

Co-morbid potentiality of Acquired TB MDR patients in RSUD DR. Soetomo

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World Journal of Advanced Research and Reviews, 2023, 20(03), 1021–1024

Publication history: Received on 31 October 2023; revised on 11 December 2023; accepted on 14 December 2023

Article DOI: <https://doi.org/10.30574/wjarr.2023.20.3.2512>

Abstract

Tuberculosis or TB is a global problem because of its high number globally. The 2021 WHO report shows that in 2020 there were around 9.9 million TB cases of which 1.2 million died. Of the total cases, 465,000 were MDR/RR-TB cases. In Indonesia, TB RO is estimated to reach 2.4% of the total new TB patients and 13% of TB patients who have been treated previously. In the Global Tuberculosis Report issued by WHO in 2023, there were 28,000 cases of MDR-TB in Indonesia. TB patients with Diabetes Mellitus (DM) also have a 6.8x risk of being infected with secondary MDR-TB. This research is an observational study conducted retrospectively using medical records obtained from the MDR-TB polyclinic in Dr Soetomo General Academic Hospital during the period January 2019 to January 2023. The result of the highest comorbid was DM with 29.3% MDR-TB Patients are found with DM with 47.7% cause of infection are treatment failure.

Keywords: MDR-TB Comorbid; HIV and MDR-TB; Hypertension among MDR-TB

1. Introduction

The 2021 WHO report shows that in 2020 there were around 9.9 million TB cases of which 1.2 million died. Of the total cases, 465,000 were MDR/RR-TB cases with a cure rate of 57%. In Indonesia there are 845,00 TB cases with a death rate of 98,000. In Indonesia, TB RO is estimated to reach 2.4% of the total new TB patients and 13% of TB patients who have been treated previously. In the Global Tuberculosis Report issued by WHO in 2023, there were 28,000 cases of MDR-TB in Indonesia. Based on SITB DKK data, 37.4% of cases are Primary TB cases while 62.5% are Secondary TB cases [1,2]

Previous study found relative high prevalence of DM among TB patients ranging from 1.9% to 45% [3]. Most of DM among TB patients is found in countries of Asia, North America and Oceania. TB patients with Diabetes Mellitus (DM) also have a 6.8x risk of being infected with secondary MDR-TB. This can be explained by the metabolism of patients with DM which differs from patients without DM because the components of anti-TB drugs are less able to be absorbed by the metabolism of DM patients [4,5]. Globally TB is one of the main causes of death among HIV patients [6]. According WHO in 2019 out of 690,000 AIDS deaths, 30% are caused by TB. HIV patients are 18x more susceptible to be infected by TB compared to people without HIV [7]. For the meantime there is no evidence that show the association between TB and Hypertension. However a study in the United States shows that prevalence of hypertension among TB patient are considerably high (59%) [8].

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2. Materials and methods

2.1. Ethical clearance

This study had received ethical clearance from Dr. Soetomo General Academic Hospital based on letter of exemption Ref. No: 1302/LOE/301.4.2/V/2023.

2.2. Methods

This research is an observational study conducted retrospectively using medical records from January 2019 to January 2023. The research method used in this research is a descriptive approach, describing the number of co-morbid in acquired MDR-TB patients. The sample for this study was all patients who came to the MDR pulmonary clinic, Dr. Soetomo General Academic Hospital with secondary MDR-TB diagnostics, from January 2019 to January 2023. The sampling technique in this study was total secondary data sampling through medical records. The independent variable in this study was acquired MDR-TB patients while the dependent variable was the co-morbid among acquired MDR-TB patients. The research instrument used secondary data from medical records of secondary MDR-TB patients who came for treatment at Dr. Soetomo General Academic Hospital. This research has gone through ethical clearance from Dr. Soetomo General Academic Hospital based on letter of exemption Ref. No: 1302/LOE/301.4.2/V/2023 where this research was declared feasible to carry out.

2.3. Data Analysis

In this study, data analysis was carried out in a descriptive manner by analyzing medical records to view the secondary MDR-TB data from January 2019 to January 2023.

3. Results

3.1. TB patients with DM co-morbid

Table 1 Distribution of MDR TB Patients with DM, Hypertnesion and HIV

Characteristic	Frequency	Percent
Co-morbidities DM		
Diabetic individual	44	29.3%
Nondiabetic individual	106	70.6%
DM + Hypertension		
Hypertensive DM	2	1.3%
Nonhypertensive DM	148	98.6%
HIV		
Positive	1	1%
Negative	149	99%

3.2. DM co-morbid aquired MDR-TB cases

Table 2 Distribution of infection causes of MDR TB with Co-Morbid

DM		
Treatment Failure	21	47.7%
Relapse	17	38.6%
Lost to Follow Up	6	13.6%

DM + Hypertension		
Treatment Failure	0	0%
Relapse	2	100%
Lost to Follow Up	0	0%
HIV		
Treatment Failure	0	0%
Relapse	1	100%
Lost to Follow Up	0	0%

4. Discussion

The most common co-morbidity found in Secondary MDR TB is DM. It was found that around 44 (29.3%) of the 150 secondary MDR TB patients for the 2019-2022 period had comorbid DM. Meanwhile, comorbid DM + Hypertension and HIV were rarely found, DM + Hypertension, only numbering 1.3%, while HIV was only 1% of the total 150 patients. A total of 47.7% of the 44 patients with comorbid DM were treatment failure patients, while 38.6% were relapse patients and 13.6% were drug withdrawal patients. For DM + Hypertension and HIV patients, all of them are relapse patients. TB cases with DM can significantly influence the development of TB into MDR TB. This is influenced by changes in the mechanism of drug absorption suffered by DM patients and They have a 6.8 times higher risk of developing become MDR TB [4] TB with hypertension as co-morbid were rarely found as with previous study where the numbers were also low and it's worth noted that until now there is no study that asses whether hypertension one of the risk factor of TB [9] TB with HIV co-morbid are found to be low in this research and can be attributed to the relative low number of HIV patients in Indonesia [10].

5. Conclusion

Based on the results it's observed that DM with treatment failure was the most common co-morbid observed while the number of HIV and Hypertension co-morbid are negligible.

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare that they have no conflicts of interest concerning this article.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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