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Pulmonary TB Relapse Case Confirmed Bacteriologically with Cor Pulmonale Chronic Disease

Putu Cahyani Paramita Yoga[1]

[1]*Department of Internal Medicine, Faculty of Medicine, Ganesha Education University*

**Corresponding Author: Putu Cahyani Paramita Yoga*
E-mail: chyaniparamitagya@gmail.com

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Abstract

Tuberculosis is a chronic infectious disease prevalent in Indonesia caused by Mycobacterium tuberculosis. It primarily affects the lungs but can also invade other organs. It is essential to gather information on the patient's medical history, close contact with TB patients, environmental conditions, and occupation as a healthcare worker to assess the risk of infection transmission. Pulmonary TB can potentially relapse and lead to post-tuberculosis chronic lung disease, which can negatively impact the patient's prognosis and quality of life. If left untreated, it may also result in heart-lung disease, causing disruptions in cardiorespiratory function. Proper treatment is crucial to effectively manage TB and prevent complications.

Introduction

Tuberculosis (TB) is a contagious infectious disease that is still the biggest health problem in Indonesia, ranking 2nd in the burden of TB in the world. Tuberculosis is mainly found in people of productive age, but all ages can be at risk of suffering from TB germ infection. (Ministry of Health of the Republic of Indonesia, 2019) Based on the 2020 Global Tuberculosis Report published by WHO, it is estimated that in 2019 there will be 10 million incident cases with 1.2 million of them dying (HIV negative) and 208,000 dying (HIV positive). (Indonesian Lung Doctors Association, 2021) In 2021 there will be 969,000 cases of pulmonary TB, of which 15,186 will die and the treatment success rate will be 86%.(Ministry Health of the Republic of Indonesia, 2022) The target indicators for reducing TB cases by 2030 in Indonesia are reducing the number of deaths due to TB by 95% compared to 2015, reducing the incidence of TB by 90%, and ensuring that no family experiences extreme economic burden due to TB (Kementerian Kesehatan Republik Indonesia, 2019).

Even though TB is a disease that can be cured with anti-tuberculosis drugs (OAT), many studies show that some patients who have completed TB treatment can experience persistent health problems and contribute greatly to the high burden of chronic lung disease globally (Mustofa et al., 2023; Menzies et al., 2021; Burney et al., 2015; Yach et al., 2004). One form of post-TB complication is chronic airway obstruction whose symptoms resemble COPD and asthma or is known as post-tuberculosis obstructive syndrome (SOPT) (Darmawan et al., 2025; Jacobs, 2024). The study found that the majority of pulmonary TB sufferers are at risk of experiencing this condition which is often confirmed by imaging findings in the form of 'destroyed lung' in unilateral lung with predominance in the upper lobe of the lung (Varona Porres et al., 2017). This situation indicates a form of severe lung damage due to complications of TB which causes significant respiratory dysfunction (Kementerian Kesehatan Republik Indonesia, 2016; Galvin et al., 2022; Fan et al., 2021).

Chronic airway obstruction after tuberculosis can be one of the causes of cor pulmonale. Cor pulmonale is a condition of changes in the structure and function of the right ventricle of the heart due to pulmonary disorders which cause an increase in the average pulmonary artery pressure. Severity level pulmonal heart This correlated with hypoxemia, hypercapnia, and obstruction of air flow along the airways (NCBI Bookshelf, 2023).

Methods

This report was written using a case study approach. The study was conducted at the Buleleng District Hospital by selecting cases that were serious complications of a primary disease, which had a major impact on reducing the patient's quality of life. The patient was admitted to the pulmonary ward in December 2023. This case report discusses a 79 year old female patient with bacteriologically confirmed relapse of pulmonary TB accompanied by Cor Pulmonale Chronic Disease.

Once cases are selected, patients are assigned informed consent as a form of consent to be the subject of this report and to be monitored during the period of treatment in hospital. In addition, visits are made to the patient's home after the patient is discharged from the hospital to holistically review the patient's health using Family Assessment Tools in the form of APGAR score and SCREEM family score. APGAR is used to assess five dimensions of family functioning, while SCREEN is used to assess six aspects of family resources in dealing with crises and accessing health services.

All data obtained is collected and documented systematically, then compiled in the form of a case report. Besides informed consent, all ethical principles in health research were applied responsibly during the conduct of this study.

Result and Discussion

Case

A 79 year old woman came with her family to the emergency room complaining of shortness of breath. Shortness appeared after 1 day of SMRS and worsened after 1 hour of SMRS. The patient admitted that the shortness of breath appeared suddenly and continuously and was getting worse. Shortness of breath is felt both when lying on your back, sitting and walking. There is nothing that aggravates or relieves the patient's complaints. The patient also complained of right chest pain (+), cough (+), fever (+), and nausea (+) without vomiting.

Right chest pain is felt when the tightness gets worse, which is around 1 hour of SMRS. Right chest pain is said to be like being stabbed without spreading to other areas of the body. This is the first time this has been experienced by the patient. Chest pain persisted until observation in the emergency room. The cough experienced by the patient is said to have been around for the last 5 days, appearing and appearing erratically. The cough feels like a phlegm but the phlegm is difficult to expel. The patient denied coughing up blood. The patient also complained of nausea for the last 5 days without vomiting which caused the patient to have no appetite. History of weight loss is unknown. History of fever since 1 day ago, fever is not too high, just like a chill. History of night sweats denied.

Medical history showed that the patient had had TB two years previously and had completed treatment. There was no history of other chronic diseases such as asthma, hypertension, heart disease, or diabetes mellitus. No family members suffer from TB. The patient no longer works, still cooks with firewood, does not smoke, and does not consume alcohol. The patient used to like drinking coffee, but stopped after experiencing TB two years ago. He has a habit of spitting in a small bucket and rarely wears a mask. There has been no close contact with TB sufferers in the last few months.

When examined, the patient appeared moderately ill with conscious *mental composure* (GCS = E4V5M6). Vital signs show blood pressure 110/70 mmHg, pulse 90x/minute, axillary temperature 37.0℃, respiratory rate 25x/minute, and oxygen saturation 96% in room air. Anthropometric status showed weight 30kg, height 148cm, and BMI 13.7 kg/m^2 which indicates poor nutritional status.

Generalist status examination *head to toe* showing head *normocephali*; eyes and ENT within normal limits; The neck lymph nodes were within normal limits and there was an increase in JVP (PR + 4 cmH_2O); Inspection of the chest wall revealed the shape of the chest *normochest* with left side chest wall movement and retraction (+/- | +/-) and no visible ictus cordis or pulsation (*thrill*); palpation of the chest wall revealed asymmetrical chest wall movement (left side left), decreased palpable fremitus in the superior and medial lobes of the right lung, narrowed rib space in the right lung, palpable deviation of the trachea to the right and palpable ictus cordis in ICS VI left midclavicular line and no palpable pulsation (*thrill*); percussion of the chest wall in the superior and medial lobes of the right lung is dull (*dullness*) with the heart-lung boundary, the right border is found at ICS V MCL dextra, the left border is at ICS VI MCL sinistra, and the upper border is at ICS III PSL dextra et sinistra; Lung auscultation revealed decreased breath sounds accompanied by additional breath sounds *crackles* in the superior and medial lobe of the right lung with a single regular S1 heart sound, hardened S2, and a (+) pansystolic murmur *grade* III/VI of ICS IV left PSL, *gallop* (-); physical examination of the abdomen revealed hepatojugular reflux (+); and extremities within normal limits.

The patient underwent a series of supporting examinations, such as complete blood count, blood sugar, kidney and liver function, electrolytes, TCM TB, HIV examination, chest x-ray and EKG. Complete blood results showed values within normal limits, including a WBC of 8.08 x $10^3\mu$L (reference value: WBC 4.00 – 11.00 x $10^3\mu$L), lymphocyte 1.95 x $10^3\mu$L (reference value: lymphocytes 1.0 – 3.70 x $10^3\mu$L), monocytes 0.68 x $10^3\mu$L (reference value: monocytes 0.00 – 0.70 x $10^3\mu$L), eosinophil 0.10 x $10^3\mu$L (reference value: eosinophils 0.00 – 0.40 x $10^3\mu$L), basophil 0.01 x $10^3\mu$L (reference value: basophils 0.00 – 0.10 x $10^3\mu$L), neutrophils 5.34 x $10^3\mu$L (reference value 1.50 – 7.00 x $10^3\mu$L), RBC 4,96 x $10^6\mu$L (reference value: RBC 4,00 – 5,20 x $10^6\mu$L), HB 13.9 g/dL (reference value: HB 12.0 – 16.0), HCT 43.2% (reference value: HCT 35.0 – 47.0), platelets 258 x $10^3\mu$L (reference value: Plt 150 – 440 x $10^3\mu$L), and NLR 2.74 (reference value: NLR < 3.13).

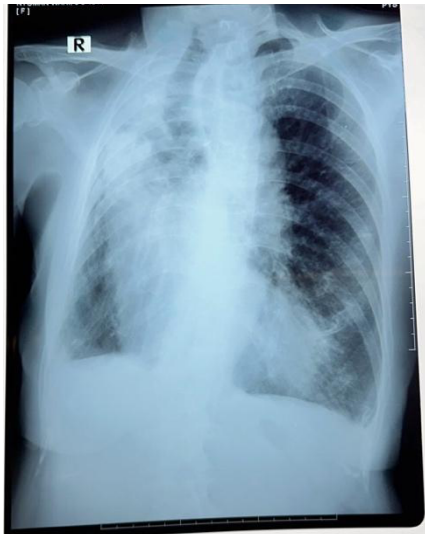

Figure 1. Chest photo

The patient's current blood sugar (GDS) was 108 mg/dL (reference value: GDS ≤ 200 mg/dL). Renal function: urea 14.8 mg/dL (reference value: 6 – 20 mg/dL) and serum creatinine 0.69

mg/dL (0.60 – 1.10 mg/dL). Liver function: SGOT (AST) 27.3 U/L (reference value: 13 – 35 U/L) and SGPT (ALT) 22.1 U/L (reference value: 7 – 35 U/L). Electrolytes: Na 134.2 mmol/L (reference value: Na 135 – 145 mmol/L), K 4.26 mmol/L (reference value: K 3.50 – 5.10 mmol/L), Cl 96.9 mmol/L (reference value: Cl 98 – 107 mmol/L), and iCa 1055 mmol/L (reference value: iCa 1120 – 1320 mmol/L). The results of the TB bacteriological test with TCM showed that M. TB was detected (+) low and rifampicin resistance was not detected. HIV screening with examination *rapid test* anti-HIV obtained *rapid* 1 non-reactive anti-HIV. Chest x-ray provides an overview of the destroyed *lung* upper lobe of the right lung with cardiomegaly and interstitial pulmonary edema (Figure 1). EKG shows sinus tachycardia with *right ventricular hypertrophy* (RVH).

Based on the results of the anamnesis, physical examination, and supporting examinations, the patient was subsequently diagnosed with pulmonary TB, a relapse case confirmed by bacteriology, HIV negative, and *Cor Pulmonale Chronic Disease* with *Malnutrition*. When in the emergency room, the patient was given initial treatment in the form of IVFD NaCl 0.9% 16 tpm, oxygenation with *simple face mask* 7 lpm, nebulized salbutamol 2.5mg every 6 hours and nebulized *fluticasone propionate* 0.5mg every 12 hours, *ceftriaxone* 2gr IV, *azithromycin* 500 mg IV, *erdosteine syrup* 3 x C II, *furosemide* 40 mg IV, *digoxin* 0,25 mg IV, *spironolactone* 25 mg IV. During treatment in the ward, the patient was given therapy in the form of IVFD NaCl 0.9% 16 tpm, oxygenation with a nasal cannula 3 lpm, nebu salbutamol 2.5 mg every 6 hours and nebu *fluticasone propionate* 0.5mg every 12 hours, *ceftriaxone* 2 g every 24 hours for 3 days (starting 09/12/2023), *azithromycin* 500 mg every 24 hours for 3 days (starting 09/12/2023), *erdosteine syrup* 3 x C II, OAT KDT 1 x 2 tabs (starting 11/12/2023), *furosemide* 40 mg IV every 24 hours, *digoxin* 0.25mg PO every 24 hours, and *spironolactone* 25 mg PO every 24 hours. During the hospitalization period, close monitoring of the clinical condition, vital signs, fluid balance and patient compliance with OAT is carried out. The patient's prognosis is assessed dubia ad bonam, both in terms of life expectancy (ad vitam), body function (ad functionam) and recovery (ad sanationam).

After being treated for about 5 days, the patient's condition improved and he was allowed to go home to continue treatment on an outpatient basis at the community health center. The author also made a home visit 3 days after the patient was discharged to further review the patient's condition holistically using *Family Assessment Tools* in the form of APGAR *score* (Table 1) and SCREEM *family score* (Table 2). During the home visit, the author was welcomed by the patient and his family and was cooperative during the interview session and observation of the home environment.

Table 1. APGAR *score*

Indicator	Information	Score (0 – 2)
Adaptation	I am satisfied that I can return to my family if I encounter problems	2
Partnership	I am satisfied with the way my family discusses and shares problems with me	2
Growth	I am satisfied with the way my family accepts and supports my desire to undertake new activities or a new direction in life	2
Affection	I am satisfied with the way my family expresses affection and responds to my emotions such as anger, concern, etc.	2
Resolve	I am satisfied with the way my family and I share our time together	2
Total shoes		**10**

Tabel 2. SCREEM *family score*

Indicator	Information
Social	The social relationship between the patient and his family and the surrounding environment is relatively good, where the patient lives in a densely populated area and when he is sick like now, neighbors come to visit the patient to provide encouragement. The patient's family also actively participates in traditional and religious activities in the local environment. The patient's quality of life can be said to have decreased because considering the patient's old age and currently being ill, there are no significant socio-psychological problems found.
Culture	The patient's cultural life is still quite strong, which is shown by the spatial layout in the house which applies the Balinese traditional house concept even though the types of rooms available are not complete. Apart from that, there is a family prayer place (merajan) located in the front yard of the house following the rules of Balinese Hindu belief. However, the patient's family does not necessarily reject modern culture, the patient's children always follow current developments, one of which is demonstrated by their behavior in seeking treatment at local health facilities. This also indirectly influences patients to trust and prioritize medical health services in addition to alternative medicine. An example is when a patient experiences severe shortness of breath that suddenly recurs, the patient's family helps to take him to the Sawan I Community Health Center and accompanies the patient in order to comply with taking medical drugs prescribed by the relevant doctor.
Religion	Patients and their families are a religious group of people, characterized by the presence of a family prayer place (merajan) in the yard of the house which is kept clean and tidy. Patients and their families are also diligent in praying every day and celebrating religious holidays by making offerings at the house. Apart from that, the patient's family also participates in celebrating religious ceremonies held in the area where they live. In facing the current condition of illness, the patient sincerely accepts the illness he is experiencing and believes that a miracle will be provided for healing as long as he continues to try and pray.
Economic	The patient belongs to a family with a middle to lower economic level. This is proven by the house where the patient lives which has plastered brick walls, some of which have been painted, some of the floors are ceramic and some are only plastered, each room contains 1 window with a total ventilation area of <10%, but has a tile roof. The bathroom is complete with a place for a toilet and a simple kitchen which still uses cooking equipment in the form of a wood-burning stove. There is 1 well in the backyard. The patient lives with her husband and second child in a house measuring around 200 m^2. In meeting daily nutritional needs, the patient's first child helps to take care of it. The patient eats 3 times a day, with the food composition consisting of carbohydrates (rice or porridge), protein (eggs, tempeh, tofu), minerals (green vegetables), the patient is also sometimes given fruit as a snack. Patients usually eat 5 – 6 bites at each meal. However, the family always tries to meet the patient's needs, especially regarding financing health efforts by utilizing BPJS.
Education	The patient is only an elementary school graduate like her husband, her first child is a junior high school graduate, and her second child is a high school graduate. Based on this, it can be said that the patient's family belongs to a low

Indicator	Information
	level of education so they have limitations in understanding information, including insight that is not broad enough, especially in matters of health.
Medical	The location where the patient and his family live is quite a distance from the health service. The distance from the patient's house to the nearest Puskesmas, namely Sawan I Health Center, is around 9.7 km, while the distance to Buleleng Regional Hospital is around 15 km. The road access from the patient's house can be passed by cars and motorbikes, but the road width is quite narrow and quite steep. It can be said that access to the place service Health care has limitations due to travel distance, transportation, and the patient's family's finances being inadequate. However, if one of the family members is found to be sick, the other family members are supportive in taking him for an examination to the Community Health Center.

Tuberculosis (TB) is a contagious infectious disease caused by *Mycobacterium tuberculosis* (Indonesian Lung Doctors Association, 2021) Generally, this infection attacks the lungs but can also attack extra-pulmonary organs. The TB infection process is closely related to the body's immune system. In individuals with a good immune system, the body can eliminate TB germs before they develop into disease. On the other hand, in individuals with weak immune systems, for example immunocompromised groups, TB bacteria can multiply and cause active infection within one year in around 5% of cases. Meanwhile, the rest will experience latent infections which are at risk of reactivation if their immune condition is weakened (CDC, 2023; Indonesian Lung Doctors Association, 2021) Active TB occurs when bacteria grow and actively attack body tissue, causing real symptoms. Meanwhile, latent TB is a condition when the germs remain in the body, but do not cause symptoms and remain non-infectious, unless reactivation occurs (CDC, 2023; Perhimpunan Dokter Paru Indonesia, 2021; Davidson et al., 2024).

Symptoms of pulmonary TB can be typical and atypical. Typical symptoms of pulmonary TB include coughing up phlegm ≥ 2 weeks, subfebrile fever > 1 month, night sweats, and unexplained weight loss; Meanwhile, atypical symptoms include coughing up blood, shortness of breath breath, chest pain, malaise, and decreased appetite which are generally experienced by immunocompromised patients (Perhimpunan Dokter Paru Indonesia, 2021). However, many TB symptoms resemble other lung diseases, so a history of contact with TB sufferers, previous TB treatment, and crowded and unhealthy environmental conditions are important in the diagnosis process (Perhimpunan Dokter Paru Indonesia, 2021; Zondo, 2022; Teibo et al., 2024; Nematahe, 2023). In this patient, symptoms were found that tended to be atypical, such as cough with phlegm that is difficult to expel, mild fever, worsening shortness of breath, and right chest pain. This condition is supported by a history of complete TB treatment in the past 2 years so there is a high possibility that latent infections that were not previously detected will experience reactivation due to a decrease in the immune system, considering the patient's old age, namely 79 years, the clinical symptoms that appeared were atypical.

On the other hand, chronic pulmonary TB infection can cause permanent lung damage, including collapse of the affected part of the lung due to the ongoing inflammatory process. This condition can develop into post-tuberculosis obstructive syndrome (SOPT), which is a form of chronic airway obstruction with symptoms that resemble COPD and asthma (Darmawan et al., 2025; Ozoh et al., 2021; Nightingale et al., 2023). SOPT appears as the body's immune response to Mycobacterium tuberculosis antigens which continuously triggers a chronic inflammatory reaction. As a result, there is a decrease in the elasticity of the lower

airways, damage to the bronchial muscles, as well as disorders of the lung tissue and blood vessels, including the pleura, which can also be damaged. (Allwood et al., 2021) Although this condition sometimes does not cause symptoms, in some patients shortness of breath and a persistent cough with phlegm can appear (Darmawan et al., 2025). According to a study *cross-sectional* shows that symptoms of shortness of breath and chronic cough can continue to be felt by tuberculosis patients for several years after treatment is completed (Gai et al., 2023) SOPT is usually confirmed through radiological examination with the classic picture of '*destroyed lung*' in unilateral lung with predominance in the upper lobe of the lung (Varona Porres et al., 2017). In this case, the patient did have a history of TB with complete treatment, complained of shortness of breath and cough with phlegm, and radiology results supported severe lung damage in the upper lobe of the right lung.

Because the symptoms are similar to atypical active TB, patients with SOPT are often suspected of experiencing a TB relapse and receive re-treatment empirically (Allwood et al., 2021). Therefore, it is very important to make a correct diagnosis. A person is said to be "suspected for TB" if they show signs of active infection. The diagnosis of TB can be made through bacteriological confirmation (finding M. tuberculosis in sputum or clinical specimens) or clinically through symptoms and imaging, especially if there is a history of close contact (Perhimpunan Dokter Paru Indonesia, 2021). In this patient, a Rapid Molecular Test (TCM) test was carried out and the result was that M. tuberculosis was detected in low numbers with sensitivity to rifampicin (+). The HIV test results showed non-reactive. With these findings, it is clear that the patient experienced a recurrence of active TB which was previously latent and unnoticed. Most likely, the patient experienced post-TB chronic lung damage in the form of SOPT which has been asymptomatic. Literature shows that individuals with SOPT are more susceptible to TB recurrence, and conversely, recurrent TB, late diagnosis, and smoking habits are risk factors for SOPT (Allwood et al., 2021; Jeniffer, 2021; Arsyad et al., 2024). Until now, there are no evidence-based clinical guidelines for treating SOPT, so the therapy given is empirical, such as pulmonary rehabilitation, smoking cessation, and administration of influenza and pneumococcal vaccines. Outpatient pulmonary rehabilitation has been proven to improve the patient's quality of life and reduce symptoms (Allwood et al., 2021; Nopp et al., 2022; Illini et al., 2022; Wang et al., 2023). In addition, SOPT treatment can be adjusted with the treatment of other chronic lung diseases such as COPD or bronchiectasis. In accordance with the latest TB guidelines, patients with drug-sensitive TB are still treated with first-line OAT regimens, including those who have undergone previous treatment, provided that resistance testing is carried out if possible (Perhimpunan Dokter Paru Indonesia, 2021; Yandhi & Ahmad, 2024; Aprianti et al., 2023).

Chronic lung damage due to TB can also have an impact on the cardiovascular system, known as cor pulmonale, namely disruption of the structure and function of the right ventricle of the heart due to high pressure in the pulmonary arteries. This condition is generally caused by chronic lung disease so it is often referred to as chronic cor pulmonale (NCBI Bookshelf, 2023). The process begins with damage to the lung parenchyma or reduced elasticity of the airways and pulmonary blood vessels due to chronic inflammation. This causes disruption of gas diffusion between the lungs and the heart, resulting in increased pulmonary vascular resistance and pulmonary artery vasoconstriction. As a result, the pressure in the pulmonary arteries increases and causes pulmonary hypertension (Mandoli et al., 2021). Pulmonary hypertension is defined as an increase in the average pressure in the pulmonary arteries (*mean pulmonary artery pressure*) > 20 mmHg and increased pulmonary vascular resistance (*pulmonary vascular resistance*) above normal under resting conditions (Naeije et al., 2022; Montani et al., 2013; Alves-Jr et al., 2013). Over time, the right heart is no longer able to compensate for this load, causing backflow of blood (reflux) to the right ventricle and ultimately right heart failure occurs. This will appear as cardiac congestion with symptoms such as jugular vein enlargement

(JVP), heart enlargement (cardiomegaly), chronic pulmonary edema, leg swelling, hepatomegaly, increased hepatojugular reflux, and even shock in severe cases (Amin & Hendriyanto, 2024; Alhusban et al., 2025). In this case, the signs of cor pulmonale were clear, namely increased JVP, positive hepatojugular reflux, and chest x-ray showed cardiomegaly and interstitial pulmonary edema. Treatment for cor pulmonale generally focuses on the basic cause. However, if the patient comes in an acute condition, symptomatic therapy such as administering medication is also needed (Ekong et al., 2024; Nalbandian et al., 2021). Governance *pulmonale heart* basically nature *causative*However, in acute conditions symptomatic management can be given. This patient was given a combination of therapy including anti-diuretic drugs such as furosemide and spironolactone to reduce pulmonary edema as well as anti-arrhythmic drugs in the form of digoxin which also plays a role in treating heart failure. As an antiarrhythmic, digoxin works to slow the heart rate and reduce the heart conduction speed in the AV node and as a heart failure drug it plays a role in increasing myocardial contractility by inhibiting the Na+/K+ pump. ATP-ase thereby increasing cardiac output (David & Shetty, 2024; Khandelwal et al., 2024).

Tuberculosis not only impacts physical health, it can also influence various other organ systems and cause permanent disability. The impact extends to reducing the patient's quality of life, both psychologically and socio-economically (B. W. Allwood et al., 2021). Several studies show that post-TB chronic lung disease can have a long-term impact on the patient's social and mental condition, including burdening the family's economy, although quantitative data on this is still limited (B. Allwood et al., 2019). In addition, negative stigma and discrimination against TB sufferers still often occurs in society. This has been identified as a risk factor for mental health disorders, reduced quality of life, and worsening of the patient's long-term prognosis (B. W. Allwood et al., 2020; Rachow et al., 2019). This is why a holistic approach in treating TB patients is very important. In this case, the assessment of the patient's condition is not only carried out in the hospital, but is also followed by a visit to the patient's home after returning home. Assessment is carried out using *Family Assessment Tools*, namely APGAR Score and SCREEM *Family Score*. The APGAR score is useful for determining family function in various situations, including: *adaptation*, *partnership*, *growth*, *affection*, and *resolve* (Panganiban-Corales & Medina, 2011). In patients, each component gets a score of 2 and a total score of 10 which shows that family function is running very well, especially in supporting patients when facing illness. Judging from the indicators SCREAM, there are educational, economic, and access functions that service health still have limitations or can be concluded families have sufficient resources, but may still experience certain difficulties in facing challenges. However, this does not prevent the family from remaining cooperative and proactive in supporting the treatment process, especially because they have utilized the National Health Insurance (BPJS) facility. They are also open to health information and actively accompany patients when accessing health services. Overall, although there were limitations in several aspects, no significant psychosocial disorders were found. With good family support and active involvement in the treatment process, the patient's opportunity to get better treatment results remains wide open.

Conclusion

Tuberculosis is a chronic infectious disease of the lower respiratory tract which can cause complications in the form of damage to lung tissue and blood vessels. One of the most common complications that occurs post TB is a chronic lung disease, especially one that triggers lower airway obstruction, with symptoms resembling COPD or asthma. Until now, there is no specific evidence-based therapy available specifically for this condition. However, various empirical approaches that have been carried out have proven to be able to provide quite good clinical outcomes. In addition, the patient's psychosocial and economic aspects have a major influence on the success of treatment. Although there is not much scientific evidence to support

this, many clinical reports state that family support and access to health services play an important role in improving patient prognosis.

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