

THE EVALUATION OF *DRUG RELATED PROBLEMS* (DRPs) OF THE TUBERCULOSIS (TB) PATIENTS AT THE LUNG DISEASE WARD IN THE INSTALLATION OF STAYED CARING OF CENTRAL GENERAL HOSPITAL PERSAHABATAN (RSUP PERSAHABATAN)

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ABSTRACT

Indonesia was the country that has the tuberculosis patients placed on the 3rd most in the world after India and China, it was supposed that there are about 10% of the TB patients from whole TB patient in the world³. Tuberculosis was the disease which was caused by the infection of *Mycobacterium tuberculosis complex* and it becomes the main health problem of the people in Indonesia³. This research aimed for knowing the number and percentage of *Drug Related Problems* (DRPs) which was occurred to the patients of TB at lungs diseases ward at IRIN RSUP Persahabatan. This research was descriptively, the collecting of the data has been done prospectively to 8 patients with the patient criteria of TB diagnose and had been stayed caring at the lungs diseases ward of RSUP Persahabatan. The data was taken on March 2014. The identification of *Drug Related Problem* (DRP) related with the choice of the drugs that was not Appropriate, it had been done through the discussion and the clinicians. The analysis of the data had been done descriptively. The result shows that the problem of the choosing of the inappropriate drugs happened on 42 cases. This problem including the drugs without the indication was 8 cases, there was the indication without the drugs that was 5 cases, the dose of the drugs was too high that was 1 cases, the dose of the drugs was too low that was 6 cases, the inappropriate of choosing the drugs that was 3 cases, undesirable of the drugs reaction that was 4 cases, the drugs interaction that was 7 cases and the failure of the patient in receiving the drugs was 8 cases. In reducing the *Drug Related Problems* (DRPs) on the patient of TB at lungs diseases

problem need the improvement of the active functioning of the pharmacists and also the cooperation between the medical experts in giving the health service.

KEY WORDS: *TB (Tuberculosis), Drug Related Problems (DRPs), RSUP Persahabatan.*

INTRODUCTION

Indonesia was the country that has the tuberculosis patients placed on the 3rd most in the world after India and China³. It was supposed that there are about 10% of the TB patients from whole TB patients in the world³. Tuberculosis (TB) was one of the disease that has been known for so long and until now it still become the main cause of the death in the world². The prevalence of TB in Indonesia and on the growing countries are quite high⁵. In 2006, the new cases in Indonesia are > 600.000 and most of them have been suffered by the people in productive age (55-55 years old)⁸. The large number of the death caused by the infection of TB was about 300 people in a day and it happened > 100.000 of death in a year⁸.

Tuberculosis was the disease which was caused by the infection of *Mycobacterium tuberculosis complex* and it becomes the main healthy problem of the people in indonesia⁶. *M. tuberculosis* has the stick shape, it was 5 μ long and 3 μ wide, it does not form the spore and including on the aerobe bacterium⁶. *Mycobacteria* can be colored like other bacteria such as the colored of Gram⁶. But once it colored by the gram colored, the color can not be vanished with the acid⁶. Because of it the *mycobacteria* was known as the Basil Tahan Asam (BTA)⁶. On the *mycobacteria* wall cells, the grease has a correlation with *arabinogalaktan* dan peptidoglikan on it's beneath⁶. This structure reduces the wall permeability of wall cells so it reduces the affectivity toward the antibiotik⁶. *Lipoarabinomannan* on other molecule in the wall cells of *mycobacteria* roles in the interaction between the female and pathogen makes *M. Tuberculosis* can survive in the macrophage.

The source of the spreading was the sufferer of TB BTA (+) when they are cough or sneeze⁴. Clinically, TB can works through the primer infection and primer post⁴. The primer infection work when someone struck the TB microbe for the first time⁴. These primer infections usually become the hidden access and go on without the symptom, only cough and soundly breath⁴. The post primer infection occurs after several months or years after the primer infection⁴. The characteristic of TB post primer was the damaged of the lungs widely with the occurring of kavitas or evusi pleura⁴.

Classification of therapy regimen of TB⁴

1. Category I (2HRZE / 4H3R3)

- The new sufferer of lungs TB BTA (+)
- BTA(-)/rontgen (+) with the deviation of wide parenkim.
- The serious extra lungs of TB

2. Category II (2HRZES / HRZE / 5H3R3E3)

- The sufferer relapse (*relaps*)
- The sufferer fail (*failure*)
- The sufferer with the treatment after negligent (*after default*)

3. Category (2HRZ / 4H3R3)

- The new sufferer BTA (-) and rontgen (+) light sickness
- The sufferer of light extra lungs of TB

In order to improve the use of the drugs rationally, the pharmacist have an important role in especially in identify and solve the problems which has correlation with the using of drugs or *Drug Related Problems* (DRPs) even in potentially or actual⁹. *Drug Related Problems* was one kind of problem that appear in the using of the drugs or medicine therapy which was potentially or actual can influenced the *outcome* of the patient therapy, increasing the caring cost and also can block the attained of the therapy purposed⁹.

The appearance of *Drug Related Problems* (DRPs) usually caused by the increasing of the kinds and the number of the drugs that was consumed by the patient (*polypharmacy*) to overcome many kinds of disease that was suffered¹⁰. Kinds of DRPs that was discovered such as 15% DRPs has been identified from the patient who received the wrong medicine, 8% patient received the therapy without the clear indication, 6 % of over dose, 16% received the sub therapy dose, 21 % of the patient felt ADR (*Adverse Drug Reaction*), and 11 % failure in receiving the medicine¹.

Realizing this problem, it was needed to evaluate of DRPs that was aimed to knowing the number and the percentage of the inappropriate of choosing the drugs to the patient of TB at the lungs disease ward in the pharmacy's installation Rumah Sakit Umum Pusat Persahabatan (RSUP Persahabatan).

Methodology of research

The research was descriptively. The data was taken prospectively of 8 patients with the criteria of the patient was the staying care patient at the lungs disease ward with the diagnosed of TB at RSUP Persahabatan. The patients who are observed their therapy improvement are the patients who have the criteria such as: the chronic disease, complication, getting a lot of drugs and geriatric. The data was taken on march 2014. The taken of the patient curing data has done through the medical recorded cars, the note card of the giving of the drugs which was written by the nurses, and other documents that was needed.

The data that have been taken are:

1. The regular data of the patient such as gender, weight, and age.
2. The history of the disease
3. The gripe that has been felt of the patient as long as they care at the hospital.
4. Diagnose
5. The result of the checkup while it physically or laboratory during the care of the patient.
6. The treatment that has been given to the patient during the care at the hospital.

The identification of *Drug Related Problems* (DRPs) related with the choosing of the drugs that was not inappropriate has been done through the discussion with the clinician. The next analysis data will be done descriptively

THE RESULT

Table 1. Kinds and number of problems in choice of drugs that was inappropriate on the patient of TB disease at lungs disease ward at IRIN RSUP Persahabatan.

Problem	Number of cases	Percentage (%)
There are drugs without the indication	8	19,05
There are indications without the drugs	5	11,90
The high dose of the drugs	1	2,38
The low dose of the drugs	6	14,29
In appropriate of choosing the medicine	3	7,14
Undesirable drugs reaction	4	9,52
The interaction of the drugs	7	16,67
The faulty of the patients in receiving the medicine	8	19,05
TOTAL	42	100

Table 2. List of drugs that had been given without the indication to the patients of TB at lungs disease ward at IRIN RSUP Persahabatan.

Name of the drugs	Indication	Number of cases	Patients
Ceftazidime	Infection of gram positive gram and negative gram	1	Mr.ARB,
Azitromisin	ISPA, Pneumonia, skin infection and soft tissue. It was more active to the negative gram	1	Mr.ARB
Omeprazole	Sore of cavity and sore of duodenum	1	Mr.M
Domperidon	Sickening and vomit	1	Mr.M
Ceftriaxone	The infection of positive gram bacteria and negative gram	3	Mrs..M, Mr.MR, Mr.UM
Amlodipin	Hipertensi, profilaksis angina	1	Mr.UM
TOTAL		8	

Table 3. The indication without the therapy on patient of TB at lungs disease ward IRIN RSUP Persahabatan.

Clinical condition	The right drugs	Number of cases	Patient
The reduction of appetite	Vitamin B complex	2	Mr.ENW, Mr.ARB
Sickening and vomit	Domperidone	1	Mr.PH
Hipertrigliserida	Simvastatin	1	Mrs.ENW
Hipoalbumin	Albumin	1	Mrs.ENW
TOTAL		5	

Table 4. The list of high doses of drugs that had been given to the patient of TB at lungs disease ward at IRIN RSUP Persahabatan.

High doses of the drugs	The right dose	Number of cases	patients
Ampisilin sulbaktam 4x1,5g	250 – 1 gram every 4 – 6 hours	1	Mr.M
TOTAL		1	

Table 5. The list of low doses of drugs that had been given to the patient of TB at lungs disease ward at IRIN RSUP Persahabatan.

The low doses of the drugs	The right doses	Number of cases	patients
Ranitidin injeksi 2 x 50 mg	3 x 50 mg	3	Mrs.ENW, Mr.MR, Mr.UM
Sukralfat 3 x 1 c	4 x 1 c	3	Mrs.ENW, Mr.ARB, Mr.MR
TOTAL		6	

Table 6. The list of choose of drugs that was not appropriate that had been given to the patient at lungs disease ward at IRIN RSUP Persahabatan.

The drugs that had been given	The right medicine	Number of cases	Patients
Single therapy of amlodipin 1 x 10 mg, TD 180/80 on 3/3/14	The combination of antihipertensi amlodipin and valsartan.	1	Mr.PH
The used of OAT 4 FDC dan Streptomisin to the cases of TB category II	The diagnose of patient TBMDR (resistensi INH and Rifampisin) it was better to use the second generation of OAT (<i>Second lines anti-tuberculosis drugs</i>) such as Cycloserine, Ethionamide, Ciprofloxacin, Levofloxacin.	1	Mr.AH
The combination therapy sukralfat, ranitidin, omeprazole at dyspepsia syndrome	Syndrome dyspepsia therapy with the high symptom in choosing of therapy sukralfat as the collator in protecting the cavity mucosa from the pepsin acid and omeprazole blocked the secretion of cavity acid.	1	Mr.MR
TOTAL		3	

Table 7. The undesirable drugs reaction on the patient of TB at lungs diseases ward IRIN RSUP Persahabatan

Name of drugs	The side effect	Number of cases	Patients
OAT 4 FDC	Sickening and vomit	1	Mr.PH
	Improving the score of SGPT	1	Mr.PH

Ethambutol	Dizzy and dazed The hazy sight	1 1	Mr. AH Mr.PH
TOTAL		4	

Table 8. List of the interaction drugs in the TB patients at lungs diseases ward IRIN RSUP Persahabatan

Interaksi Obat	Effect	Number of cases	Patients
Rifampisin dan INH	Improving the toxicity INH by improving the metabolism metabolisme	3	Mr.AH, Mr.M, Mrs.ENW
Rifampisin and Pyrazinamide	Improving the toxicity one and another with the interaction of pharmacodynamic	1	Mrs.ENW
INH and Pyrazinamide	Improving the toxicity one and another with the interaction of pharmacodynamic	1	Mrs.ENW
INH and Parasetamol	INH will gain the effect of parasetamol by influencing the metabolism of enzyme CYP2E1 in the liver.	1	Mrs.AH
Rifampisin and Parasetamol	Rifampisin reduce the effect of parasetamol by improving the metabolism	1	Mrs.AH
TOTAL		7	

Table 9. List of the failure in receiving the drugs on TB patients at lungs disease ward at IRIN RSUP Persahabatan

Nama of Drugs	Time	Number of cases	Patients
Ceftriaxon Injection	12.00 (10/3/14), 06.00 (4/3/14)	2	Mr.ENW, Mr.MR
Ranitidin Injection	06.00 (11/3/14), 06.00 (12/3/14), 06.00 (13/3/14)	3	Mrs.ENW
Ceftazidime	12.00 (11/3/14), 12.00 (13/3/14)	2	Mr.ARB
Curcuma	06.00 (5/3/14)	1	Mr.SYH
TOTAL		8	

DISCUSSION

The result of this research shows that the problem of choosing the drugs that was not appropriate on 42 cases with the kinds and numbers on the table 1. The effectively of the treatment was determined by the decision of choosing the medicine. The choosing of

medicine without the strong scientific basic proof can caused the healing process become slower so it can add the time of stayed caring and add the cost of treatment. On the table 2 it was showed the list of the choosing drugs without the indication. From the table 2 we can see the majority of choosing the drugs without the indication hooked with the use of antibiotics. The principal of the use of antibiotic was based on the main consideration of the cause of the infection and factors from the patients. The giving of right antibiotic was based on the result of microbiology test and the test of germ sensitivity, but in the daily practice this check up was rarely to do. On the serious infection that was need the quick handling; the giving of antibiotic can be started while waiting the result of microbiology test and the test of germ sensitivity⁷.

On the table 3 it was showed the list of there was an indication without the therapy. From the table 3 we can see the majority of indication without the indication was the clinical condition of the reduction of appetite. On the table 4 it was showed the list of there was a high dose of the drugs that was the used of antibiotic which can trigger the resistance. On table 5 it was showed the list of low dose of the drugs. From the table 5 it can be seen that there are majority of the drugs with low dose that was the used of ranitidine injection 2x50mg, according to Renal Drug Handbook (2009) it should be 3x50mg on ranitidine dose injection. The consideration of this clinical situation influenced the duration of healing and the caring duration of the patient in the hospital.

On the table 6 it was showed the list of choosing the medicine that was less precise on the choose of the antihypertensive therapy which was need the combination, anti tuberculosis drugs to the TBMDR patients and the choosing of the combination therapy to the dyspepsia syndrome. The combination of the drugs that was not needed was the use of two kinds of drugs or more with the class of the same therapy but it was different on its class that was purposed to improve the effectiveness of the therapy but one of the drugs or more on that combination which was needed by the patient. On the table 7 it was showed that the ADR (*Adverse Drug Reaction*) data on the use of anti tuberculosis drugs. The use of drugs should be consider the ratio of benefit and the risk for the patient. The choosing of the drugs not only see the benefit in curing the diseases but must be followed by the consideration of clinical condition. The drugs which categorized unsafe to the patient condition if the drugs potentially cause the dangerous side effect or it had been proved can cause the side effect to the patient. On the table 8 it was showed the list of interaction of the medicine which the majority of

interaction between the anti tuberculosis drugs. The interaction between the drugs and another drugs was the phenomenon where the work of the drug was influenced by the other drugs that was given collectively or almost collectively. The interaction of the anti tuberculosis drugs was characterize of hepatotoksik, so it was needing the monitoring of the heart function (SGOT, SGPT). On the table 9 it was showed the list of the failure of the patient in getting the majority drugs was the failure in getting the antibiotic and anti-sore. The use of the antibiotic that was not arranged and suitable with the duration of the therapy can cause the antibiotic resistance. The evaluation of the *Drug Related Problems* (DRPs) on the patient of TB at stayed cure was the challenge to the pharmacist at the hospital in doing the *Pharmaceutical Care*. To diminish the *Drug Related Problems* (DRPs) on the patient of TB it was needed the improving of the cooperation between the medical expert in giving the health service.

CONCLUTION

From the 8 category of *Drug Related Problems* (DRPs) that has been evaluated it was achieved the number of whole DRPs about 38 cases, those are

1. The patients who received the drugs without the indication are 19,05%
2. The patients who was not received the drugs without the related indication are 11,90%
3. The patients who received the high dose of the drugs are 2,38%
4. The patient who received the low dose of the drugs are 14,29%
5. The patients who received the choosing of inappropriate drugs are 7,14%
6. The patients who felt the *Adverse Drug Reaction* (ADR) are 9,52%
7. The patient who felt the drugs interaction are 16,67%
8. The patients who felt the failure in getting the drugs are 19,05%

To reduce the *Drug Related Problems* (DRPs) to the patients stayed caring of TB was needing cooperation between the medical experts in giving the health service.

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