

RESEARCH ARTICLE

The Incidence of Pulmonary Tuberculosis in HIV/AIDS Patients at Deli Serdang Regional General Hospital, 2013–2015

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ABSTRACT

Background: In 2010, the number of TB patients rose to 330,000 and in 2012, the number of TB patients is quite sharp, ie 583,000 people. TB is the number one killer among infectious diseases and ranking third in the list of top ten diseases in Indonesia which causes about 100,000 deaths annually, or in a day occurred 300 deaths due to TB.

Methods: This study is a descriptive and cross sectional study conducted at the Medical Records Regional General Hospital Deli Serdang years 2013-2015 total of 49 samples were selected with a total sampling technique.

Results: Based on the research that has been done, the highest age group with pulmonary tuberculosis in people with HIV / AIDS is as much as 32.65% of 25-30 years, by sex more dominant male is 79.59%, based on the most common residence is outside city field as much as 83.67%, the highest frequency based on the self- employed work is as much as 38.77%, the highest frequency of risk factors based on sex is as much as 71.42% and the highest frequency based on CD4 count is <200 as much as 91.83%.

Conclusion: Based on this study concluded that the incidence of pulmonary TB in people with HIV / AIDS are still very high, the highest in the age group 25-30 years of age and male gender, the dominant occupation were self-employed, the highest risk factor was sexual relations with CD4 count <200.

Keywords: pulmonary tuberculosis, HIV / AIDS

INTRODUCTION

Human Immunodeficiency Virus (HIV) is the virus that causes AIDS, weakening and destroying the human immune system. HIV is one of the world's most serious health problems. By the end of 2001, more than 40 million people worldwide were infected with HIV and living with AIDS. The World Health Organization estimates that approximately 20 million people have died from AIDS since the infection was first described in 1981. Nearly 500,000 deaths have occurred in the United States. 1 The HIV/AIDS epidemic in ASEAN was first reported in early 1984 in the Philippines and Thailand and in 1990 in Cambodia and Vietnam. The number of HIV/AIDS cases recorded in ASEAN by 2006 was nearly 1.6 million. According to a study, around the end of 2003, the number of adults living with HIV/AIDS in Indonesia was 110,000. Nearly 15,000 women aged 15-49 are living with HIV/AIDS, and nearly 2,400 deaths are attributed to HIV/AIDS.(2) The World Health Organization (WHO) estimates that approximately one-third of the world's population is infected with *Mycobacterium tuberculosis*. According to WHO estimates, there were 9 million new cases of active pulmonary TB in 2010. Globally, approximately 14.8% of TB patients are also infected with HIV. This figure is much higher in sub-Saharan Africa.3

Data from the same study show that TB is the most common opportunistic infection, infecting approximately 62.3% of patients. Several studies on the prevalence of HIV/AIDS in TB patients in Asian countries also show quite high rates, ranging from 9.4% to 40%. In New Delhi (India), the prevalence rate is 9.4%; in Mumbai (India), 30%; and in Northern Thailand, 40%.4

Tuberculosis is an infectious disease caused by the bacterium *Mycobacterium tuberculosis*. More than 2 billion people (about one-third of the world's population)

are estimated to be infected with TB. The global incidence of TB peaked around 2003 and has been shown to vary widely across the globe. The highest rates (100/100,000 or higher) are observed in sub-Saharan Africa, India, China, and the islands of Southeast Asia. Intermediate rates of TB (26-100/100,000) occur in Central and South America, Eastern Europe, and North Africa. Low rates (less than 25/100,000) occur in the United States, Western Europe, Canada, Japan, and Australia.5

In Southeast Asia, WHO data shows that TB kills approximately 2,000 people every day. Approximately 40 percent of global TB cases occur in Southeast Asia. Two of the three countries with the largest number of TB cases in the world, namely India and Indonesia, are located in this region.6

The number of TB cases in Indonesia continues to increase year after year. According to a WHO report, in 1999, the estimated TB incidence rate in Indonesia was approximately 220 per 100,000 population per year. TB case detection in Indonesia in 2005 (68%) approached the global target of 70% for case detection in 2005, and the prevalence of TB in families, patients, the environment, and housing conditions was high.8

In 2010, 350,000 people died from TB and HIV. TB and HIV are the most common presentations among people living with HIV, including those on ART. There were an estimated 1.1 million new TB cases among HIV-positive individuals worldwide in 2010. Approximately 82% of these patients live in sub-Saharan Africa. At least one-third of the 34 million people living with HIV worldwide are infected with TB. A person with TB-HIV coinfection is 21-34 times more likely to develop active TB disease than someone without HIV.9

In Indonesia, there is still no comprehensive data on TB-HIV coinfection, and only data from a few studies is available, even though it is an opportunistic disease that can cause death. Therefore, researchers were interested in conducting a study of TB cases in

conjunction with HIV/AIDS at Deli Serdang Regional Hospital between 2013 and 2015.

In 2007, the prevalence was 74%, while in 2009, it was 294,731. In 2010, the number of TB cases rose to 330,000, and in 2012, the number of TB cases increased sharply to 583,000. TB is the number one killer among infectious diseases and ranks third among the ten most common diseases in Indonesia, causing approximately 100,000 deaths annually, or 300 deaths per day. Currently, one new TB case appears every minute.⁷

In 2010, there were 15,614 TB cases in North Sumatra Province. Of these, there were 12,145 TB cases, with a cure rate of 67.07% (8,145 cases). The district/city with the highest number of TB cases was South Tapanuli Regency, with 5,303 cases.⁸

In 2010, there were 918 TB cases in Medan City, with a prevalence of 45.9 per 100,000 population. Compared to all districts/cities in North Sumatra Province, the number of TB cases in Medan City was

MATERIALS AND METHOD

The study was conducted at Deli Serdang Pakam Regional General Hospital from June 23 to 25, 2016. The population was all data on pulmonary tuberculosis patients with HIV/AIDS recorded in medical records for the period January 1, 2013 to December 31, 2015, at Deli Serdang Regional General Hospital.

RESEARCH PROCEDURE

This study is about the incidence of pulmonary tuberculosis in HIV/AIDS patients at (Deli Serdang Regional General Hospital) Pakam for the period of January 1, 2013-December 31, 2015, using a descriptive research method with a cross-sectional study design where data was collected at a certain time (Notoatmodjo, 2012). In this study, secondary data was collected in the form of medical record data

from the Deli Serdang Regional General Hospital in 2013-2015.

RESULTS

This research was conducted at the Deli Serdang Regional General Hospital, located on Jalan Thamrin Lubuk Pakam, Deli Serdang Regency. This hospital is the only regional general hospital owned by the Deli Serdang Regency Government, as a teaching hospital and service referral center, with class B status, based on the Decree of the Minister of Health of the Republic of Indonesia Number 405/MENKES/SK/IV/2008 and has been fully accredited through SK.No.03.05/III/3389/2008. The sample of this study amounted to 49 patients over a period of 3 years (January 1, 2013 - December 31, 2015), taken from the medical record data section at the Deli Serdang Regional General Hospital from 2013-2015, which is then presented as follows:

Frequency Distribution by Age Group

Table 1.

Frequency Distribution of Pulmonary TB and HIV/AIDS by Age

Nomor	Kelompok Usia	frekuensi (orang)	Persentase (%)
1.	25 – 30	16	32,65
2.	Tahun	8	16,33
3.	31 – 35	10	20,41
4.	Tahun	15	30,61
	36 – 40		
	Tahun		
	>40 Tahun		
	Jumlah	49	100

Based on Table 1 above, the highest frequency of patients by age was 16 patients (32.65%) in the 25-30 year age group, and 8 patients (16.33%) in the 31-35 year age group.

Frequency Distribution by Gender

Table 2: Frequency Distribution of Pulmonary TB in HIV/AIDS by Gender

Nomor	Jenis Kelamin	rekuensi (orang)	Persentase (%)
1.	Laki – laki	39	79,59
2.	Perempuan	10	20,41
Jumlah		49	100

Based on Table 2 above, the highest frequency of cases by gender was among males, with 39 cases (79.59%), and the lowest frequency was among females, with 10 cases (20.41%).

Frequency Distribution by Residence

Table 3: Frequency Distribution of Pulmonary TB and HIV/AIDS by Residence

Nomor	Tempat Tinggal	rekuensi (orang)	Persentase (%)
1.	Dalam Kota	8	16,33
2.	Luar Kota Medan	41	83,67
Jumlah		49	100

Based on Table 3 above, the highest frequency of patients based on residence was outside Medan City, with 41 patients (83.67%), and the lowest frequency was within Medan City, with 8 patients (16.33%).

Frequency Distribution by Occupation

Table 4: Distribution of Pulmonary TB and HIV/AIDS Frequency Based on Occupation

Nomor	Pekerjaan	frekuensi (orang)	Persentase (%)
1.	Petani	3	6,12
2.	Wiraswasta	19	38,77
3.	Pegawai	10	20,41
4.	Swasta	7	14,20
5.	Ibu Rumah	1	2,04
6.	Tangga	2	4,09
7.	Pekerjaan Pabrik Kuli Bangunan Tidak Bekerja	7	14,28
Jumlah		49	100

Based on Table 4 above, the highest frequency of cases by occupation was self-employed, with 19 cases (38.77%), and the lowest frequency was factory workers, with 8 cases (16.33%).

Frequency Distribution by Risk Factors

Table 5. Frequency Distribution of Pulmonary TB in HIV/AIDS by Risk Factors

Nomor	Faktor Resiko	rekuensi (orang)	Persentase (%)
1.	Seksual	35	71,42
2.	IDU	11	22,45
3.	Transfusi Darah	3	6,13
Jumlah		49	100

Based on Table 5 above, the highest frequency of cases based on risk factors is sexual activity, with 35 cases (71.42%), and the lowest frequency is blood transfusion, with 3 cases (6.13%).

Frequency Distribution Based on CD4 Level

Table 6: Frequency Distribution of Pulmonary TB in HIV/AIDS Based on CD4 Level

Nomor	Kadar CD4	frekuensi (orang)	Persentase (%)
1.	>500	0	0
2.	>350	0	0
3.	<350	4	8,17
4.	<200	45	91,83
Jumlah		49	100

Based on table 6 above, the highest frequency of sufferers based on CD4 levels is CD4 <200 with 45 sufferers (91.83%), and the lowest frequency is CD4 levels <350 with 4 sufferers (8.17%).

DISCUSSION

The research data used was secondary data, derived from the medical records of pulmonary TB patients with HIV/AIDS, containing personal patient data from examinations at the Deli Serdang Regional General Hospital. The data collected covered a three-year period, from January 1, 2013, to December 31, 2015. A total of 67 medical records were collected, but only 49 complete medical records contained personal patient data, including age, gender, residence, occupation, risk factors, and CD4 count. This data will serve as the basis for discussing the final results of this study, which are outlined as follows:

Pulmonary TB Patients in HIV/AIDS Patients by Age

The highest prevalence of TB patients by age was 32.65% in the 25-30 age group, and the lowest prevalence was 16.33% in the 31-35 age group. According to records from the HIV/AIDS Case Statistics in Indonesia reported as of September 2014 by the Directorate General of CDC & EH, Ministry of Health, Republic of Indonesia (2014), the age group with the highest incidence is 20-35 years. This study aligns with research conducted by Permitasari at Dr. Kariadi

General Hospital in Semarang, which found that the 20-35 age group had the highest incidence (59%). Theoretically, the high number of TB-HIV cases in this age range is related to the fact that people in this productive age group are sexually active, making them vulnerable to HIV infection. This age group is active in daily activities and interacts with many people, thus increasing the risk of contact with TB patients. 10,11

The similarity in the age of TB-HIV patients, which is prevalent among productive-age patients in this study and other studies, particularly in Asia, is due to the fact that nearly two-thirds of TB cases live in Asia and the Pacific, where socioeconomic conditions are low, poverty rates remain high, and access to health services and information is limited. These countries have the highest number of TB cases after Africa.12

Pulmonary TB Cases in HIV/AIDS Patients by Gender

The highest frequency of cases by gender was in men at 79.59%, and the lowest frequency was in women at 20.41%. This is in line with research showing that men outnumber women. This is theoretically due to behavioral differences between men and women and genetic factors. Male behavior is associated with frequent migration when seeking work and increased contact with others, increasing the probability of exposure to the bacillus.11

Pulmonary TB Cases in HIV/AIDS Patients by Place of Residence

The highest frequency of cases by place of residence was outside Medan City at 83.67%, and the lowest frequency was within Medan City at 16.33%.

The HIV virus uses CD4 cells to replicate within cells.

Based on place of residence, the majority of cases found in this study were outside Medan City. There has been no previous research

related to this. However, this can be used as a benchmark, as the location of the study suggests this could occur, given that Deli Serdang Regional General Hospital is a grade B general hospital with adequate equipment and facilities.

Pulmonary TB Patients in HIV/AIDS Patients by Occupation

The highest prevalence of TB cases based on occupation was self-employed (38.77%), and the lowest prevalence was factory workers (16.33%). Similarly, there has been no research or theory regarding occupational factors.

Pulmonary TB Patients in HIV/AIDS Patients by Risk Factors

The highest prevalence based on risk factors was sexual activity (71.42%), and the lowest prevalence was blood transfusion (6.13%). The theory found to be associated with HIV/TB coinfection is a risk factor for HIV/AIDS infection. Patients infected with HIV through sexual intercourse (both heterosexual and homosexual) are associated with HIV/TB coinfection compared to IDU patients. This is in line with a cohort study in Bandung, which found that HIV/AIDS patients who contracted TB through sexual intercourse had a high risk of developing TB.

Pulmonary TB Patients in HIV/AIDS Based on CD4 Levels

The highest frequency of patients based on CD4 levels was CD4 <200 cells/mm³ (91.83%), and the lowest frequency was CD4 <350 cells/mm³ (8.17%). Similarly, a study conducted by Paz Ayar Nibardo et al. in Mexico in 2012 found that the most common CD4 counts were <200 cells/mm³ (77%) and >200 cells/mm³ (22.3%). CD4 counts significantly correlated with TB incidence in HIV-positive individuals. This is because CD4 T-lymphocytes play a key role in the immune system.

CONCLUSION

The highest frequency of sufferers based on age is at the age of 25 – 30 years as much as 32.65% and the lowest frequency is 31 – 35 years as much as 16.33%. The highest frequency of sufferers based on gender is in men as much as 79.59% and the lowest frequency is in women as much as 20.41%. The highest frequency of sufferers based on Residence is outside the city of Medan as much as 83.67% and the lowest frequency is in the city of Medan as much as 16.33%. The highest frequency of sufferers based on Occupation is Self-Employed as much as 38.77% and the lowest frequency is Factory Work as much as 16.33%. The highest frequency of sufferers based on Risk Factors is Sexual as much as 71.42% and the lowest frequency is Blood Transfusion as much as 6.13%.

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