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Characteristics of Tuberculous Spondylitis Patients at Dr. M. Djamil Padang Hospital 2018-2020

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Abstract

Background: Tuberculosis is an infectious disease caused by Mycobacterium tuberculosis which has long been known and still one of the top 10 causes of death in the world. Tuberculosis spondylitis is one of the most common extrapulmonary tuberculosis. This study aims to describe the characteristics of patients diagnosed with tuberculous spondylitis at RSUP Dr. M. Djamil Padang in 2018 – 2020.
Methods: This study is an observational descriptive study with a retrospective approach using medical record data from patients diagnosed with tuberculosis spondylitis at RSUP Dr. M. Djamil Padang 2018 - 2020. The sampling method used total sampling technique.
Results: The results of this study show that tuberculous spondylitis is mostly in the age group 17 – 25 years (25%), the ratio between male and female gender is 1:1, patients come from outside Padang (78.8%), occupation most were housewives (27.5%), and most had no family history of tuberculosis (80%). Local pain is the most common clinical manifestation experienced by as many as 70 people. The lesion location is most often in the thoracic region (45%).
Conclusion: Tuberculous spondylitis is most common in the age group 17 – 25 years, comes from outside the field, is a housewife, and has no family history of tuberculosis. Men and women have the same number of cases. Local pain is the most common clinical manifestation and the thoracic lesion is the most frequently found location.

Keywords: *tuberculous spondylitis, tuberculosis, characteristic, extrapulmonary TB*

Introduction

Tuberculosis (TB) is a contagious infectious disease caused by Mycobacterium tuberculosis.[1–3] About 16% of tuberculosis cases are extrapulmonary tuberculosis that can affect the lymphonoduses, pleura, bones and joints, urogenital tract, and meningen.[4] Spinal tuberculosis (TB spondylitis) is the most common extrapulmonary tuberculosis (50%).[5,6]

TB spondylitis can cause deformity, paralysis, and neurlogical deficits, making it a difficult form of TB lesion to resolve.[7] The highest incidence is found in the early adult age group (26 - 35 years). The female to male ratio is 1:1.4. The thoracolumbar region is the most commonly involved site followed by the lumbar and cervical regions.

Early diagnosis is essential to reduce the morbidity rate. It is important to know the patient's history and clinical symptoms. The clinical course of patients with TB spondylitis varies, ranging from localized pain in the infected vertebrae to persistent back pain, limited movement of the spine, pus formation, and neurologic involvement. Fever is a typical symptom in patients infected with tuberculosis. In extrapulmonary TB, local symptoms are more prominent and frequent than systemic symptoms.[6]

The therapy in tuberculous spondylitis should take into account the severity of the disease. Medical therapy is the primary therapy in the management of TB spondylitis using anti tuberculosis drugs regimens. Surgical therapy may be considered for cases of TB spondylitis with cold abscess, neurologic deficits, and progressive kyphosis.[8,9]

Methods

This study is a descriptive observational study with a retrospective approach using data from the medical record status of patients diagnosed with tuberculous spondylitis at Dr. M. Djamil Padang Hospital in 2018-2020.

The population of this study were all cases of tuberculous spondylitis at Dr. M. Djamil Padang Hospital during the 2018-2020 period. The sample of this study was the entire population that met the inclusion criteria, the research population with complete medical record data. The sampling technique in this study was total sampling with a total of 80 samples. Data taken from the sample were age, gender, regional origin, occupation, family history of TB, clinical manifestations, and lesion location.

The data obtained will be processed using an analysis program with univariate analysis. The results of the analysis are in the form of a frequency distribution of each variable which is then displayed in the form of a frequency distribution table.

The research has passed the ethical review with letter number 474/KEPK/2021 which has been issued by the Health Research Ethics Committee of Dr. M. Djamil Hospital Padang.

Results

Data collection was carried out in the medical records section of Dr. M. Djamil Padang Hospital from April 2021 to January 2022 with a total of 80 samples.

Table 1. Distribution of TB spondylitis patients by age

Category	Frequency	Percentage (%)
0 – 5	2	2,5
6 – 11	2	2,5
12 – 16	3	3,8
17 – 25	20	25
26 – 35	18	22,5
36 – 45	16	20
46 – 55	6	7,5
56 – 65	7	8,8
>65	6	7,5

Table 1 shows that TB spondylitis is most prevalent in the age group 17 - 25 years (25%) followed by the age group 26 - 35 years (22.5%), age 36 - 45 years (20%), age 56 - 65 years (8.8%), age 46 - 55 years (7.5%), age> 65 years (7.5%), and age 12 - 16 (3.8%). The age groups 0 - 5 years and 6 - 11 years were the least common, with 2 people each (2.5%).

Table 2. Distribution of TB spondylitis patients by gender

Category	Frequency	Percentage (%)
Male	40	50
Female	40	50

Table 2 shows that the percentage of TB spondylitis patients between males and females is equal with 40 people each in a ratio of 1:1.

Table 3. Distribution of TB spondylitis patients based on regional origin

Category	Frequency	Percentage (%)
Outside Padang	63	78,8
Padang	17	21,2

Based on Table 3, the majority of patients came from outside Padang, 63 people (78.8%) while 17 patients (21.2%) came from Padang.

Table 4. Distribution of TB spondylitis patients by occupation

Category	Frequency	Percentage (%)
Housewife	22	27,5
Student	17	21,3
Laborer/farmer	12	15
Employee	10	12,5
Self-employed	9	11,3
Unemployment	7	8,6
Trader	3	3,8

Based on Table 4, the most common type of work of TB spondylitis patients is housewives (27.5%), followed by students (21.3%), laborers/farmers (15%), employees (12.5%), self-employed (11.3%), unemployment (8.6%), and traders (3.8%).

Table 5. Distribution of TB spondylitis patients based on family history

Category	Frequency	Percentage (%)
No	64	80
Yes	16	20

Table 5 shows that cases of Tb spondylitis in patients who did not have a family history of TB were 64 people (80%) and patients who had a family history of TB were 16 people (20%).

Table 6: Distribution of TB spondylitis patients based on clinical manifestations

Category	Frequency	Percentage (%)
Localized pain	70	36,6
Neurological deficits	46	24
Kyphosis/gibbus	21	11
Fever	18	9,4
Weight loss	15	7,8
Pus	13	6,8

Based on the table above, local pain is the most common clinical manifestation, which is 70 people (36.6%). Neurological deficits (24%), kyphosis/gibbus (11%), fever (9.4%), weight loss (7.8%), pus (6.8%) and night sweats (4.1%).

Table 7. Distribution of TB spondylitis patients by lesion location

Category	Frequency	Percentage (%)
Thoracic	36	45
Lumbar	24	30
Thoracolumbar	18	22,5

Table 7 shows that TB spondylitis cases were most common in cases with lesions in the thoracic regions (45%) and lumbar regions (30%). Thoracolumbar lesions were found in 18 people (22.5%). Cervical was the least common lesion location with 2 people (2%).

Discussion

In this study, the most cases of TB spondylitis patients were in the age group of 17-25 years (25%). These results are in accordance with research in China (2020) showing a high incidence of TB spondilitits in patients aged 21-30 years (20.94%). This is related to a more risky lifestyle and activities.[10] In children and the elderly it is related to the immune system. Research states that the age group of 0 - 5 years can be infected because children's immunity has not yet developed optimally.[11] In addition, the age group > 45 years can be infected because at this age a decrease in body immunity has begun.[2]

In this study, TB spondylitis cases by gender had an equal distribution between males and females (1:1). This result is in contrast to some literature that shows men are more often affected by TB spondylitis than women. The high prevalence of TB spondylitis in men is thought to be due to men's more outdoor activities and high levels of smoking, resulting in a higher risk of exposure to tuberculosis.[2] The difference in research results, suggests that the incidence of TB spondylitis cannot be determined by gender, but rather there are various factors that cause a person to be susceptible to infection, both from individual factors such as hygiene, immune status, nutritional status, smoking and drinking habits, history of chronic diseases, low socioeconomic status, and individual awareness of their health, as well as external factors such as the availability and quality of public health services.[12]

In this study, most TB spondylitis cases came from outside the city of Padang (78.8%). The area of origin can be influential with a person's susceptibility to contracting a disease. This is related to the environmental conditions, cleanliness, and population density of an area. Sanitation is one of the aspects assessed in the environment. A dirty environment will be a medium for germs to grow. Ventilation as a regulator of air circulation to keep it clean and fresh so that oxygen needs will be maintained. Poor ventilation will cause air humidity to rise and become a breeding ground for germs.[13] Overcrowding has an impact on reduced oxygen consumption. Dense housing is also risky because if one family member has an infectious disease, it will be easier to transmit it to other family members. This is a factor that increases the risk of contracting tuberculosis infection.[14]

In this study, most TB spondylitis cases based on occupation were in patients who worked as housewives. Occupation is considered to have a relationship with vulnerability to direct and indirect exposure to a disease. This depends on the type of work performed, the magnitude of the risk posed, the work environment, and the resulting socioeconomic impact of the work.[15] Employment can influence a person in utilizing health services. In addition, work is also related to a person's income level which will affect economic status which has an impact on daily patterns or lifestyles such as providing nutritious food, health maintenance, and environmental conditions. This will affect a person's immune system, which if not fulfilled can reduce immunity so that it is susceptible to disease.[16]

In this study, TB spondylitis cases based on family history were most common in patients who did not have a family history of TB. Research in the United States also reported that there were fewer cases of TB spondylitis with a family history of TB infection.[17] A family history of TB allows a person to become infected due to inhalation of droplets containing TB germs, especially if family members live in the same house. However, a person's ability to become infected cannot be judged solely by the presence of a family history, but is also related to the health status and hygiene of the individual. In addition, the lack of knowledge and awareness to check their health at health facilities has an impact on the number of unrecorded TB cases.[6,18]

In this study, patients with TB spondylitis mostly experienced localized pain with the most common location being the back as many as 65 patients, followed by pain in the waist, and pain in the neck. The least common symptom was night sweats. The clinical manifestations of TB spondylitis vary widely and can include both systemic and local symptoms. Constitutional symptoms are typical of TB infection, but are not the symptoms that must be found to make a diagnosis.[6] Back pain is the most commonly complained of local symptom. Pain is usually localized to the infected site and the severity of pain is related to disc damage and spinal instability, nerve

fiber compression, and fracture pathology. Neurologic deficits may result from granulation tissue or abscesses compressing the spinal cord and cauda equina. Mclain and Isada reported neurological involvement generally occurs if there is involvement of the thoracic and cervical spine.[19] Deformity and gibbus abnormalities occur because the corpus vertebrae lose strength as a result of progressive destruction so that they cannot withstand the weight of the body which will trigger vertebral collapse.[20] Changes of the body structure cause patients to come for treatment due to local symptoms in the spine rather than systemic symptoms.[21]

In this study, TB spondylitis cases based on lesion location were most commonly found in the thoracic region, followed by the lumbar, thoracolumbar, and cervical regions. The high incidence of lesions in the thoracic region is due to a combination of hematogenous, lymphogenous, and direct invasion routes, making it easier for pulmonary TB to spread to this region. Spread to the thoracic region is also often due to involvement of the mediastinal lymph nodes and pleura.[22] This is also because in the thoracic region, kyphosis deformity is apparent due to normal dorsal curvature. An increase in the angle of kyphosis in this region will cause the ribs to pile up and cause a deformity in the chest cavity (barrel chest), so that there is a noticeable change in the shape of the body structure. In the cervical region, collapse appears minimal. The normal form of lordosis in the lumbar region causes kyphosis in this area to appear slightly, resulting in partial collapse.[7]

Conclusions

Based on the results of the research that has been conducted regarding the description of the characteristics of patients with tuberculous spondylitis at Dr. M. Djamil Padang Hospital in 2018-2020, it can be concluded that patients with tuberculous spondylitis are mostly in the age group of 17-25 years, have the same number of cases in male and female gender, the majority come from outside Padang, most of them are patients who work as housewives, more patients do not have a family history of tuberculosis, local pain is the most common clinical manifestation, and the location of abnormalities is mostly found in the thoracic.

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Declarations of competing interest

No potential competing interest was reported by the authors.

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