International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 07 Issue 12 December 2024
DOI: 10.47191/ijcsrr/V7-i12-44, Impact Factor: 7.943
IJCSRR @ 2024
www.ijcsrr.org

Holistic Management of an Elderly Patient with Relapsed Pulmonary Tuberculosis and Herpes Zoster Accompanied by Inadequate Housing Conditions in Indonesia Primary Health Centre

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ABSTRACT: Pulmonary tuberculosis (TB), caused by Mycobacterium tuberculosis, remains a major global health issue, particularly in developing countries. Weakened immunity in TB patients increases their risk of herpes zoster, whose incidence rises with age. Over 60% of cases occur in individuals older than 50 years, while only 10% affect those under 20. This case report highlights the application of evidence-based medicine in family practice, focusing on identifying risk factors, clinical issues, and patient management through a patient-centered, family-oriented approach. Data were collected through anamnesis, physical examinations, and home visits to evaluate family, psychosocial, and environmental factors. Additional information was obtained from the patient's medical records. A holistic assessment was conducted from diagnosis to outcome, incorporating qualitative and quantitative analyses. The patient, Mr. A., a 72-year-old, presented with relapsed pulmonary TB and herpes zoster. He sought routine anti-tuberculosis drug retrieval and reported lesions on his left back with sensations of heat and itching. Interventions led to improvements in TB symptoms, healing of herpes lesions, and enhanced patient behaviour. Quantitative evaluations showed increased knowledge, medication adherence, and better dietary habits. The diagnosis and management followed national guidelines and relevant literature. Positive outcomes were observed in the patient's symptoms, knowledge, and behaviours, as well as improvements within his family, as assessed during follow-ups. This case underscores the importance of holistic and evidence-based approaches in addressing complex comorbidities in primary care.

KEYWORDS: Family Medicine, Herpes Zoster, Holistic Management, Relapsed Lung TB.

INTRODUCTION

Pulmonary tuberculosis (TB) is an infectious disease caused by Mycobacterium tuberculosis and remains a global health issue, particularly in developing countries. In Indonesia, an estimated 969,000 TB cases occur annually, equivalent to one case every 33 seconds. This marks a 17% increase from 824,000 cases in 2020. The prevalence of TB in Indonesia is 354 cases per 100,000 population. The risk of developing pulmonary TB increases with smoking and alcohol consumption, which facilitate TB transmission. Other contributing factors include living with individuals suspected or diagnosed with pulmonary TB, inadequate housing conditions, immune status, patient behavior, and housing density. Exposure to Mycobacterium tuberculosis is influenced by the duration or intensity of contact with a pulmonary TB patient. Therefore, controlling the transmission of M. tuberculosis requires identifying and treating pulmonary TB cases to break the chain of infection. Interrupting M. tuberculosis transmission is essential to prevent potential new TB cases and reduce the overall burden of the disease.[1].[2].[3]

Herpes zoster is a condition caused by the reactivation of the varicella-zoster virus (VZV), which remains latent in the dorsal root ganglia. Reactivation of the virus leads to a recurrent infection known as herpes zoster. It represents the primary infection in individuals initially exposed to the varicella-zoster virus. The clinical manifestation typically includes grouped reddish skin rashes accompanied by radicular pain that follows a dermatomal distribution. The incidence of herpes zoster increases with age, with over 60% of cases occurring in patients older than 50 years, while only 10% affect individuals under 20 years old. Globally, the annual incidence ranges from 3.4 to 4.82 per 1,000 population, increasing to 11 per 1,000 population annually among those aged 80 years.[4].,[5]

Herpes zoster often begins with prodromal symptoms such as pain, itching, or tingling in the area of the lesion that may persist for days or weeks. This may be accompanied by allodynia, or pain caused by light touch, even before the rash appears, or in some cases,

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no rash develops, a condition known as zoster sine herpete. Other symptoms such as headache, malaise, and photophobia may also occur. In approximately 75% of cases, the main complaint is pain, described as burning, throbbing, or stabbing, in addition to pruritus at the lesion site. In immunocompetent patients, herpes zoster can resolve spontaneously, and supportive management is typically sufficient. However, given the recurrent nature of the disease, comprehensive management is essential, encompassing curative, promotive, and preventive approaches. Effective management involves not only the patient but also the active participation of their family to achieve optimal therapeutic outcomes. This holistic approach ensures that treatment addresses both immediate symptoms and long-term prevention strategies, enhancing the patient's quality of life.[6]

CASE REPORT

Mr. A., a 72-year-old male, visited Natar Community Health Center on February 29, 2024, for his routine anti-tuberculosis medication consisting of 3 daily fixed drug combination (FDC) tablets. He began this regimen in January 2024 after a positive Molecular Rapid Test for tuberculosis (TB). The patient reported improvement in his cough with sputum production, which has been resolving over the past month, and denied any fever. However, he presented with a new complaint of a lesion on his left back, described as itchy and warm, which had appeared a week prior. Initially, the lesion manifested as fluid-filled vesicles that he ruptured due to unbearable itching, leading to a three-day fever at the onset of symptoms. The patient denied any previous similar episodes or a history of chickenpox. Mr. A. had completed pulmonary TB treatment in October 2023, with a sputum test confirming negative results at the end of therapy. He contracted TB through his late wife, Mrs. S., who passed away from pulmonary TB in September 2023. A retired construction worker, Mr. A. has been unemployed for five years and currently lives at home. He has a history of smoking from the age of 17, ceasing the habit in 2023 upon his initial TB diagnosis. He does not consume alcohol. His current diet is limited to two meals daily with no specific pattern or adequate macronutrient intake, and his food choices are monotonous. This case highlights the need for integrated management of relapsed TB and herpes zoster in the context of nutritional and lifestyle factors.

Upon physical examination, the patient appeared in a mild state of illness, with a conscious level described as compos mentis, and a Glasgow Coma Scale (GCS) score of E4V5M6, indicating full alertness and responsiveness. The patient was cooperative during the examination. Vital signs were as follows: temperature 36.8°C, blood pressure 135/85 mmHg, pulse rate 64 beats per minute, respiratory rate 20 breaths per minute, weight 41 kg, height 160 cm, and a Body Mass Index (BMI) of 16 kg/m², categorizing the patient as underweight. Examination of the head and neck was unremarkable and within normal limits. On thoracic examination, both chest expansion and tactile fremitus were symmetric. No tenderness was noted upon palpation, and chest expansion was symmetrical. Percussion of the lung fields revealed a resonant sound, while vesicular breath sounds were audible throughout both lung fields. Minimal wet rhonchi were noted at the apices of both lungs, without associated wheezing. The cardiac impulse was not palpable, and the cardiac borders were within normal limits. Heart sounds I and II were regular, with no additional heart sounds present. Abdominal examination revealed a flat abdomen, with bowel sounds present at a rate of 10 per minute. No tenderness or organomegaly was observed, with findings consistent with normal abdominal function. Examination of the extremities revealed that both upper limbs were warm to the touch, with no edema, wounds, or deformities. Similarly, both lower limbs were warm, with no edema, wounds, or deformities present. Capillary refill time (CRT) was less than 2 seconds. A skin examination of the left lumbar region revealed papular lesions that had erupted with an erythematous base, accompanied by minimal crusting, located at the level of the L2-L3 dermatome. The lesions were tender to palpation and felt warm. Laboratory results from the Molecular Rapid Test performed on January 29, 2024, indicated “MTB Detected” with no evidence of drug resistance.

Figure 1. Localized Examination

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FAMILY DATA

The patient's family structure is an extended family consisting of the father, children, and grandchildren. The patient's wife, Mrs. S. (69 years old), passed away in 2023 due to pulmonary tuberculosis. They had 8 children and 16 grandchildren. The patient currently lives with his youngest son, Mr. An., and his grandchild from his eldest child, L., who is 14 years old.

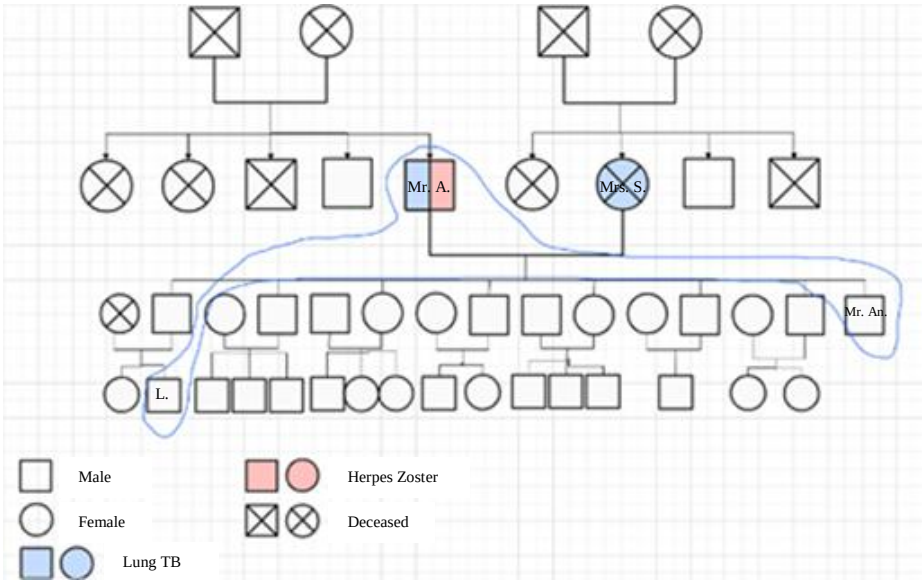

Figure 2. Mr. A.'s Genogram

The relationships within Mr. A.'s family can be seen in Figure 3.

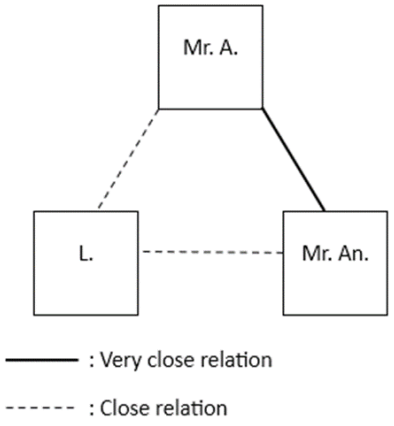

Figure 3. Mr. A.'s Family Map

The Family APGAR Score for Mr. A's family yielded a total score of 8, with the following breakdown: Adaptation (1), Partnership (1), Growth (2), Affection (2), Resolve (2). The interpretation of Mr. A's family indicates good family functioning. According to Duvall's family life cycle stages, the patient's family is in Stage VIII, the elderly family stage, as depicted in Figure 4. This stage is associated with several risk factors, such as reduced income, declining health, and decreased productivity.

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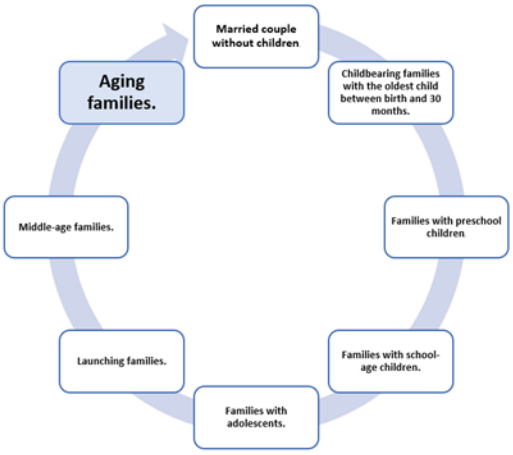

Figure 4. Mr. A.'s Family's Life Cycle

The patient resides in a permanent, privately owned house with his youngest son, Mr. An., and the grandchild from his eldest child, L. The house appears to be in an unhealthy condition, measuring 6 x 20 meters, single-story, with no terrace. It has a living room, family room, three bedrooms, two bathrooms, and a kitchen. The floors are covered with cement, and the walls are made of brick, with some areas plastered while others remain exposed. Lighting and ventilation are adequate, supported by a relatively high ceiling, but the house remains damp due to the family drying clothes indoors. The water source comes from a well with an electric pump, which is not always functioning, requiring manual water fetching. Waste is directed to a drain located in front of the house. The two bathrooms serve different purposes: one for bathing and washing, and the other contains a squat toilet. However, the septic tank is located only about 6 meters away from the water source, which does not meet the Indonesian National Standards (SNI) of at least 10 meters from the clean water well. Adjacent to the house is a plot of land used by a person who sells scrap goods. The area is moderately populated and is connected to the electricity grid.

Figure 5. Mr. A.'s House Plan

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INITIAL HOLISTIC DIAGNOSIS

Personal Aspect

- **Reason for Visit:** The patient came to collect anti-tuberculosis (TB) medication (ICD-10: A15.0, ICPC-2: A70) and reported the onset of itchy lesions on his left back (ICPC-2: S06).
- **Concerns:** The patient is worried that his illness will worsen, possibly progressing like his late wife's condition, and fears it may be transmitted to those around him (ICPC-2: Z11; Z15; Z27).
- **Perception:** The patient perceives that tuberculosis (TB) is similar to other respiratory infections and believes his skin condition is not contagious (ICPC-2: Z07).
- **Expectations:** The patient hopes that with regular medication, his condition will improve and that he will recover (ICPC-2: Z11).

Clinical Aspects

- Pulmonary Tuberculosis (TB): (ICD-10: A15.0; ICPC-2: A70)
- Herpes Zoster: (ICD-10: B02.9; ICPC-2: S70)

Internal Risk Factors

- Age: The patient is 72 years old (ICD-10: R54).
- Curative treatment regimen (ICPC-2: Z10).
- Lack of physical activity (ICD-10: 272.3).
- Dietary patterns and eating habits are inadequate (ICD-10: Z72.4).
- Limited knowledge regarding:
- The importance of consistent medication and TB and Herpes Zoster transmission prevention (ICD-10: Z55.9; ICPC-2: Z07).
- The risk factors and complications associated with pulmonary tuberculosis.

External Risk Factors

- Family's curative treatment regimen (ICPC-2: Z10).
- Family support in meeting the patient's nutritional needs, medication adherence, and physical activity (ICPC-2: Z01; Z28).

Functional Degree

Based on the Dartmouth COOP Functional Health Assessment Charts adopted by WONCA, the patient's functional degree is categorized as level 3, indicating that the patient is capable of self-care but is unable to perform light daily activities.

INTERVENTION

Interventions will be implemented based on a patient-centered, family-focused, and community-oriented approach. The patient will receive three visits. The first visit will focus on completing the patient's data and monitoring after the health center visit. The second visit will involve intervention, while the third visit will evaluate the effectiveness of the interventions. Patient-centered interventions will include medicinal management such as anti-tuberculosis medication (3 tablets per day for 6 months) to treat pulmonary TB, acyclovir (800 mg, 5 times per day for 7 days) to treat Herpes Zoster, acetylcysteine (200 mg, 3 times per day if productive cough persists), chlorpheniramine maleate (4 mg, 3 times per day for pruritus), and Vitamin B complex (1 tablet per day for 7 days). Non-medication interventions will include educating and motivating the patient to attend regular health center visits, as well as teaching long-term medication adherence and educating about the transmission risks and prevention of TB and Herpes Zoster. Evaluation of interventions will be based on clinical improvements and the patient's understanding, assessed through pre-test and post-test evaluations. Specifically, for TB, microbiological examination for acid-fast bacilli (AFB) will be conducted at the 2nd month and at the end of treatment. Family approach interventions will include educating the family about the patient's conditions, treatment, and disease transmission prevention, providing support in monitoring the patient's medication adherence, daily activities, and diet, and educating the family on the importance of routine health check-ups to prevent the spread of infections and non-communicable diseases, particularly for household members.

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The final holistic diagnosis of the patient consists of personal, clinical, internal and external risk aspects, and functional status. In the personal aspect, the patient's reason for seeking care was coughing, pain, and itching on the back, which have reduced, with the patient's concerns decreasing with treatment and being optimistic about recovery. In the clinical aspect, the patient was diagnosed with pulmonary tuberculosis (ICD-10: A15.0; ICPC-2: A70) and Herpes Zoster (ICD-10: B02.9; ICPC-2: S70). Internal risk aspects include improved understanding of preventive care, promotion of clean and healthy behavior, minimal activity at home, better diet and nutrition, and increased knowledge about TB and Herpes Zoster. External risk aspects include family awareness of the importance of early detection to prevent the chain of infection, providing moral and material support for the patient, and monitoring medication adherence. The patient's functional degree is level 3, meaning they can perform self-care but are unable to do light daily work.

DISCUSSION

The clinical diagnosis of Mr. A was established based on the results of anamnesis, physical examination, and supporting investigations. During the anamnesis, the patient reported persistent cough and occasional chills for approximately one month, accompanied by night sweats in January 2024. These symptoms align with the common presentation of pulmonary tuberculosis, where the patient typically experiences a productive cough lasting more than two weeks, often accompanied by at least one respiratory symptom (such as shortness of breath, sputum mixed with blood, hemoptysis, or pleuritic chest pain) and/or systemic symptoms (including fever, fatigue, weight loss, loss of appetite, and night sweats without physical activity). The patient has undergone a molecular rapid test at the Natar Community Health Center, which yielded a positive result. The patient had previously completed a 6-month course of tuberculosis treatment, which concluded in October 2023. At the end of the treatment, the patient's sputum was examined for acid-fast bacilli (AFB), and the result was negative.[7]

The patient also presented with a new complaint of lesions on the left back that had been itchy and hot for a week before visiting the health center. The patient reported that the lesion initially appeared as a fluid-filled bump, and due to intense itching, the bump was ruptured by the patient. The patient also experienced a fever for 3 days at the onset of the symptoms. The patient does not recall having chickenpox in his lifetime. Herpes zoster typically begins with prodromal symptoms lasting two to four days, which may include systemic symptoms (fever, dizziness, malaise) and localized symptoms (muscle and bone pain, itching, and aching). Following this, erythema develops, evolving into grouped vesicles with an edematous and erythematous base. These vesicles initially contain clear fluid, which may later become cloudy, possibly progressing into pustules and crusts. If the vesicles contain blood, it is referred to as hemorrhagic herpes zoster. The presence of ulcers or scars may indicate a secondary infection.[6]

During the physical examination, the following vital signs were obtained: blood pressure 135/85 mmHg; heart rate 64 beats per minute; respiratory rate 20 breaths per minute; temperature 36.8°C; weight 41 kg; height 160 cm; and BMI 16 kg/m², which falls into the underweight category. This underweight condition could be attributed to the patient's previous history of pulmonary tuberculosis, along with the current relapse of pulmonary TB, compounded by inadequate energy intake. On physical examination of the thorax, the findings included a normal shape of the chest. with symmetrical chest movement and no retraction of the chest wall. Palpation revealed no tenderness or masses. Tactile fremitus was symmetrical on both sides, and percussion of the lung fields revealed normal resonant sounds with the heart borders within normal limits. Auscultation revealed vesicular breath sounds (+/+), with fine, minimal wet crackles (rhonchi) at both apexes of the lungs, without wheezing. In a patient with pulmonary TB, these findings are consistent with pulmonary involvement. In cases of minimal lesions in TB, physical examination may be normal or show minimal abnormalities. Increased vesicular breath sounds and fine wet crackles (fine crackles) are due to abnormalities in the distal airways (alveolar ducts, bronchioles). The fine wet crackles are high-pitched, resulting from infiltration or consolidation of the lung parenchyma, which becomes denser (hepatization), thus acting as a good medium for sound conduction.[8],[9]

On localized physical examination, multiple vesicles with an erythematous base were observed in the left lumbar region. Some of these vesicles had ruptured, were small (miliary), round and irregular in shape, with well-defined borders and uneven edges, consistent with a herpetiform distribution along the L3 dermatome. No additional diagnostic tests were performed on the patient. The diagnosis of herpes zoster is typically based on clinical findings, which include the presence of prodromal symptoms such as pain, a characteristic dermatome distribution, and the appearance of grouped vesicles. In some cases, papules may be present. Several lesion groups are found within the dermatome, especially where sensory nerves are located. A key feature of herpes zoster is the

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absence of a similar rash in the same distribution (to differentiate it from herpes simplex zosteriform), along with pain and allodynia (pain induced by stimuli that do not usually cause pain) in the affected area.[10]

Based on the results of the patient's anamnesis, physical examination, medical history, and supporting tests conducted one month ago, the diagnosis of relapsed pulmonary TB was confirmed clinically. The patient was prescribed first-line TB treatment, which consists of two phases: the intensive phase (2 months) and the continuation phase (4 months). The patient was advised to take 3 tablets of Anti-Tuberculosis Drugs FDC daily following the TB treatment guidelines in Indonesia. The prescribed first-line TB regimen includes rifampicin (R), isoniazid (H), pyrazinamide (Z), and ethambutol (E), which are administered daily with fixed doses in one tablet, adjusted according to the patient's body weight. The goal of TB treatment is to cure the patient, improve productivity and quality of life, prevent death due to TB or its long-term consequences, reduce the risk of TB relapse, decrease the transmission risk of TB, and prevent the development and transmission of drug-resistant TB. For the treatment of herpes zoster, the patient was prescribed antiviral therapy, which can be either systemic or topical. The antiviral chosen was acyclovir (800 mg, five times a day for seven days), as other antivirals such as valacyclovir (1000 mg every 8 hours) and famciclovir (500 mg every 8 hours) were either unavailable or more expensive. Acyclovir was selected due to its availability and lower cost. For other symptomatic complaints, the patient was prescribed antipruritic medication, namely chlorpheniramine maleate, and analgesics such as paracetamol. However, analgesics were not prescribed because the patient reported minimal pain compared to the pruritus.[11],[12]

Studies have shown that oral acyclovir is more effective in inhibiting the replication of the Varicella Zoster virus during secondary viremia compared to primary viremia, which occurs between five days before and one day after the clinical onset. This may be due to differences in the degree of induction by the viral thymidine kinase during primary and secondary viremia. The activity of the viral thymidine kinase begins to increase 3-5 days before the clinical onset of varicella. Topical acyclovir affects the local healing of herpes zoster by reducing pustulation, crust formation, and the average time for healing. In this patient, it was found that the patient is experiencing a case of relapsed pulmonary tuberculosis. Pulmonary tuberculosis relapse refers to a situation where a patient who has previously received anti-tuberculosis treatment, was declared cured, and completed the treatment, is now diagnosed with a recurrent episode of tuberculosis, which may be due to either a relapse or reinfection. Relapsed pulmonary tuberculosis can be caused by either endogenous or exogenous factors. The risk factors for the recurrence of pulmonary tuberculosis can stem from various aspects, including the patient's immune status, comorbid conditions, socioeconomic factors, behavioral factors, as well as the bacteriological characteristics of the M. tuberculosis microorganism itself.[13],[14],[15]

Other factors, such as improper sputum collection methods or uncalibrated equipment and materials, can contribute to the risk of false negative results in sputum examinations, leading to the impression of a relapse when clinical manifestations recur. In the case of Tn. A, multiple factors may influence why pulmonary tuberculosis (TB) relapsed, including impaired immune status. Following his previous TB treatment, the patient's nutritional status was categorized as underweight, which is one of the factors contributing to a weakened immune system. This is because the immune system relies on protein for its formation, and poor nutritional status can result in an inadequate immune response due to the lack of immunoglobulins or antibodies. Additionally, the lack of protein can interfere with drug transport, as most medications are bound in plasma by proteins.[15]

During the first visit, an approach was made to introduce the purpose and goals of the visit to the patient, followed by a family history interview, inquiry about the diseases previously suffered, gathering data on the condition of the home, and identifying possible risk factors. This was followed by a holistic assessment, which included biological, psychosocial, social, economic, and behavioral aspects of the patient and his family. From the results of the visit, it was found that the patient still had limited knowledge about his diseases, treatment, and preventive measures for tuberculosis (TB) and herpes zoster. The patient also expressed concerns that his condition might worsen and that he could potentially transmit the disease to others. The patient's family functions fairly well, but it is considered somewhat inadequate for addressing health issues and problems. The patient previously followed a curative treatment approach, which aligns with the family's treatment approach. The patient mentioned regularly taking anti-tuberculosis medications daily, often supervised by Mr. An. However, the family still lacks knowledge about tuberculosis (TB), particularly its contagious nature. Family members who frequently visit the house were asked by Mr. A. to undergo TB screening, but all declined, believing they showed no symptoms. This health behavior poses a risk for reinfection, as underdiagnosed individuals may spread the M. tuberculosis bacteria to those who are vulnerable. The family also takes care to maintain the cleanliness of the wound on the patient's left back, which helps prevent the transmission of the herpes zoster virus.

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The patient's home is fairly adequate, with sufficient building size, ventilation, and lighting in some rooms. However, the surrounding environment, which is used as a junkyard, the dampness of the house, and the improper distance of the septic tank from the water source, pose risks in the patient's disease progression. A house that does not meet health standards can become a medium for the transmission of respiratory diseases, including tuberculosis (TB). The denser the living conditions, the easier and faster the transmission of contagious diseases. Poor ventilation and lighting due to overcrowding result in low air exchange, while droplets from a TB patient's cough or sneeze can survive in the room for up to 2 hours. The patient's previous smoking habits present a risk for TB reinfection, even though they have quit smoking a year ago. The patient's hygiene is adequate; however, the living conditions, such as infrequently airing out the bed, sheets, and pillowcases, increase the risk of TB transmission.

During the second visit, before the intervention, both the patient and their family were given a pretest to assess their knowledge of tuberculosis (TB) and herpes zoster. The results of the pretest were compared with the posttest results after the intervention, to evaluate the improvement in their knowledge. In the pretest, Tn. A received a score of 50 and Tn. An. scored 60, which were considered insufficient. This indicates that both the patient and the family did not fully understand the important aspects of the diseases, treatment, and prevention of TB and herpes zoster. Additionally, a food recall method was used to assess the patient's nutritional intake over the past 24 hours. It was hoped that after the intervention, the patient would be able to follow the education and guidance provided according to their health conditions and nutritional status. To facilitate education, a poster was used as a visual aid, explaining key points about TB and herpes zoster. The patient and family were informed about the diseases' causes, symptoms, transmission, treatments, and prevention measures. Specific explanations were provided on the duration of the TB and herpes zoster treatments, potential side effects, and the importance of adhering to the prescribed medications. Furthermore, the patient and family were educated about the importance of the Medication Adherence Support (PMO) method through the DOTS (Directly Observed Treatment, Short-course) strategy. This method ensures that the patient takes their medication consistently and reduces the risk of discontinuation, which could lead to complications or drug resistance. The role of the family in supporting the patient's treatment and preventing medication noncompliance was emphasized.

The patient and their family were also educated about the importance of providing nutritious food for the patient and the family. The patient was advised to consume high-calorie, high-protein foods (HCHP) to boost their immune system, especially since they are currently infected with tuberculosis, and to help improve their body mass index. A high-calorie, high-protein diet aims to meet the increased energy and protein needs, prevent, and reduce tissue damage. Additionally, this diet helps the patient gain weight and reach a healthy weight. The principles of the TKTP diet include: 1) High energy, 40-45 kcal/kg of body weight (BB); 2) High protein, 2.0-2.5 g/kg BB; 3) Sufficient fat, 10-25% of total energy needs; 4) Adequate carbohydrates, the remainder of total energy requirements; 5) Sufficient vitamins and minerals, based on normal needs; and 6) Food should be easily digestible. The patient and their family were also educated about the importance of maintaining a healthy environment around the home. The home should not be damp and should be smoke-free. Every morning, the house should be cleaned, and windows should be opened to allow sunlight into the home. Furthermore, the family was motivated and educated about the importance of emotional support for the patient's recovery.

The third visit was an evaluation of the interventions conducted during the second visit. The patient reported that their cough had become occasional and there was no complaint of shortness of breath. The lesion on the left back had improved, with no more vesicular lesions, crusting, or open lesions. During the physical examination, only minimal fine crackles (rhonchi) were heard at both apices of the lungs. In the evaluation interview, the patient mentioned that their concern about the severity of the illness had decreased, and both the patient and the family had a much better understanding of the diseases the patient was suffering from. The patient's perception of the diseases had also changed, realizing that tuberculosis (TB) was different from other respiratory illnesses, as it was caused by the bacterium M. tuberculosis, and the skin condition was a contagious disease caused by a virus. The patient understood that adhering to the prescribed TB treatment (OAT) could lead to a positive outcome. The patient's diet had also improved, as evidenced by a change in the food recall, due to the increased understanding of the importance of nutrition in aiding the recovery process and strengthening the immune system to fight the disease. The patient expressed satisfaction with the health worker's visits, which also helped raise awareness within the family about TB screening, aiming to break the chain of infection within the household.

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CONCLUSION

Based on this case, health problems were identified in the elderly patient, Mr. A, who is suffering from relapsed pulmonary tuberculosis and herpes zoster, as diagnosed through the examinations performed. The patient's and family's knowledge regarding the transmission and prevention of the diseases was minimal. A holistic and comprehensive management approach was implemented for both the patient and the family, incorporating patient-centered, family-based, and community-oriented interventions. The goals of these interventions were to cure the patient's diseases, prevent the transmission chain and complications, and improve the patient's quality of life.

DECLARATION OF PATIENT CONSENT

The authors certify that they have patient consent for his images and other clinical information to be reported in the journal.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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