Influence of Side Effect and Medication Adherence to Incidence of Tb Drug Resistance in RSUP H. Adam Malik Medan 2018

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Abstract: TB drug resistance is a condition where the Mycobacterium tuberculosis bacteria can no longer be killed with one or more anti-TB drugs. The study aims to analyze side effect and medication adherence with TB patients on the incidence of TB drug resistance in RSUP H. Adam Malik Medan 2018. This type of research is analytic observation research with case-control research design with a total sample of 82 people obtained by Purposive Sampling. Data were obtained through interviews with questionnaires and medical record. Based on the results of multivariate analysis showed that side effect and medication adherence affect the incidence of TB drug resistance. Information related to the risk of TB drug resistance as a side effect and medication adherence was expected to reduce TB drug resistance.

1 INTRODUCTION

In 2013, there were 6,800 new cases of TB with Multi-Drug Resistance (MDR TB) in Indonesia. It was stated that 2% of new TB cases and 12% of TB cases were re-treated as MDR TB cases. More than 55% of MDR TB patients have not been diagnosed or received the good and correct treatment. MDR TB cases in Indonesia tend to increase from 2009 to 2014 (Ministry of Health, 2015).

MDR TB is a disease with ongoing treatment. Treatment of MDR TB patients is more difficult to treat with a success rate of around 50% and the cost of treatment for patients with MDR TB can be up to 100 times more expensive than ordinary TB (Aditama, 2000). An adult TB patient is estimated to lose an average working time of 3 to 4 months and can result in a loss of annual household income of 20-30%. If the person dies, they can lose around 15 years of income (Ministry of Health, 2011).

In 2015, there were 10.4 million new cases of TB cases in the world with 480,000 multidrug-resistant cases (World Health Organization [WHO], 2016). Based on the WHO 2017 Global Report Tuberculosis, in 2016 there were 600,000 new cases resistant to rifampicin OAT, which is an OAT that is very effective in TB treatment, and there is an increase in cases of MDR TB to 490,000 cases (WHO, 2017). In 2017, there were 10 million new cases of TB cases in the world with 558,000 cases of MDR TB (WHO, 2018).

The results of the study by Cahyaningtyas, Perwiraningtyas and Sulasmini (2018) conducted at the Medical Center for Lung Disease, Purwokerto, stated that the risk factors for MDR TB were disorderly treatment with OR = 2.3, which means that patients who are irregularly treated have a 2.3 times chance suffer from MDR TB compared to patients who regularly seek treatment.

The research conducted by Fauziah and Sudaryo (2013) conducted in RSUP Persahabatan in 2013 found that the factors that influence the incidence of MDR TB were age (OR 1.7), alcohol consumption (OR 1.5), contact history TB (OR 2, 1), medication compliance (OR 10.8), and diabetes mellitus (OR 2.1). Fauziah and Sudaryo (2013) said that to support the DOTS program, TB patients should continue to be monitored and controlled during their treatment, especially in terms of medication compliance.

One of the factors that cause MDR TB is a factor that is caused by patients, namely the low compliance with taking medication which is often caused by drug side effects (Ministry of Health, 2015). Research results of Cahyaningtyas et al. (2018) state that there is a correlation between OAT side effects on TB patient adherence in TB treatment.

Based on the report of the H. Adam Malik Hospital Medan Medical Record Installation in 2019, there were 41 people with MDR TB in 2018 with 6 deaths in 2017.

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2 METHOD OF RESEARCH

This type of research is analytic observation research with case-control research design. The sample in this study consisted of cases, namely patients who had been diagnosed as TB drug resistance patients and controls, namely patients who had been declared cured based on data in the medical record of 41 cases and 41 controls taken by purposive sampling based on inclusion criteria determined by the researcher.

The method of data collection is done by collecting primary data obtained directly from the sample using a questionnaire as a research instrument and secondary data obtained from documents in the form of medical records or TB patient status at H. Adam Malik Hospital Medan.

Data analysis was carried out by univariate, bivariate and multivariate analysis. Univariate analysis was carried out to see the frequency distribution of side effect, medication adherence, and TB drug resistance. Whereas bivariate analysis was carried out using the chi-square test, to see the relationship between side effect, medication adherence with TB drug resistance. Multivariate analysis was carried out using logistic regression tests to see the factors that influence TB drug resistance with the terms p <0,25 and the most dominant factors influencing.

3 RESULT AND DISCUSSION

H Adam Malik General Hospital Medan is a drug-resistant Tuberculosis service implementing hospital in Indonesia regulated in the Decree of the Minister of Health of the Republic of Indonesia Number HK.01.07 / Menkes / 350/2017.

According to the frequency distribution on table 1 showed that 15 patient (36,6%) with TB drug resistance has a side effect when they consumpt the anti-TB drugs and 35 patient (85,6%) with TB drug resistance disobedient to consumption the anti-TB drugs.

Table 1: Frequency Distribution of Side Effect and Medication Adherence

Variable	Control		Case	
	n	%	n	%
Side Effect				
No	34	82,9	26	63,4
Yes	7	17,1	15	36,6
Amount	41	50,0	41	50,0
Medication Adherence				
Obedient	33	80,5	6	14,6
Disobedient	8	19,5	35	85,6
Amount	41	50,0	41	50,0

The result of the bivariate analysis showed that there is a relationship between a side effect and medication adherence with TB drug resistance and each p values of these variables are 0,046 and <0,001.

Table 2: Relationship between Side Effect and Medication Adherence with TB drug resistance

Variable	TB drug resistance				P Value	RR
	Control		Case			
	n	%	n	%		
Side Effect						
No	34	82,9	26	63,4	0,046	1,78
Yes	7	17,1	15	36,6		
Amount	41	50,0	41	50,0		
Medication Adherence						
Obedient	33	80,5	6	14,6	< 0,001	4,55
Disobedient	8	19,5	35	85,6		
Amount	41	50,0	41	50,0		

Based on the results of multivariate analysis on table 3 it can be seen that the factors that influence the incidence of TB drugs resistance are side effect (p=0,047) and medication adherence (p <0,001), where the dominant factor influencing is medication adherence with a regression coefficient of 4,700, which means that TB patients who disobedient taking drugs had a risk of 4,700 times for TB drug resistance compared to those who adhered to take the drug.

Table 3: Multivariate Analysis

Variable	B	Sig.	Lower	Upper
Side Effect	-2,234	0,047	0,102	0,967
Medication Adherence	4,700	<0,001	12,33	981,55

The results of this study are in accordance with the research conducted by Cahyaningtyas et al. (2018) conducted at the Medical Center for Lung Disease, Purwokerto. the possibility of 2.3 times suffering from MDR TB compared to patients who regularly seek treatment.

The results of research by Waokicho, Kassahun, and Alemseged (2017) were conducted at St. Hospital. Peter Khusus TB, Addis Ababa, Ethiopia, said that the factors at risk of influencing MDR TB

were age, the number of rooms in one house, history of previous treatment and HIV infection.

Rumende (2018) stated that in 2014, as many as 190,000 MDR TB patients died due to lack of access to effective treatment. The mechanism for the occurrence of MDR TB can be caused by genetic factors, previous treatment history and other factors such as diabetes mellitus. Factors associated with previous treatment are incomplete or inadequate treatment and non-compliance in TB treatment.

One of the factors that cause MDR TB is a factor that is caused by patients, namely the low compliance with taking medication which is often caused by drug side effects (Ministry of Health, 2015). Management of TB-resistant patients Good drugs uses appropriate treatment strategies with second-line OAT. To treat TB Resistance Drug patients, second-line OAT guidelines and first-line lines that are still sensitive and quality are needed with appropriate treatment guidelines. The more complicated second-line OAT in management includes the determination of drug guidelines, dosage, method of administration, duration of administration, calculation of needs, storage and so on. In addition, the price of second-line OAT is far more expensive, the potential possessed is lower, side effects are more and more severe than the first-line OAT.

Research results of Cahyaningtyas et al. (2018) state that there is a correlation between OAT side effects on TB patient adherence in TB treatment.

4 CONCLUSIONS

Based on the research that has been done, it can be concluded that side effect and medication adherence are related to the incidence of TB drug resistance in H. Adam Malik Hospital Medan. Factors that influence the incidence of TB drug resistance are a side effect and medication adherence, where the dominant factor influencing is medication adherence.

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