

Conference Paper

Tuberculosis Coinfection Risk Towards People with HIV/AIDS in Care, Support, and Treatment Polyclinic Santa Maria Hospital Pekanbaru

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Abstract

The tuberculosis patients infected by HIV and the person with both HIV/AIDS (PWHA) and tuberculosis are recognized as TB-HIV coinfecting patient. When HIV infection spreads out, the amount and the function of CD4 lymphocytes decreased. These cells take a very important part of killing TB germs. The body immune system can no longer defend itself from the germ expansion. This research was aimed to analyze the Tuberculosis coinfection risk towards people with HIV/AIDS in CST Polyclinic Santa Maria hospital that had many criterias, such as age, sex, educational level, marital status, and employment, the factor of HIV infection risk, passed follow up medication history, and the number of CD4. This research used Case Control Analytical Descriptive design with Retrospective data during the period of January – December 2017 to the 18 respondents (total sampling). This research had been held on June 2018, in Care, Support, and Treatment polyclinic of Santa Maria Hospital Pekanbaru, and the data was proceeded with computer system. As the result of the research, the highest percentage of TB-HIV coinfection number from people with HIV/AIDS was found in the age of 36-45 years old which consisted of 8 respondents (44.4%) and in the age of 26-35 years old consisted of 6 respondents (33.3%), men who got coinfecting were 14 respondents (77.8%), employed respondents were 16 (77.8%), the entrepreneurs were 7 respondents (38.8%), married respondents were 10 (55.6%), the infection risk were 100% because of the sexual intercourse where the heterosexual took part were 14 people (77.8%), and the CD4 amount <200 cells/mm³ were 17 people (94.4%).

Keywords: risk factor, coinfection, tuberculosis, HIV/AIDS

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1. Introduction

HIV pandemic shows the correlation with the increasing number of Tuberculosis epidemic worldwide which caused Tuberculosis case in the population increased. TB patient positively infected by HIV and HIV patient infected by TB is known as coinfection TB-HIV patient. In 2016, the numbers of TB infected by HIV patient were 45.000 people, and the patients who knew about their HIV positive status were 4.330 people, patients



who treated with ARV therapy from the whole TB-HIV coinfecting patients were 1.228 people, and the TB patient with HIV test were 50.205 people on the list. In 2016, The successful numbers of TB-HIV treatment were 60 % [1, 2].

HIV infection case in Indonesia keeps growing up. The HIV cumulative number from 2009 until December 2016 was 232.323 people. In 2015, the amount of HIV suspect was reported as many as 30.935 people, showing the increasing number in 2016 as many as 41.250 people [2]. In the world level, many efforts have been done to handling coinfection TB-HIV impact for both programs. *World Health Organization (WHO)* is collaborating with Stop TB Partnership has developed the guidance for collaborating programs of TB-HIV arranged based on the prevalency HIV level.

Care, Support, and Treatment (CST) HIV program has been implemented in many countries; this collaboration was started as the effort in controlling TB and increasing the triumph of AIDS program.[3–5]

To support the government program in preventing HIV/AIDS and TB, The Health Department of Riau Province assigned Santa Maria Hospital as the service for CST in November 2010 that collaborated with Senapelan health center as *Voluntary Counseling and Testing (VCT)* service. As the hospital accreditation standard in 2012, the government added more program called *Millenium Development Goals (MDGs)* that aimed to lessen the burden of TB-HIV patients and HIV with TB patients.

In 2017, the patients entered CST service was increased, with 335 as the total amount, 257 people among all were able to fulfill the requirements needed to follow ARV therapy (44 people were dead, 70 people referred out, and people who passed the follow up were decreased into 21 people), 78 patients hadn't fulfilled the requirements to be treated with ARV therapy, TB-HIV coinfecting patients were increased into 18 people (5 people died, 7 people had fulfilled the requirements to be treated with OAT and ARV, 6 people referred out).

The purpose of this research was to figure out the description of TB coinfection risk towards people with HIV/AIDS in many factors, such as; patient characteristic, sex, work state, marital, HIV infected risk, passing follow up history, and CD4 amount.

2. Methods and Equipment

Analytical Descriptive design was used by Retrospective collecting data during the period of January – December 2017 for 18 respondents (total sampling) using patient medical record documentation as the instrument, form, and sheets that had been set by Indonesian Health Department nationally. This research had been held on July 2018

in Care, Support, and Treatment polyclinic of Santa Maria hospital Pekanbaru, and data was proceeded by computer system.

3. Result

3.1. Respondent characteristic

TABLE 1: The Distribution Frequency of Respondent Characteristic Towards TB-HIV Coinfected Patient.

No	Respondent Characteristic	N	%
1	Age		
	17 – 25 years old	2	11,1
	26 – 35 years old	6	33,3
	36 – 45 years old	8	44,4
	46 – 55 years old	2	11,1
	56 – 65 years old	0	0
	>65 years old	0	0
	Total	18	100
2	Sex		
	Male	14	77,8
	Female	4	22,2
	Total	18	100
3	Occupation		
	Farmer	1	5,6
	Salesman	1	5,6
	Entrepreneur	7	38,8
	Employees	2	11,1
	Civil Servant	1	5,6
	Housewife	2	11,1
	Unemployed	4	22,2
	Total	18	100
4	Marital Status		
	Married	10	55,6
	Unmarried	8	44,4
	Total	18	100

According to the table above, it could be seen that the highest TB-HIV coinfected respondents in CST polyclinic Santa Maria hospital Pekanbaru during the period of January – December 2017 came from 8 people who were in 36-45 years old age-group (44.4%) and 6 people were in 26-35 years old age-group (33.3%), 14 men (77.8%), 10 people were high school graduate (55.5%), and 6 people of university graduate (33.3%),

16 people were employed (77.8%), and 7 of them mostly entrepreneur (38,8%), and 10 people in a married state (55.6%).

3.2. Infection transmission risk

TABLE 2: The Distribution Frequency of HIV Infection Transmission Risk Towards TB-HIV Coinfected Patient.

No	HIV Infection Transmission	n	%
1	Heterosexual	14	77,8
2	Homosexual	4	22,2
3	Drugs Injection	0	0
4	Blood Transfussion	0	0
5	Perinatal	0	0
	Total	18	100

According the table above, it could be seen that the infection transmission risk of HIV to all respondents (18 people) coinfectd by TB-HIV in CST Santa Maria hospital pekanbaru during the period of January – December 2017 was happening due to sexual intercourse (100%), while 14 people were heterosexual (77.8%) and 4 people were homosexual (22.2%)

3.3. Medical history

TABLE 3: The Distribution Frequency of TB-HIV coinfectd Patients Who Passed the Follow Up.

No	Medical History	n	%
1	Never visit during the period of < 180 hari	1	5,6
2	Never visit during the period of ≥180 hari	3	16,6
	Total	4	22,2

According to the table above, it could be seen that there were 4 TB-HIV coinfectd respondents who passed the follow up (PFU) (22.2%) and 14 TB-HIV coinfectd respondents who did not pass the follow up (77.8%) in CST polyclinic of Santa Maria hospital Pekanbaru during the period of January- December 2017.

TABLE 4: The Number of CD4 Frequency Distribution Towards TB-HIV Coinfected Patient.

No	Nilai CD4	n	%
1	< 200 cell/mm ³	17	94,4
2	≥ 200- ≤ 250cell/mm ³	1	5,6
3	>250 - ≤ 350 cell/mm ³	0	0
4	≥ 350 cell/mm ³	0	0
	Total	18	100

3.4. The number of CD4

According to the table above, it could be seen that the highest percentage of CD4 number towards 17 people (94.4%) of TB-HIV patient in CST polyclinic of Santa Maria hospital Pekanbaru during January – December 2017 was < 200 cell/mm³.

4. Discussion

4.1. The analysis of respondent characteristic distribution frequency towards TB-HIV coinfecting patient

4.1.1. Age group

This research found that the people who were in 36-45 years old age group (44.4%) and the people who were in 26-35 years old age group (33.3%) got the highest percentage. Different result came from Made Agustyaresearch in 2015 in Buleleng State Hospital, it stated that the age group that had infected was 20-40 years old (80%), and 12 respondents (66.6%) were categorized at the same age group. In the research of Bráulio Matias de Carvalho and partners in Brazil (2012) stated that the highest number of people who were infected came from 27-49 years old age group (80.6%) with the average age was 36 years old [6, 7].

The research result showed that the highest age period which got TB-HIV coinfecting towards people with AIDS was young adult period (26-35 years old) and late adult (36-45 years old). According to its symptom, it would take 5-10 years for knowing the indication of HIV. During that period of time, there would be many inflectional stages before HIV turns into AIDS. When it comes to the exact time, AIDS disease has already infected the suspect with many coinfections[8]. If it got counterback from young adult until later, the age range of the respondents when the virus enters the body would be around 16-35 years old, which is in the age of late teen and young adult, knowing the fact that in that period of time, characteristic for individuals is mostly looking for their truly

identity, having a lot of activities, and high chance of associating with many people until somehow they caused troubles for themselves. There are many factors that can affect the characteristic improvement in that period of age which can be categorized as two major factors; internal and external factors. Genetics, nutritional adequacy, and their minds are categorized as the internal factors. Meanwhile the external factors could be from their inner circle, such as parents, teachers, and their mate [9].

From the gender section, the majority people who got infected are men (77.8%). Tuberculosis coinfecting people with HIV/AIDS caused by the different behavior traits, socio-economy, and genetic factors. The opportunistic infection exposure to people with HIV/AIDS has the different kind of gender. The illness would have the difference caused by the manykind of behavior and social function[10]. In 2016, Indonesia Ministry of Health reported that Lung Tuberculosis mostly happened to men rather than women. This result also supported by the statement of Bráulio Matias de Carvalho and partners from Brazil [7] which explained that the sex of the men was the risk factor of Tuberculosis happened with HIV/AIDS suspect caused by the different social behavior between men and women. The research of MuhammedTaha in Ethiopia (2009) substituted that the connection between sex of the men and Tuberculosis was explained through the behavior, socio-economy and genetic factors. One of the caused was act behavior factor and socio-economy which was not healthy, that is smoking and promiscuity that can rise up the infection transmission [11].

For the highest employment status was employed (77.7%), mostly of them were entrepreneur (38.8%) who would get high risk of infection worked as Disk Jockey / DJ (1 person), Salon worker (2 people), and entrepreneur (4 people). These kinds of jobs had a high intensity to interact with much kind of people and environment, so it would probably affect people mindset or personalities to act and decide either positive or negative [12].

For marital status, the highest percentage was married (55.6%). The result of this research was supported by the research of MuhammedTaha in Ethiopia (2009) that claimed that mostly patients were married (42.6%), DesiAyu (2012) stated on her research that 87.2% of patients in dr. Kariadi State Hospital Semarang were married, and Ali-faNasyahta (2014) claimed on her research that 45.7% of patients in dr. Kariadi State Hospital Semarang were married couple who were infected by HIV[12, 13].

From the research finding, 10 respondents coinfecting by TB-HIV were married couples with the risk of whole respondents were heterosexual. Sexual intercourse is the presence of love, emotion, and communication between husband and wife in a marriage. And the healthy sexual intercourse is not having sex before legal marriage, and not

changing sex partner. The respondents in this research probably had sex before marriage or before having a regular partner or having sex intercourse with people who were not their own partner. Transmission risk which caused by changing partner constantly were the factor of virus inseminations to the body, so in a mean time, the respondents would enter the HIV or AIDS status, and transmit to their regular partner or another people who have not infected yet during the sexual intercourse. It was obviously seen from the marriage status of the respondent, where 8 of 10 were having the job which has close characteristic as mentioned before that contributed to someone infected by lung Tuberculosis, related to the *Mycobacterium Tuberculosis* germ exposure. There were 6 respondents of high school graduate and 2 collegians with 22 – 45 age range as the highest educational level. This age grouping was also connected with the age characteristic that had already explained above, which is productive age that had higher sexual hormone activity, environmental influence, and job.

4.2. The analysis of the distribution frequency of HIV infection transmission risk towards TB-HIV coinfecting patient

The research result in CST Santa Maria hospital polyclinic Pekanbaru during January – December 2017 found that the HIV transmission risk towards TB-HIV coinfecting patient over all were caused by the sexual activity, where the 14 heterosexual patients got the highest percentage (77.8%) and the 4 homosexual patients (22.2%), meanwhile there was no other transmission risk. This caused the positive HIV patients who entered the CST Santa Maria hospital service because of the drug injection were referred to PetalaBumi hospital Pekanbaru which has RumatanMatadonTheraphy Program (RMTP), which is the rehabilitation service for drug addict and HIV treatment, meanwhile the children patients and perinatal HIV positive referred to Arifin Ahmad Regional Public Hospital that has PCTCT service (*Prevention of Mother To Child Transsmision*), which serve a pregnant mother who became the positive suspect of HIV during the birth process, breeding, or partner who has a pregnancy program. And these services also treat a baby with HIV positive mother before they were born, during the birth process, and after they were born.

In this research, the characteristic of the respondents above affected the risk of HIV transmission because of the sexual activity (100%), both for heterosexual (77.8%) or homosexual (22.2%), the highest research finding belonged to gender, productive age, marital status, educational level, and work, which was happened to 77.8% men, 55.6% marriage, that had sexual activity with different partners so they can transmit the virus to

their legal/ regular partner, in the productive age (26-45 years old) who had high sexual hormone activity and doing a lot of activities, 55% from Senior High School graduate where the teen age period is the time for searching their truly identity and easier to be influenced by the environment and other people, and housewife who were infected by their partners. The over all respondents of this research had the risk factor because of the unsafety sexual intercourse (100%) that caused the transmission of the virus.

4.3. The number of CD4 distribution frequency towards TB-HIV coinfecting patient

The highest number of CD4 of this research was <200 cell/mm³ from 17 patients (94.4%). All of the respondents came to CST polyclinic of Santa Maria hospital Pekanbaru for the first time to check their HIV status and followed by checking the number of CD4. And all of the respondents came with many opportunistic infections, mostly TB-HIV coinfection and categorized as III and IV clinical stage, whereas 13 people of men (76.4%), and 15 of respondents (88.8%) were categorized in the productive age that had high hormonal sexual activity and had high activity, 10 respondents were in High School educational level (58.8%) when the teenage is the period of searching their truly identity and easily affected by their inner circle. 7 respondents (41.1%) had a high risk job, such as Disc Jockey/DJ, salon, entrepreneur, and housewives that had many interactions with outsiders through sexual activity (100%) both heterosexual or homosexual. The high amount of respondents who had low number of CD4 was caused because they checked themselves when opportunistic infection appeared, the symptoms only considered as normal illness, meanwhile, in that time, the immunity was decreased and indicated lower number of CD4, which was below normal [15].

This result was supported by Desy Ayu research in dr. Kariadi hospital Semarang (2012) that stated the highest number of CD4 of patient is <100 cell/mm³ (87.3%), meanwhile the research that categorized the highest number of CD4 was <200 cell/mm³ (50.6%) belonged to Muhammed Taha (2009) research in Ethiopia, 71.9% found in Bráulio Matias de Carvalho and partners research (2012), and 20.5% Alifa Nasyah research in dr. Kariadi Semarang (2014).

All of the respondents came to CST Santa Maria hospital were TB-HIV coinfecting who were checked their HIV status for the first time, and continued with CD4 checking. And all of the respondents came with many opportunistic infections categorized in stage III and IV. This fact was supported with the number of CD4 they had.

According to the TB-HIV coinfection characteristic the respondents had on this research, 17 respondents got the highest percentage, 13 respondents were men (76.4%), 15 of them (88.8%) included to the respondents who had high sexual hormone activity, 10 of the respondents (58.8%) were in the high school period where the teen age were the process of searching their truly identity, and easily get affected by the environment and their inner circle, 7 respondents (41.1%) had the high risky job, such as; Disc Jockey/DJ, salon worker, Entrepreneur, and housewife who had high interaction with their surrounding, 9 respondents (52.9%) in married status, and the risk of HIV transmission came from sexual activity (100%), both for heterosexual or homosexual was obviously affected the number of CD4 they had since they first sentenced as HIV positive.

The high amount of respondents who had low number of CD4 was caused because they checked themselves when opportunistic infection appeared, the symptoms only considered as normal illness, meanwhile, in that time, the immunity was decreased and indicated by lower number of CD4, which was below normal.[16]

5. Conclusion

Based on the result of the research, it could be concluded that there were various factors that caused TB-HIV coinfection risk, such as age, gender, marital status, sexual behavior and even the number of CD4 <200.

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