ORIGINAL ARTICLE

CHARACTERISTICS OF OUTPATIENTS WITH TUBERCULOSIS AND HUMAN IMMUNODEFICIENCY VIRUS AT DR. HASAN SADIKIN GENERAL HOSPITAL BANDUNG IN 2019

Vania Felicia[1], Iceu Dimas Kulsum[2], Susantina Prodjosoewojo[3]
[1]Faculty of Medicine, Universitas Padjadjaran, Bandung
[2]Division of Pulmonology and Critical Care Medicine, Department of Internal Medicine, Faculty of Medicine, Universitas Padjadjaran/Dr. Hasan Sadikin General Hospital, Bandung
[3]Department of Internal Medicine, Faculty of Medicine, Universitas Padjadjaran/Dr. Hasan Sadikin General Hospital, Bandung

ABSTRACT

Background: The burden of tuberculosis (TB) and Human Immunodeficiency Virus (HIV) co-infection is still alarming with high number of cases and mortality especially in West Java. This is affected by delayed treatment in these patients due to difficulty in diagnosis of TB in HIV patients. Clinical presentations were commonly atypical.
Objective: This study aims to identify sociodemographic characteristics, clinical manifestations, and additional findings of outpatients with TB and HIV at Dr. Hasan Sadikin General Hospital Bandung in 2019.
Methods: A retrospective descriptive-observational study on medical records of outpatients in Directly Observed Treatment Short-course (DOTS) and HIV units of Dr. Hasan Sadikin General Hospital Bandung was conducted at 1 January-31 December 2019. Results: There were 22 outpatients with the diagnosis of TB with first category of treatment and HIV, mean age of 34,91 ± 7,68 years, 9,87 ± 19,07 months since HIV diagnosis, BMI of 17,9 ± 2,95. Majority were male (86,4%), married (55%), working (70,6%), in high school (88,2%). Chronic cough (18,6%) was commonly found. There were equal number of patients with positive and negative AFB sputum smear. Most were pulmonary TB (53.3%), Rifampicin sensitive (25%), CD4 cell count of <200 cells/mm3 (77,3%) and stage IV of HIV (72,7%). Most patients had available chest x-ray results (85%), with pulmonary TB (60%) and unilateral infiltrate (40%).
Conclusion: Most of the patients were male in productive age with low BMI, stage IV HIV with low CD4 cell count. Most patients were found with common cough, diagnosed as pulmonary TB, with chest x-ray results showed pulmonary TB with unilateral infiltrate. There were equal number of positive and negative results on AFB sputum smear and most were rifampicin sensitive.
Keywords: tuberculosis, HIV, characteristics

ABSTRAK

Pendahuluan: Jumlah kasus koinfeksi TBC dan HIV masih memprihatinkan dengan jumlah kasus dan mortalitas yang cukup tinggi terutama di Jawa Barat. Ini disebabkan karena keterlambatan dalam pengobatan dikarenakan sulitnya menegakkan diagnosis TB pada pasien HIV. Gambaran klinis umumnya atipikal. Tujuan: Penelitian ini bertujuan untuk mengetahui karakteristik sosiodemografi, manifestasi klinis, dan hasil pemeriksaan penunjang pasien rawat jalan dengan TBC dan HIV di RSUP Dr. Hasan Sadikin Bandung tahun 2019.
Metode: Penelitian retrospektif deskriptif-observasional menggunakan rekam medis pasien rawat jalan di Poli DOTS dan Klinik Teratai RSUP Dr. Hasan Sadikin Bandung periode 1 Januari-31 Desember 2019. Hasil: Ditemukan 22 pasien rawat jalan terdiagnosis TB dengan pengobatan kategori 1 dan HIV dengan usia rata-rata 34,91 ± 7,68 tahun, 9,87 ± 19,07 bulan sejak terdiagnosis HIV, BMI 17,9 ± 2,95. Mayoritas adalah laki-laki (86,4%), menikah (55%), bekerja (70,6%), SMA (88,2%). Manifestasi klinis yang paling umum adalah batuk kronis (18,6%). Terdapat jumlah hasil sputum BTA yang sama baik positif dan negatif. Mayoritas terdiagnosis sebagai TBC paru (53,3%), sensitive Rifampisin (25%), jumlah sel CD4 <200 sel/mm3 (77,3%) dan HIV stadium IV (72,7%). Sebagian besar pasien memiliki hasil foto toraks (85%) dengan TB paru sebagai temuan umum (60%) dan memiliki infiltrat unilateral (40%).
Kesimpulan: Sebagian besar pasien merupakan laki-laki pada usia produktif dengan indeks massa tubuh (IMT) rendah, HIV stadium IV dengan jumlah CD4 rendah. Batuk kronis banyak ditemukan dan sebagian besar pasien terdiagnosis TB paru. Mayoritas pasien menunjukkan TB paru dengan gambaran infiltrat unilateral pada foto toraks. Terdapat jumlah hasil sputum BTA yang sama baik positif dan negatif dan sebagian besar sensitif terhadap rifampisin.
Kata kunci: tuberkulosis, HIV, karakteristik

Address for corespondance :
Vania Felicia
Faculty of Medicine, Universitas Padjadjaran, Bandung
Division of Pulmonology and Critical Care Medicine, Department of Internal Medicine, Faculty of Medicine, Universitas Padjadjaran/Dr. Hasan Sadikin General Hospital, Bandung
Email : vania.felicia027@gmail.com

How to cite this article :
CHARACTERISTICS OF OUTPATIENTS WITH TUBERCULOSIS AND HUMAN IMMUNODEFICIENCY VIRUS AT DR. HASAN SADIKIN GENERAL HOSPITAL BANDUNG IN 2019

INTRODUCTION

Human Immunodeficiency Virus (HIV) remains a major global health problem as it caused the deaths of 33 million people worldwide. Infection caused by this virus leads to immunosuppression which results in opportunistic infections as one of the main factors contributing to high mortality in HIV patients.[1] Most commonly found in HIV/AIDS patients, Tuberculosis (TB), has played a role as one of the top 10 causes of death worldwide with 1,2 million deaths in 2018 according to World Health Organization (WHO).[2] These two diseases have a very close correlation. Their interaction results in an accelerated progression of both diseases, thus worsen their prognosis. Immunosuppression caused by HIV infection results in the depletion of immune protection and granuloma formation failure. This causes reactivation of latent TB infection, thus amplifies the development of TB to further advanced stages. In turn, *Mycobacterium tuberculosis* also played a role in accelerating HIV transcription due to stimulation of CD4 T lymphocytes, increasing viral load and activity.[3–5]

The burden of TB and HIV co-infection is still alarming with a high number of cases worldwide. According to WHO on Global Tuberculosis Report 2019, there are 862.000 cases of TB and HIV co-infection and is responsible for 251.000 deaths in 2018 worldwide. Indonesia has the third highest burden for TB with the number of cases of 244 per 100.000 population and HIV with 48.300 cases in 2017.[6] Moreover, West Java was ranked as a province with the second highest number of HIV cases and third highest number of TB cases.[7,8] Human Immunodeficiency Virus (HIV) has been found to increase the mortality rate of TB patients by 4 and is the leading cause of death in TB patients.[2,9] This is believed to be affected by delayed in treatment which is due to the difficulty in diagnosis of TB in HIV patients.[10] Recent studies show that 86% of TB-HIV patients had their TB underdiagnosed.[11] This is related to atypical clinical presentations shown in patients with TB and HIV co-infection on different stages of HIV. Symptoms found in TB-HIV patients such as fever, weight loss, malaise are commonly related to HIV and could ignore the possibility of TB.[12] Several studies shown negative results of acid-fast bacilli (AFB) sputum smear in common.[12,13] Chest x-ray findings are generally atypical with rare signs of cavities.[12] Furthermore, TB and HIV co-infection are generally found in late-stages of HIV with low levels of CD4 T lymphocytes and low BMI (BMI <18,5).[13,14]

In dealing with TB and HIV co-infection cases, it is important to know clinical characteristics and other examinations for diagnostic and treatment approaches. Sociodemographic factors are important for developing TB and HIV control strategies.[14,15] Sociodemographic characteristics of patients with TB and HIV co-infection such as age, gender, marital status, employment status, and education level usually differ from region to region.[16,17] It has been known that Dr. Hasan Sadikin General Hospital is a national referral hospital in West Java with DOTS and HIV units to serve and provide management for patients with TB and HIV. Due to those reasons and given that no recent studies of this kind have been carried out in DOTS and HIV units of Dr. Hasan Sadikin General Hospital, the present study was conducted to identify the sociodemographic characteristics, clinical manifestations, and additional findings of patients with TB and HIV co-infection.

METHODS

The study was a retrospective descriptive-observational study conducted from October to November 2020 using medical records of outpatients in DOTS and HIV units of Dr. Hasan Sadikin General Hospital Bandung. Subjects of this study were all patients diagnosed with TB and HIV that were treated in DOTS and HIV units of Dr. Hasan Sadikin General Hospital Bandung in 2019. The inclusion criteria in this study were outpatients with the diagnosis of TB with first category of treatment and HIV that were registered in DOTS and HIV units of Dr. Hasan Sadikin General Hospital Bandung in 2019 and ≥18 years old. Patients with incomplete data except for marital status, employment status, body

mass index (BMI), acid-fast bacilli (AFB) sputum smear, rapid molecular test for TB and pulmonary TB chest x-ray findings were excluded. Samples were taken by using total sampling method. Data was collected and analysed with IBM SPSS Statistics 25 and Microsoft Excel 2016.Variables selected for this study were: age, gender, marital status, employment status, education level, length of time since HIV diagnosis, clinical manifestations, BMI, AFB sputum smear, rapid molecular test for TB, CD4 cell count, chest x-ray results, pulmonary TB chest x-ray findings, pulmonary TB, extrapulmonary TB, HIV stage and are based on medical records. This study has been approved by the ethic committee of Faculty of Medicine Universitas Padjadjaran no. 701/UN6.KEP/EC/2020 and hospital ethic committee of Dr. Hasan Sadikin General Hospital no. LB.02.01/X.2.2.1/19920/2020.

RESULTS

Of 42 patients diagnosed with TB and HIV that were treated in DOTS and HIV units of Dr. Hasan Sadikin General Hospital Bandung in 2019, 2 patients did not fulfil the inclusion criteria, and from these, 18 patients were excluded. Twenty two patients (52.4%) were included in the study and were divided into 3 categories based on their initial diagnosis: initial diagnosis of HIV, initial diagnosis of TB, and initial diagnosis of TB and HIV co-infection. Out of these patients, there were 20 patients with the initial diagnosis of HIV, 0 patients with the initial diagnosis of TB, and 2 patients with the initial diagnosis of TB and HIV co-infection. These patients have several missing variables where we decided to put them into exceptions on our exclusion criteria in order to minimize further reduction of subjects in this study. These missing variables were 2 subjects for marital status, 5 subjects for employment status and education level, 3 subjects for BMI, 6 subjects for AFB sputum smear, 13 subjects for rapid molecular test for TB, and 2 subjects for pulmonary TB chest x-ray findings.

Sociodemographic characteristics are shown in Table 1. Patients were dominated by male (86,4%). Of 20 patients, majority were married (55%). Of 17 patients, majority were working (70,6%), and were in senior high (88,2%).

Table 1. Sociodemographic characteristics

Sociodemographic characteristics	Initial diagnosis of HIV (n=20)	Initial diagnosis of TB and HIV co-infection (n=2)	Total (n=22)
Age			
Mean ± SD - year	34,7 ± 7,21	37 ± 15,56	34,91 ± 7,68
Gender – no. (%)			
Male	17 (85)	2 (100)	19 (86,4)
Female	3 (15)	0 (0)	3 (13,6)
Marital Status – no./total no. (%)*			
Married	11/19 (57,9)	0/1 (0)	11/20 (55)
Not married	5/19 (26,3)	1/1 (100)	6/20 (30)
Divorced	3/19 (15,8)	0/1 (0)	3/20 (15)
Employment status – no./total no. (%)**			
Working	12/16 (75)	0/1 (0)	12/17 (70,6)
Not working	4/16 (25)	1/1 (100)	5/17 (29,4)
Education level – no./total no. (%)**			
Primary	1/16 (5,9)	0/1 (0)	1/17 (5,9)
Junior high	0/16 (0)	0/1 (0)	0/17 (0)
Senior high	14/16 (88,2)	1/1 (100)	15/17 (88,2)
Bachelor/Master/Diploma	1/16 (5,9)	0/1 (0)	1/17 (5,9)

* data regarding marital status were missing for 2 patients (9,1%)
** data regarding employment status and education level were missing for 5 patients (22,7%)

Mean length of time since HIV diagnosis of 9,87 ± 19,07 was found in these patients. 19 patients had the mean BMI of 1,.9 ± 2.,5 and these were shown in Table 2.

Table 2. Length of time since HIV diagnosis and Body Mass Index (BMI)

Variables	Initial diagnosis of HIV (n=20)	Initial diagnosis of TB and HIV co-infection (n=2)	Total (n=22)
Length of time since HIV diagnosis			
Mean ± SD - months	10,86 ± 19,77	0	9,87 ± 19,07
Body Mass Index (BMI)*			
Mean ± SD - kg/m^2	17,9 ± 3,03	18	17,9 ± 2,95

*data regarding BMI were missing for 3 patients (13,6%)

Clinical manifestations for these patients were shown in Table 3. Chronic cough was the most commonly found in these patients (18,6%), followed by weight loss (15,7%), fatigue (12,9%), fever (12,9%) and others (12,9%). Of these patients, it was found that neck lump was the most common other clinical manifestations (41,7%).

Table 3. Clinical Manifestations

Clinical Manifestations	Initial diagnosis of HIV	Initial diagnosis of TB and HIV co-infection	Total
Chronic cough – no. (%)	13 (23,2)	0 (0)	13 (18,6)
Weight loss – no. (%)	11 (19,6)	0 (0)	11 (15,7)
Night sweats – no. (%)	4 (7,1)	0 (0)	4 (5,7)
Haemoptysis – no. (%)	0 (0)	0 (0)	0 (0)
Decreased appetite – no. (%)	1 (1,8)	0 (0)	1 (1,4)
Fatigue – no. (%)	7 (12,5)	2 (33,3)	9 (12,9)
Fever – no. (%)	8 (14,3)	1 (16,7)	9 (12,9)
Diarrhoea – no. (%)	2 (3,6)	0 (0)	2 (2,9)
Oral ulcer – no. (%)	2 (3,6)	0 (0)	2 (2,9)
Respiratory disorders – no. (%)	5 (8,9)	0 (0)	5 (7,1)
Neurological symptoms – no. (%)	2 (3,6)	2 (33,3)	4 (5,7)
Skin lesions – no. (%)	1 (1,8)	0 (0)	1 (1,4)
Others – no. (%)	8 (14,3)	1 (16,7)	9 (12,9)

Out of 22 patients, 6 did not had their AFB sputum smear (27,3%) and 13 did not had their rapid molecular test for TB (59,1%). In patients with AFB sputum smear performed, there were equal number positive and negative results (both 8 respectively). Rifampicin sensitive was the common result for patients with rapid molecular test for TB performed. These were shown in Table 4.

Table 4. Bacteriological findings

Bacteriological findings	Initial diagnosis of HIV (n=20)	Initial diagnosis of TB and HIV co-infection (n=2)	Total (n=22)
Acid-fast bacilli (AFB) sputum smear – no. (%)			
Performed	15 (75)	1 (50)	16 (72,7)
Positive	8 (40)	0 (0)	8 (36,4)
Negative	7 (35)	1 (50)	8 (36,4)
Not performed	5 (25)	1 (50)	6 (27,3)
Rapid molecular test for TB – no. (%)			
Performed	7 (35)	2 (100)	9 (40,9)
Rif Sensitive	5 (25)	2 (100)	7 (31,8)
Rif Resistance	0 (0)	0 (0)	0 (0)
Rif Indeterminate	0 (0)	0 (0)	0 (0)
Negative	2 (10)	0 (0)	2 (9,1)
Not performed	13 (65)	0 (0)	13 (59,1)

Majority of these patients had CD4 cell count of <200 cells/mm^3 (77,3%) and were found at stage IV of HIV (72,7%), followed by stage III (22,7%). These were shown in Table 5.

Table 5. CD4 cell count and HIV stage

Variable	Initial diagnosis of HIV (n=20)	Initial diagnosis of TB and HIV co-infection (n=2)	Total (n=22)
CD4 cell count – no. (%)			
>500 cells/mm^3	0 (0)	0 (0)	0 (0)
350-499 cells/mm^3	3 (15)	0 (0)	3 (13,6)
200-349 cells/mm^3	1 (5)	1 (50)	2 (9,1)
<200 cells/mm^3	16 (80)	1 (50)	17 (77,3)
HIV stage – no. (%)			
I	1 (5)	0 (0)	1 (4,5)
II	0 (0)	0 (0)	0 (0)
III	5 (25)	0 (0)	5 (22,7)
IV	14 (70)	2 (100)	16 (72,7)

Radiological findings were shown in Table 6. It was found that majority of these patients had available chest x-ray results (81,8%) with pulmonary TB as the common finding (60%). All of these patients with available chest x-ray had their chest x-ray performed before the start of TB treatment (100%). Out of 12 patients with pulmonary TB chest x-ray results, 10 patients had their data on pulmonary TB chest x-ray findings and were all patients with the initial diagnosis of HIV. Majority of these patients had unilateral infiltrate (40%) followed by other findings (30%) and bilateral infiltrate (20%).

Table 6. Radiological findings

Radiological findings	Initial diagnosis of HIV (n=20)	Initial diagnosis of TB and HIV co-infection (n=2)	Total (n=22)
Chest x-ray results – no. (%)			
Available	17 (85)	1 (50)	18 (81,8)
Pulmonary TB	12 (60)	1 (50)	13 (59,1)
Negative TB	5 (25)	0 (0)	5 (22,7)
Not available	3 (15)	1 (50)	4 (18,2)
Pulmonary TB chest x-ray findings – no./total no. (%)*			
Cavity	0/10 (0)	0/0 (0)	0/10 (0)
Unilateral infiltrate	4/10 (40)	0/0 (0)	4/10 (40)
Bilateral infiltrate	2/10 (20)	0/0 (0)	2/10 (20)
Mediastinal lymphadenopathy	1/10 (10)	0/0 (0)	1/10 (10)
Others	3/10 (30)	0/0 (0)	3/10 (30)

*data regarding pulmonary TB chest x-ray findings were missing for 2 patients (16,7%)

The most common diagnosis was pulmonary TB (53.3%) and these were shown in Table 7.

Table 7. Diagnosis

Diagnosis	Initial diagnosis of HIV	Initial diagnosis of TB and HIV co-infection	Total
Pulmonary TB – no. (%)	14 (51,9)	2 (66,7)	16 (53,3)
Extrapulmonary TB – no. (%)	13 (48,1)	1 (33,3)	14 (46,7)
Meningitis	2 (7,4)	1 (33,3)	3 (10)
Pleuritis	1 (3,7)	0 (0)	1 (3,3)
Pericarditis	0 (0)	0 (0)	0 (0)
Abdominal TB	1 (3,7)	0 (0)	1 (3,3)
Lymphadenitis	6 (22,2)	0 (0)	6 (20)
Others	3 (11,1)	0 (0)	3 (10)

DISCUSSION

In our study, our patients had the mean age of 34,91 ± 7,68 years. In another study performed by Zamy et al., majority of the patients were in 20-40 years age group (84%).[17] These findings were similar to our study. Globally, HIV and TB infections happen to patients in their productive age.[1] People in their productive age tends to contact more people which increase their susceptibility for getting infected. We also found out that our patients with initial diagnosis of HIV had the mean length of time since HIV diagnosis of 9,87 ± 19,07 months before they were diagnosed as TB and HIV. This is different with another study performed by Pecego et al. where the mean length of time since HIV diagnosis was 5 months.[18] The HIV progression varies within hosts and is affected by several factors.[1]

Patients were dominated by male (86,4%). In Indonesia, the number of new TB cases found in males were 1,4 times higher than females in 2017 and 62% of HIV cases reported from October-December 2017 were male patients.[6,8] Tuberculosis are more likely to happen in males due to several factors. It was found that in high-burden countries, males travel more frequently, spend more time outside and have more social contacts. They often spend time in bars and cigarette smoking which increases susceptibility

to TB.[19] A study found that men who have sex with men (MSM) is the most common risk factor in HIV transmission and they were more likely to get infected as they tend to engage in unprotected anal intercourse. This could also led to transmissions to their female partners.[20,21]
Majority of the patients were married (55%). Another recent study by Anwar et al. showed majority of patients with TB and HIV co-infection were married (76%).[22] Also, majority of the patients were working (70,6%) which is similar to study conducted by Krisnahari.[13] A person's employment status reflects their socioeconomic condition and had an effect to his or her living condition. People with deprived socioeconomic condition have a higher risk for contact with TB patients due to the likelihood of living and working in crowded and poor ventilated places. This also means higher risk of malnutrition, less healthy behaviours, more barriers in accessing health care which increases vulnerability to the disease.[23] However, other study performed by Widiyanti et al. showed that employment status has no correlation to TB and HIV co-infection.[16] This difference may be due to differences in behaviours and culture related to different regions. We also found that majority of our patients in this study had the education level of senior high (88,2%). This is similar to another study performed by Anwar et al. that showed majority of patients with TB and HIV co-infection were in senior high (50,81%).[22] Therefore, HIV screening in TB patients and vice versa should be considered especially with patients in these groups, such as males in their productive age. Control of TB especially in young age is important in order to decrease further burden of latent TB reactivation in older ages. Interventions for prevention and early detection should be further strengthened especially to these high-risk groups as this might be a potential threat in West Java if there is a high burden of TB in both age groups. Moreover, it is important for the public to increase their awareness for TB especially due to its high prevalence in people in their productive age.
Chronic cough was most commonly found in these patients (18,6%), followed by weight loss (15,7%), fatigue (12,9%), fever (12,9%) and others (12,9%). This is similar to another study performed by Amin et al. that showed chronic cough, fever and weight loss as the most common symptoms.[24] Other than chronic cough, these manifestations could be related to atypical clinical manifestations that were common in patients with TB and HIV co-infection.[12] Moreover, it was found that neck lump was the most common other clinical manifestations in this study. Neck lump refers to lymphadenitis TB that was the most common extrapulmonary TB in this study. Immunosuppression caused by progression of HIV increased the risk for extrapulmonary TB, one of the main causes for lymphadenitis in HIV patients.[25] Also, we found that most patients were diagnosed as pulmonary TB (53,3%) and this is similar to other studies.[26,27]
Patients had the mean BMI of 17,9 ± 2,95. This is similar to other study by Taha et al. that showed BMI <18,5 were commonly found in patients with TB and HIV co-infection (54,3%).[14] However, we could not ascertain whether low BMI could have preceded TB or TB results in low BMI as data of BMI were obtained at the time of diagnosis, therefore further cohort studies are recommended. We suggest several theories reported by other studies: Karima et al. showed that low BMI has increased the risk of HIV patients to be infected by TB by 1.9 compared to higher BMI.[27] This indicates malnutrition where patients would have lower immunity and increase the risk for infections such as TB. This could also cause an infection in gastrointestinal tract which would lead to diarrhoea, causing dehydration and weight loss as a consequence. Moreover, this also increase the risk for latent TB reactivation.[23,27]
Pulmonary TB was commonly seen in patients with available chest x-ray results (59,1%). This is similar to other study by Castro et al. where TB was commonly suspected in chest x-ray results (29,2%).[26] Out of 12 patients, 10 patients had their data on pulmonary TB chest x-ray findings. It was found that unilateral infiltrate was the most common finding (40%). This is similar to other study where infiltrates were commonly found.[28] Also, no cavity was found in this study. This is similar to other study which showed cavitation is rare in late HIV

infection, where atypical presentations are commonly found. Human immunodeficiency virus is able to decrease cavity formation which lowered bacteria load in sputum.[29] This is related to the majority of our patients in this study that were in stage IV of HIV and there were negative AFB sputum smear results. This could play a role in delayed diagnosis of TB.

Bacteriological diagnosis of TB requires positive result of AFB sputum smear or rapid molecular test of TB. We found out that bacteriological testing was not performed to all of our patients (6 for AFB sputum smear and 13 for rapid molecular test for TB). However, we could not ascertain the reasons behind these results and therefore further cohort studies are recommended to be performed in Dr. Hasan Sadikin General Hospital. We suggest several theories: this may due to most patients were clinically diagnosed by their clinical manifestations and extrapulmonary TB patients that were diagnosed by other methods. Also, patients with HIV are often unable to produce sputum which could led to difficulty in sputum collection for diagnostic testing.[30] World Health Organization (WHO) in 2010 has recommended rapid diagnostic test of TB (Xpert MTB/RIF assay) for use in all individuals suspected for MDR-TB or TB-HIV, but this has not been stated in national policies in Indonesia due to limitations in equipment in several hospitals.[31] Hence, this showed that lack of bacteriological testing remains a problem in Dr. Hasan Sadikin General Hospital. This becomes a suggestion to Dr. Hasan Sadikin General Hospital as a national referral hospital in West Java to improve their quality of diagnostic testing especially in bacteriological diagnosis for TB.

We found out that patients with AFB sputum smear performed had equal number of positive and negative results. However, other study by Taha et al. showed majority of the patients had negative AFB sputum smear result (42%).[14] Patients in this study showed no cavity lesions which could explain negative results of AFB sputum smear.[30] We believed that differences in clinical presentations of patients in different stages of HIV played a role in these differences in sputum smear results.[31] Patients were commonly detected as rifampicin sensitive (77.8%) in their rapid molecular test for TB results. This is similar to another recent study by Castro et al. which majority of patients that had rapid molecular test for TB performed had rifampicin sensitive (7,4%).[26]

Patients were in <200 cells/mm^3 group in common (77,3%). This low CD4 cell count was associated with TB and is similar to other studies.[14,24,27] Low CD4 cell count indicates immunosuppression which increases the risk for opportunistic infections such as TB and is able to reactivate latent TB infection. Destructions of CD4 T lymphocytes by HIV results in low CD4 cell count and HIV progression is enhanced by TB infection.[14,27] This also explains majority of patients that were found at stage IV of HIV(72,7%) which is similar with other studies.[13,27]

Our study has some limitations. Many data were not available due to incompleteness in filling the medical records. Also, this study only used medical records in period of 2019 which results in small sample size. This results in significant proportion of missing data for some variables which results in incomplete analysis for subjects in these variables. Also, the process of manually entering data in this study did not escape the risk of human-based errors. As TB-HIV remains as a high burden including in Dr. Hasan Sadikin General Hospital as a national referral hospital in West Java, therefore registration of cases in medical records and diagnostic testing for TB in DOTS and HIV Units need to be re-evaluated. We recommend further cohort studies on prognosis or treatment outcomes for patients with TB and HIV.

CONCLUSION

Most of the patients were male in productive age, 9,84 months since HIV diagnosis, working, low BMI, stage IV of HIV with low CD4 cell count. Chronic cough was commonly found and most patients were diagnosed as pulmonary TB. Most chest x-ray results showed pulmonary TB with unilateral infiltrate. There were equal number of positive and negative results on AFB sputum smear and were mostly rifampicin sensitive. In addition, it is recommended that physicians should consider HIV among patients with TB and vice versa especially in males in productive

age. Diagnostic testing in DOTS and HIV Units of Dr. Hasan Sadikin General hospital need to be re-evaluated for better diagnosis of patients with TB and HIV.

REFERENCES

1. WHO | HIV/AIDS. WHO. 2019;
2. WHO | Global tuberculosis report 2019. WHO. 2020
3. Munthali L, Khan PY, Mwaungulu NJ, Chilongo F, Floyd S, Kayange M, et al. The effect of HIV and antiretroviral therapy on characteristics of pulmonary tuberculosis in northern Malawi: A cross-sectional study. BMC Infect Dis. 2014 Feb 25;14(1):107.
4. Montales MT, Beebe A, Chaudhury A, Patil N. Mycobacterium tuberculosis infection in a HIV-positive patient. Respir Med Case Reports. 2015 Nov 30;16:160–2.
5. Bell LCK, Noursadeghi M. Pathogenesis of HIV-1 and mycobacterium tuberculosis co-infection. Nat Rev Microbiol. 2018;16(2):80–90.
6. Depkes RI. InfoDatin Tuberculosis. Kementeri Kesehat RI. 2018;1.
7. Kementerian Kesehatan RI Badan Penelitian dan Pengembangan. Hasil Utama Riset Kesehatan Dasar. Kementrian Kesehat Republik Indones. 2018;1–100.
8. Kemenkes RI. InfoDatin-HIV-AIDS-2018.pdf. 2018. p. 12.
9. Narasimhan P, Wood J, Macintyre CR, Mathai D. Risk factors for tuberculosis. Pulm Med. 2013;2013.
10. Naidoo K, Naidoo K, Padayatchi N, Abdool Karim Q. HIV-associated tuberculosis. Clin Dev Immunol. 2011;2011.
11. Mntonintshi M, O'Mahony D, Mabunda S, Namugenyi KAF. Undiagnosed tuberculosis in patients with HIV infection who present with severe anaemia at a district hospital. African J Prim Heal Care Fam Med. 2017;9(1).
12. Sterling TR, Pham PA, Chaisson RE. HIV Infection–Related Tuberculosis: Clinical Manifestations and Treatment. Clin Infect Dis. 2010 May 15;50(s3):S223–30.
13. Krisnahari KL, Sawitri AAS. Karakteristik Pasien HIV/AIDS dengan Koinfeksi Tuberkulosis di RUmah SAkit UMum Daerah (RSUD) Badung dan Klinik Bali Medika Kuta. E-Jurnal Med Udayana. 2018;7(11):1.
14. Taha M, Deribew A, Tessema F, Assegid S, Duchateau L, Colebunders R. Risk Factors of Active Tuberculosis in People Living with HIV/AIDS in Southwest Ethiopia: A Case Control Study. Ethiop J Health Sci. 2011 Aug 26;21(2):131.
15. Dambach P, Mahenge B, Mashasi I, Muya A, Barnhart DA, Bärnighausen TW, et al. Socio-demographic characteristics and risk factors for HIV transmission in female bar workers in sub-Saharan Africa: a systematic literature review. BMC Public Health. 2020 May 15;20(1):697.
16. Widiyanti M, Fitriana E, Iriani E. Karakteristik Pasien Koinfeksi Tb-Hiv Di Rumah Sakit Mitra Masyarakat Mimika Papua. Sel J Penelit Kesehat. 2017;3(2):49–55.
17. Zamy DA, Lestari BW, Hartantri Y. Gambaran Hasil Terapi TB Paru pada Pasien TB-HIV di RSUP dr.Hasan Sadikin Bandung Tahun 2012-2014. eJournal Kedokt Indones. 2016;3(3):7–12.
18. Pecego AC, Amancio RT, Ribeiro C, Mesquita EC, Medeiros DM, Cerbino J, et al. Six-month survival of critically ill patients with HIV-related disease and tuberculosis: A retrospective study. BMC Infect Dis. 2016 Jun 10;16(1):270.
19. Nhamoyebonde S, Leslie A. Biological differences between the sexes and susceptibility to tuberculosis. J Infect Dis. 2014;209(SUPPL. 3).
20. Friedman MR, Wei C, Klem M Lou, Silvestre AJ, Markovic N, Stall R. HIV infection and sexual risk among men who have sex with men and women (MSMW): A systematic review and meta-analysis. Vol. 9, PLoS ONE. Public Library of Science; 2014. p. 87139.
21. Aldous JL, Pond SK, Poon A, Jain S, Qin H, Kahn JS, et al. Characterizing HIV

Transmission Networks Across the United States. Clin Infect Dis. 2012 Oct 15;55(8):1135–43.
22. Yelfi Anwar, Sucahyo Adi Nugroho NDT. Characteristics of Sociodemography, Clinical, and Pattern of Antiretroviral Therapy of Hiv/Aids Patients At Rspi Prof. Dr. Sulianti Saroso in the Period January To June 2016. (Pharmaceutical J Indones. 2018;15(01):1–33.
23. Duarte R, Lönnroth K, Carvalho C, Lima F, Carvalho ACC, Muñoz-Torrico M, et al. Tuberculosis, social determinants and co-morbidities (including HIV). Vol. 24, Pulmonology. Elsevier Espana S.L.U; 2018. p. 115–9.
24. Djoerban Z, Yunihastuti E, Uyainah A, Amin Z. Profil Pasien Tb-hiv dan Non Tb-hiv di Rscm. Indones Bull Heal Res. 2013;41(4):195–9.
25. Cortez MV, de Oliveira CMC, Monte RL, de Araújo JR, Braga BB, dos Reis DZ, et al. HIV-associated tuberculous lymphadenitis: The importance of polymerase chain reaction (PCR) as a complementary tool for the diagnosis of tuberculosis a study of 104 patients. An Bras Dermatol. 2011;86(5):925–31.
26. Castro S de S, Scatena LM, Miranzi A, Neto AM, Nunes AA. Characteristics of cases of tuberculosis coinfected with HIV in Minas Gerais state in 2016. Rev Inst Med Trop Sao Paulo. 2019;61:1–10.
27. Karima UQ, Sudaryo MK, Kiptiyah NM. Prediktor Kejadian TB pada ODHA di Salah Satu RS Pemerintah Bogor, Tahun 2014-2016. J Epidemiol Kesehat Indones. 2017;1(2):25–34.
28. Agustya M, Wesnawa DP, Nama N, Bagian P, Smf /, Buleleng PR. Profil Pasien Koinfeksi TB – HIV. J Respir Indo. 2016;36(3):175–81.
29. Kwan C, Ernst JD. HIV and tuberculosis: A deadly human syndemic. Vol. 24, Clinical Microbiology Reviews. American Society for Microbiology (ASM); 2011. p. 351–76.
30. Sabur NF, Esmail A, Brar MS, Dheda K. Diagnosing tuberculosis in hospitalized HIV-infected individuals who cannot produce sputum: Is urine lipoarabinomannan testing the answer? BMC Infect Dis. 2017 Dec 28;17(1).
31. Kementerian Kesehatan RI. Petunjuk Teknis Tata Laksana Klinis Ko-infeksi TB-HIV. 2012. 1–150 p.