2
	126	100

Distribution of HIV stage based on WHO

The result of the study showed that the clinical HIV stage of AIDS patients at VCT BRSU Tabanan were mostly at stage III (57.1%), followed by stage I (23.1%) and stage II (11.1%). Stage IV is the highest stage of HIV and only 8.7% of the AIDS patients visited VCT BRSU Tabanan were at this stage.

Table 7. Distribution of clinical stage of AIDS patients

Clinical Stage	Frequency	Proportion (%)
Stage I	29	23.1
Stage II	14	11.1
Stage III	72	57.1
Stage IV	11	8.7
	126	100

Table 8. Distribution of clinical stage of AIDS patients by CD4 count

WHO STAGE	CD4 COUNT			TOTAL
	<200	200-500	>500	
I	15	11	3	29
II	12	2	0	14
III	64	7	1	72
IV	9	2	0	11
TOTAL	100	22	4	126

Distribution of HIV patients with weight loss and opportunistc infections

The study revealed that 85 patients (67.5%) had HIV-associated weight loss, while the rest did not experience weight loss (32.5%). Of 126 patients, 71.4% of them has ever been diagnosed of opportunistic infections, while, 28.6% of the patients never had any form of opportunistic infections. Half of patients visiting VCT could have or had ever contracted more than one OI.

Data revealed that the type of opportunistic infections experienced by AIDS patients of VCT BRSU Tabanan was oral candidiasis; 40.5% of the patients visiting the polyclinic has ever or were being diagnosed of having oral candidiasis. The other types of opportunistic infections found in the study were: Abscess (1.6%), GEA 15%, Pulmonary TB 19%, Unspecified Pneumonia 12.7%, Dermatitis 9.5%, Tinea 0.8%, Extrapulmonary TB 0.8%, Toxoplasmosis 4.8%, PCP 3.2%, Condiloma 1.6%.

Table 9. Proportion of weight loss and opportunistic infections

	WEIGHT LOSS		OPPORTUNISTIC INFECTION	
	FREQ	%	FREQ	%
YES	85	67.5	90	71.4
NO	41	32.5	36	28.6
	126	100	126	100

Table 10. Distribution of opportunistic infections among AIDS patients at VCT BRSU Tabanan

OPPORTUNISTIC INFECTIONS	Frequency	Proportion
Candidiasis oral	51	40.5
Abscess	2	1.6
Unspecified Diarrhea	19	15
Pulmonary TB	24	19
Unspecified Pneumonia	16	12.7
Dermatitis	13	10.3
Extrapulmonary TB	1	0.8
Toxoplasmosis	6	4.8
PCP	4	3.2
Condiloma	2	1.6

Distribution of regimen of ARV and ARV adherence

Data obtained from this study found that 120 (95.2%) patients regularly consumed ARV and 4.8% did not regularly consume their ARV. Most of the patients were given combination of AZT+3TC+NVP (73.8) and combination of TDC+3TC+EVF (13.5%).

Table 11. Regimen of ARV

ARV Combination	Frequency	Proportion (%)
TDF+3TC+EFV	17	13.5
TDF+3TC+NVP	9	7.1
AZT+3TC+EFV	4	3.2
AZT+3TC+NVP	93	73.8
TDF+3TC+LPV	1	0.8
ABC+3TC+EFV	1	0.8
DT4+3TC+EFV	1	0.8

DISCUSSION

Among 126 AIDS patients recorded at VCT BRSU Tabanan, the patients were mostly in age group of 30-39 years old (34.9). This finding is consistant with the Health Ministry Report (2017) which reported that 35.2% of AIDS patients were in the age group of 30-39 years old, followed by age group of 20-29 years old (29.5%) and age group of 40-49 years old (17.7%). Patients who were diagnosed at age 29-35 years old could have been exposed to HIV virus during their late teenage years or at their early adulthood. The data is similar to the result study conducted by Saktina (2014) at RSUP Sanglah[10].

Some studies suggested that many infections occurring at young age was associated with emotional and attitude maturity. This finding is correlated with free sex lifestyle and drug abuse. The pathophysiology of HIV infection takes up 5 – 10 years to develop AIDS. Patients aged 30 – 39 years old might have been contracted the HIV virus since they were at their late teenage years or early adulthood.[9,11]

Higher proportion distribution of AIDS patients based on gender was men (55.6%) compared to women (44.4%). This finding is similar to the Ministry of Health Report (2017) which stated the proportion of men contracted HIV was twice the proportion of women. The study by Yusri dkk. (2012) at RSUP H. Adam Malik Medan also support this finding which observed that of 163 patients contracted by sexual transmission, 119 (73.0%) were men. Similar result was also found by a study at RSUP Sanglah by Saktina (2014). Some studies did not find any significant difference between men and women. Male patients were associated to have higher risk lifestyle and more likely to have multiple sex partners, as well as more tendency to use needle for illicit drug use.[9,11]

There were more AIDS patients visited VCT BRSU tabanan had occupation (60.3%) com-

pared to patients who were unemployed (39.7%). Occupation is associated with financial freedom. This financial status could support high risk lifestyle such as free sex which lead to increase risk of HIV exposure.

Unemployed community group, such as housewives can get infected by HIV through sexual contact with their spouses. If their husbands have sexual intercourse with commercial sex workers who have HIV/AIDS, the wives will be at high risk to get HIV/AIDS. The HIV transmission might not be realized by both parties. The same standpoint was also stated by Notoatmodjo (2003) which said that the type of occupation has role in probability of getting certain disease [9].

Most of the AIDS patients who came to VCT polyclinic for control were married (68.2%). Data also showed that 17.5% of the patients were single and 14.3% were divorced. Research by Kambu 2012 concluded that married respondents are 3.75 more likely to have high risk sexual berhavior compared to those divorcee. Some studies in Kambu 2012 also concluded that unmarried people is highly associated with high risk sexual behavior. However, the study initially did not seek for relationship between marital status and AIDS [11].

In India, the significant increase of new HIV cases occurred in married women whose husbands frequently having sexual intercourse with commercial sex workers (UNAIDS. 2005). WHO published a report that new infection cases was quite significant in married pregnant women. However, research by Barnighausen (2008) found that the progress risk of HIV infection was twice in unmarried group.

This study also found that the highest stage of HIV among AIDS patients visited VCT BRSU Tabanan was stage III, which was 72 patients (57.1%), followed by stage I (23.1%) and stage II (11.1%). Stage IV is the highest stage of HIV and only 8.7% of the AIDS patients visited VCT BRSU Tabanan were at this stage. All the patients visiting VCT BRSU Tabanan during June 2019 had undergone treatment for more than 4 months and the HIV transmission was sexual contact. There was no AIDS patients who had transmission factor from needle. Most of the patients had CD4 count < 200 at the first ARV therapy (79.3%). Some patients had CD4 level between 200 and 500 (17.5%) and only small number of patients had CD4 >500 (3.2%) at their first ARV treatment.

The result of this study is slightly different to the study by RSUP H. Adam Malik Medan on 223 HIV/AIDS patients which observed that the proportion of HIV/AIDS in clinical stage III was 167 patients (74.9%). In accordance with a study at VCT RSUD Arifin Achmad Provinsi Riau which reported that out of 88 HIV/AIDS patients, the highest proportion of patients was in stage III as many as 40 patients (45.45%), followed by stage II which was 30 patients (34.09%) and stage I and IV, which both were 9 patients (10.23%) respectively. Howev-

er, a study by Agus (2010) at VCT – CST RSUP Sanglah stated thath most of the HIV/AIDS patients came to the clinic when they were at stage IV (72.9%), and 10.4% of the patients were at stage III [12,13]. The number of stage IV patients in this study was not as many as stage III patients which might due to the progressivity of the diseases in stage IV patients, thus the patients had passed away before they had chance to visit the clinic. It was observed that high number of HIV/AIDS patients at late stage visitng the clinic because they decided to have themselves checked after the opportunistic infections occur.

Most of the patients visiting VCT clinic had CD4 count <200 at the first ARV treatment (79.3%). Some patients had CD4 level between 200 and 500 (17.5%) and only small number of patients had CD4 >500 (3.2%) at their first ARV treatment. Study by Andy (2013) at RSUP H. Adam Malik Medan revealed similar result. Of 223 HIV/AIDS patients, 80.7% had CD4 count <200 sel/mm3. This result is also in accordance with the study by Innes (2011) conducted at RSUP Dr. Kariadi Semarang which reported that out of 42 HIV/AIDS patients admitted at internal medicine ward of RSUP Dr. Kariadi Semarang , 90.47% of them had CD4 count <200 sel/mm3.

The study revealed that 85 patients (67.5%) had HIV-associated weight loss, while the rest did not experience weight loss (32.5%). Of 126 patients, 71.4% of them has ever been diagnosed of opportunistic infections, while, 28.6% of the patients never had any form of opportunistic infections. Half of patients visiting VCT could have or had ever contracted more than one OI. Data revealed that the type of opportunistic infections experienced by AIDS patients of VCT BRSU Tabanan was oral candidiasis; 40.5% of the patients visiting the polyclinic has ever or were being diagnosed of having oral candidiasis. The other types of opportunistic infections found in the study were: Abscess (1.6%), GEA 15%, Pulmonary TB 19%, Unspecified Pneumonia 12.7%, Dermatitis 9.5%, Tinea 0.8%, Extrapulmonary TB 0.8%, Toxoplasmosis 4.8%, PCP 3.2%, Condiloma 1.6%.

According to study by Lubis (2011) at RSPI Sulianti Saroso, the type of OI in AIDS patients were dominantly Tuberculosis (67.4%), Toxoplasmosis (22.8%), Candidiasis (5.4%), Chronic Diarrhea (3.3%), and Hepatitis C (1.1%). Meanwhile, study by Yusri dkk (2012) conducted at RSUP H. Adam Malik Medan reported that the OI type were mostly Oral Candidiasis (35.3%), PulmonaryTuberculosis (33%), Chronic Diarrhea (12.7%), Pneumocystis carinii pneumonia (11.4%), Toxoplasmosis encephalitis (3.8%), Sarcoma Kaposi (2.9%), Herpes zoster (0.6%) and Cryptosporodiasis (0.3%). This indicates that there were difference in type of opportunistic infections among different health center since the pattern of the pathogen are different.

The high proportion of candidiasis was caused by the fact that this disease has prominent clinical symptom and readily recognized as early sign of HIV infection. Furthermore, at stage III of HIV infections, patients have shown symptoms of oral candidiasis. Candida is normal microflora present in oral cavity. Recognizing the pattern of pathogen in an area will help to confirm the early diagnosis and treatment of choice when the result of laboratory test has not been conclusive. This will provide more appropriate treatment of opportunistic infection [1,9,11].

Data showed that 120 patients (95.2%) regularly consumed their ARV and 4.8% did not comply with their ARV treatment. Most of the students were prescribed combination of AZT+3TC+NVP (73.8%) followed by combination of TDC+3TC+EVF (13.5%). This finding is slightly different to the use of ARV among HIV patients at RSPI Prof. dr. Sulianti Saroso; the most common regimen was tenofovir + lamivudine + efavirenz (TDF + 3TC + EFV). Almost all of the respondents were at clinical stage I and showed good response. Compliance is necessary to meet the success of therapy and prevent resistance. In order to achieve 85% viral suppression, the adherence level needed is 90-95%. Adherence monitoring could be done by counting the remaining number of medication when the patients pick up the next medication, providing medication monitoring card, and by interviewing the person in charge of the patients' compliance [15,16].

CONCLUSIONS

This study obtained data from 126 patients visiting VCT BRSU Tabanan, 55.6% of which was men. Most of the patients were in the age group of 30-39 years old which was 39.4%. As many as 60.3% of the patients were working and the level of education of patients were mostly moderate level (58.7%). Most of the patients were also married (68.2%) and 79.3% of the patients had CD4 count <200 at the start of therapy (79.3%). This study also revealed that stagge III was the most clinical stage (57.1%). More than half of the patients experienced weight loss (67.5%) and has ever or were being diagnosed with opportunistic infections (71.4%). The type of opportunistic infection contracted by the patients was mostly oral candidiasis (40.5%). Number of patients complied with the ARV treatment was 95.2% and the most regimen used was combination of AZT+3TC+NVP (73.8%).

RECOMMENDATION

It is recommended to conduct a research with larger number of sample in order to produce more representative description of epidemiology. The government is also expected to facilitate a better laboratory test to definitively diagnosed opportunistic infections which will lead to more adequate therapy.

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