SCREENING AND FACTORS ASSOCIATED TUBERCULOSIS IN TASIKMALAYA REGENCY IN 2019

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Abstract

Tuberculosis is an infectious diseases with an agent Mycobacterium tuberculosis with attachks the lung organs. In 2011 the prevalence of Indonesian population diagnosed with pulmonary TB by health workers in West Java was 0,7%. In 2018 in the Health Departement recorded average of around 800 cases of tuberculosis found in Tasikmalaya region for the past 3 years [1]. The purpose of this study was to determine the results lt of to knowing tuberculosis screening in Tasikmalaya district. In addition to knowing the relationship between age, sex, source of finding, type of PMO, th results of the examination with the incidence of pulmonary TB in Tasikmalaya District in 2019. This study was an observational analytic study were all people who were sceened in Tasikmalaya regency Januari 2019. The sample of this study was that people who were screened for phlegm aged 1-75 years were selected based on inclusion criteria in totality sampling and purposive sampling in January 2019. They were reffered to pulmonary TB screening test in the form of smear test, TCM, test rongent, mantoux test as many as 279 people. Data was collected from the results of health center screening checks in Tasikmalaya District, Tasikmalaya Hospital and Singaparna Medical Center wich were recorded by pulmonary TB cadres of the Institute of Health Nahdlatul Ulema Tasikmalaya Regency January 2019. Data analysis used were univariate and bivariate and multivarate. The result of this study indicate that screening used the BTA test has a sensitivity of 93,33%, spesivisity of 92,22%, Positive Predictive value of 66,66%, Negative Predictive value of 98,8%. In TCM test sensitifity of 92%, spesivity of 98,37%, Positive Predictive value of 92%, Negative Predictive value of 98,37 % with p= 0,00. Bivariate analysis showed that there was a relationship between age, sex, source of finding, type of PMO, the results of the examination with the incidence of pulmonary TB. Age (RR= 2,03; CI 95%= 1,15-3,57; p= 0,01), sex (RR= 1,59;CI 95% = 0,95-2,63;p= 0,03); source of finding (RR =2,69; CI 95%=1,19-6,06); type of PMO (RR=0,14; CI 95%= 0,10-0,200; p=0,00); the results of the examination (RR= 58,4; CI 95%= 18,847-181,06; p=0,00). Multivariate analysis showed the source of case finding (p=0,021) and the result of examination (p=0,036) significant with pulmonary TB. The conclusion of the best screening test for sensitivity and spesivisity is the TCM test. Source of finding was the most dominant factors with pulmonary TB. The recomendations of this study were expected to be more enthusiastic for people in pulmonary TB screening as an effort to prevent early detection of pulmonary TB.

Keywords: screening for pulmonary TB, Pulmonary TB, TCM, Source of finding cases of pulmonary TB.

1. INTRODUCTION

Pulmonary tuberculosis (TB) is an infectious disease that increases mortality and morbidity in the world. Various prevention efforts are carried out to overcome pulmonary TB problems, namely five levels of prevention such as health promotion, specific protection, early diagnosis, disability and promt treatment and rehabilitation. Screening is one of the early diagnoses in an effort to prevent pulmonary TB. Screening aims to find cases of pulmonary TB, early detection of pulmonary TB clients [2]. Screening also aims to separate people who are truly

diseased and stated positively with healthy people so that they are appropriate in their response. World Health Organization states that cases of pulmonary TB in the world continue to increase by 9.6 million cases of pulmonary TB, in Indonesia as many as 1 million cases 399 per 100,000 inhabitants [3]. The pulmonary TB mortality rate in Indonesia is very high at 61,000 deaths annually [3]. The three largest regions in Indonesia are Eastern Indonesia with 44%, Sumatra with 33%, Java and Bali 23%. In West Java Province the prevalence of pulmonary TB is 0.7% [4]. The Tasikmalaya Health Office in 2018 states that around 800 cases of tuberculosis were found in the Tasikmalaya Region for the past 3 years [1]. Based on a preliminary study by interviewing the Nahdlatul Ulama Health Institution Coordinator, stated that the number of people screened perio From January to March 2019 there are more than 9,000 people. In January 2019 the number of people screened for pulmonary TB sputum was 5595 people with the discovery of cases of pulmonary TB through contact and extension investigations [5]. The problem in finding cases of pulmonary TB through screening is the noncompliance with recommendations for suspected pulmonary TB to be referred to for pulmonary tuberculosis testing and the process of waiting for the results of laboratory tests for people who have been screened due to the sensitivity and specificity of a screening test. In addition, there is still a low number of drug swallow supervisors (PMO) in patients with pulmonary TB. Epidemiology of pulmonary TB, among others, pulmonary TB agent is Mycobacterium tuberculosis, host pulmonary TB is a human all age groups, environment Pulmonary TB includes physical, biological, socio-cultural. Factors that influence the incidence of pulmonary TB in screening for pulmonary TB include age, sex, source of case finding, and results of pulmonary TB screening

2.   MATERIALS AND METHODS

The study was observational analytic using crossectional design. The population in this study were all people who were screened in Tasikmalaya District in January 2019. The sample of this study was that people who were screened for phlegm aged 1-75 years were selected based on inclusion criteria in totality sampling and purposive sampling in January 2019, referred for examination pulmonary TB screening in the form of smear test, TCM test, Rongent test and Mantoux test as many as 279 people. The Puskesmas which became the reference for screening tests was 26 Puskesmas. Data was collected from secondary data from screening results from Puskesmas in Tasikmlaya District, Tasikmalaya Regional Hospital and Singaparna Medical Center Hospital which were collected by pulmonary TB cadres at the Nahdhatul Ulama Health Institution in Tasikmalaya Regency in the period of January 2019. Data analysis was univariate, bivariate and multivariate
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3. RESULTS AND DISCUSSION

Result

Table 1.1 Univariate Analysis

Variable	Categori	F	Persentage (%)
Age	1-15 years	34	12,1
	16-75 years	245	87,81
Sex	Male	124	44,4
	Female	155	55,6
Source of Case Finding	Contact Investigation	204	73,1
	Counseling	75	26,9
Type PMO	None	264	94,62
	There were	15	5,37
Result Examination	Positive	59	21,14
	Negatve	220	78,85
Type of examination	BTA +	21	7,5
	BTA -	84	30,1
	TCM +	25	9,0
	TCM -	123	44,1
	Rongent Ekstra Lung +	10	3,6
	Rongent Ekstra Lung-	4	1,4
	Mantoux test in children +	3	1,1
	Test mantoux in children -	9	3,2

In univariate analysis shows the characteristics of respondents who participated in sputum screening screening to determine pulmonary TB status. The characteristics of respondents based on the age of majority were adult age groups of 245 people (87.81%), respondents of female sex were more than men as many as 155 people (55.6%), sources of case finding were mostly from 204 contact investigations people (73.1%). Based on the characteristics of the results of the most examination is negative as many as 220 people (78.85%). The types of examinations included 21 AFB + (7.5%); BTA - 84 people (30.1%); TCM + 25 people (9.0%); Extra lung Rongent + as many as 10 people (3.6%); Extra lung Rongent - as many as 4 people (1.4%); Mantoux test in children + as many as 3 people (1.1%); Mantoux test in children - as many as 9 people (3.2%).

Table 2.1 Comparison of the Results of BTA Screening with TCM

Screening	Sensitivitas	Spes	PPV	NPV	RR	CI 95%	p
BTA	93,33	92,22	66,66	98,8	56,00	7,79-402,2	0,00
TCM	92	98,37	92	98,37	56,58	14,24-224,78	0,00

Table 2.3 Analysis Bivariate

Variable	Pulmonary TB		No		RR	95% CI	P-Value
	n	%	n	%			
Age							
Children	11	3,94	23	8,24	2,03	1,15-3,57	0,01*
Adult	39	13,98	206	73,8			
Sex							
Male	28	10,03	96	34,4	1,59	0,95-2,63	0,03*
Female	22	7,88	133	47,67			
Source of case finding							
Contact Investigation	44	15,77	160	57,35	2,69	1,19-6,06	0,00*
Counseling	6	2,15	69	24,73			
Type PMO							
None	36	12,90	228	81,7	0,14	0,10-0,200	0,00*
There were	14	5,02	1	0,36			
Result Examination							
Positive	47	16,84	12	4,30	58,4	18,847-181,06	0,00*
Negative	3	1,07	217	77,77			

Table 3.1 Analysis Multivariate

Variable	β	S.E.	Exp (β)	95% Cl	p
Age	0,040	0,049	1,040	0,944-1,146	0,422
Sex	0,206	0,371	1,228	0,593-2,543	0,579
Source of case finding	1,446	0,624	4,244	1,248-14,429	0,021*
Type PMO	19,155	6318,447	208451745,3	0,000-0,000	0,998
Result Examination	0,321	0,153	1,378	1,021-1,859	0,036*

-2 *Log likelihood*= 195,448   *Overall Percentage*= 87,1

Discussion

Screening is one effort to prevent disease from five level of prevention which is one of the early diagnosis efforts. Screening is a screening effort to separate sick people and healthy people, determining someone who is sick and really sick. In addition, it can determine which people are healthy or free of disease from truly negative people based on screening tests. The screening makes someone healthy to check their health condition early even though it still looks healthy and if the screening results indicate pain even though previously it looks healthy to make the treatment handler earlier so that it does not worsen the pain. Pulmonary tuberculosis (pulmonary tuberculosis) is an infectious disease that is very rapidly spreading and thus requires appropriate prevention and eradication strategies. The examination method that is widely used in endemic TB countries is microscopic examination which currently has a low sensitivity and is unable to determine drug sensitivity and varies in examination competence. Examination of conventional models takes a long time and must meet multicomplex procedures, during treatment patients are given various drugs that have an impact on treatment resistance. One conventional diagnosis is the examination of Acid Resistant Basil (BTA). In overcoming the various problems of diagnosing pulmonary TB at this time there is a new model of screening test that is more accurate in its detection, namely the Molecular Rapid Test (TCM) [10].

In this study using secondary data from the results of pulmonary TB screening at the Nahdhatul Ulama Health Institution (LKNU). The research sample in this study consisted of 279 respondents in the Tasikmalaya Regency period. On the results of examination of BTA and TCM screening tests with results that are not much different, but TCM is better than BTA. The pulmonary TB screening test that uses TCM is still limited in its equipment, in Tasikmalaya District TCM is only available at Local Government Hospitals and Private Hospitals. This equipment does not yet exist in the Puskesmas and health clinics. Data on positive results of pulmonary TB that were declared TCM were obtained from RSUD Tasikmalaya, Tasikmalaya SMC Hospital. while BTA is already in the Puskesmas in Tasikmalaya. Test diagnostic screening equipment is a necessity in the diagnosis of pulmonary TB, so it is expected that the Central Government will provide diagnostic tool equipment to health facilities, especially in Puskesmas. Although TCM has accurate advantages in determining pulmonary TB but cannot be used as a follow-up examination (monitoring) in patients receiving treatment [10].

Screening is one way to find effective cases of pulmonary TB. Based on LKNU screening data for the period of January 2019 there were around 5000 people screened in Tasikmalaya District. Obstacles in the implementation of screening are still a lack of family support in the implementation of screening, there are suspected new cases of pulmonary TB that have been symptom-positive but after receiving a referral did not go to a health facility for screening testing. This hampered the discovery of new cases because it was unknown whether pulmonary TB status was diagnosed positively or not. Some factors that influence pulmonary TB especially in finding new cases on screening include sex, source of case finding, type of PMO, and results of screening examinations. Risk factors for pulmonary TB that can increase transmission of pulmonary TB include open contact with patients, especially droplets from pulmonary TB patients, people who travel from endemic areas of pulmonary TB, people who work in health care facilities where high risk of exposure to pulmonary TB such as nurses, midwives , doctors, health analysts who do not use personal protective equipment (PPE) so that nosocominal infections occur. For the age of children who are at risk of exposure to pulmonary TB, among others toddlers, HIV infected, people who have decreased body weight, organ transplants, smoking, people who have immunosuppressive therapy, people who have a history of pulmonary TB [21].

The most dominant factor affecting pulmonary TB is the result of pulmonary TB screening tests. Accurate results of examination of pulmonary TB will be reported in epidemiological pulmonary TB surveillance activities starting from data collection, data processing, data analysis and data interpretation to the stage of decision making or health policy [22]. Epidemiology surveillance of pulmonary TB aims to take into account and early detection of pulmonary TB epidemics, evaluating, improving prevention programs, controlling pulmonary TB, gathering information, monitoring trends in pulmonary TB disease [22].To support in pulmonary TB surveillance activities through pulmonary TB screening must pay attention to the accuracy of the results of screening tests so that the validity and reliability of the equipment used must meet the gold standard. A screening test tool must have validity by including a number of dimensions of face validity, content validity, construct validity and criteria validity. Whereas reliability must be able to measure and detect sensitivity, specificity, positive and negative presumption values [22]. To improve the quality of screening programs there must be an evaluation of screening activities so that they can correct weaknesses in the activities. In pulmonary TB surveillance there must also be an evaluation, namely having to fulfill simplicity, felxibbel, acceptable, sensitive, positive predictive value, representative, time line [23].

Epidemiological surveillance program for pulmonary TB through screening is one of the efforts in reducing the prevalence of pulmonary TB, investigating the discovery of cases of pulmonary TB actively, finding positive cases through BTA, TCM, lung X-ray and Mantoux test in children [24]. Therefore pulmonary TB cadres, health workers and the Health Office are expected to continue to coordinate in an effort to eradicate pulmonary TB especially in the discovery of new cases and continue to be committed to the prevention and eradication of pulmonary TB. The Department of Health continues to improve the competence of health workers by participating in surveillance training for epidemiological surveillance staff or disease management and environmental health staff, especially competence in the detection of pulmonary TB in laboratories, strengthening facilities and infrastructure including adequate laboratory equipment, enhancing capabilities in processing up to data analysis [25]. The health office is also expected to be able to provide guidance to Puskesmas officers in epidemiological surveillance. There was a synergy between mass Islamic organizations such as NU and the Health Office in creating a healthy society. Steps that can improve the efficacy of eradicating pulmonary TB through a case detection rate (CDR), namely the active role of the community, namely pulmonary TB cadres, Islamic organizations in controlling pulmonary TB through screening as an effort for community-based surveillance [26].

4. CONCLUSION

Our results showed that The conclusion of the best screening test was the TCM test. The results of screening tests with TCM included sensitivity of 92%, specificity of 98.37%, PPV of 92%, NPV of 98.37. Analysis bivariate show that TCM, RR value = 56.58, 95% CI = 14.24-224.78, p-value = 0,000 means that there is a significant relationship with of pulmonary TB. Source of finding was the most dominant factors with pulmonary TB. Multivariate analysis showed that the source of case finding was the dominant factor in pulmonary TB with a value of 195 and equal *overall percentage* 87,1 it mean the ability to predict the incidence of pulmonary TB was 87,1% and 12,9 caused by other factors.

Acknowledgments

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