



Morbus Hansen Type MB ENL Reaction

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Abstract

Leprosy (Morbus Hansen) is a chronic infectious disease caused by *Mycobacterium leprae* that primarily affects the skin and peripheral nerves with highly diverse clinical manifestations depending on the host's immune response. This disease remains a public health problem in several endemic countries, including Indonesia, because it can cause permanent physical disabilities and social impacts such as stigma and discrimination. This paper aims to provide a comprehensive overview of the etiology, classification, clinical manifestations, diagnostic methods, and management of leprosy based on various scientific literature and current health guidelines. The Ridley-Jopling and WHO classifications are used to determine the severity of the disease and determine the appropriate therapeutic regimen. Diagnosis is established through clinical evaluation, bacteriological examination, histopathological examination, and other supporting tests. The recommended primary therapy is Multidrug Therapy (MDT), which has proven effective in killing germs, preventing drug resistance, and reducing the risk of relapse. In addition to medical aspects, leprosy management also emphasizes the importance of early detection, public education, and stigma reduction so that patients can receive prompt and appropriate treatment.

Introduction

Chronic granulomatous infection remains a public health problem requiring serious attention in many developing countries (Leiding et al., 2026; Santos et al., 2026; Fang et al., 2026). This disease is caused by the bacterium *Mycobacterium leprae*, which has the ability to attack human skin, mucosal tissue, and peripheral nerves. As a result of the prolonged infection, sufferers can experience sensory impairments ranging from decreased to complete loss of sensation in the skin, which, if not treated appropriately, can progress to permanent disability (Hadiqo et al., 2024).

Globally, this disease remains endemic in several regions of the world, with case numbers showing no significant decline (Hua et al., 2026; Sun & Zhang, 2026; Xu et al., 2026). The World Health Organization reports that hundreds of thousands of new cases are still detected annually, with uneven distribution across countries. Most cases are concentrated in countries with high population densities and limited access to health services, suggesting that social and

economic factors play a role in the continued transmission of this disease (Sela et al., 2025; Sidiq et al., 2026; Kussainova et al., 2026).

In Asia, Africa, and Latin America, this disease remains a complex public health challenge. Indonesia is one of the countries with a significant global contribution to cases, making it a key focus of the national elimination program. This situation indicates that despite various control efforts, community transmission continues, particularly in areas with limited access to healthcare (Joshi & Duvic, 2022; Taruna et al., 2026).

This disease can affect all age groups without exception, from children to the elderly. However, most cases are found in the productive age group who actively interact in social environments. Furthermore, several studies indicate a tendency for differences in distribution by gender, although this pattern can vary by region depending on risk factors and environmental exposure (Fadhilah et al., 2025). Transmission of this disease generally occurs through close and prolonged contact with an untreated sufferer. The bacteria can be released through respiratory droplets and then enter the body of another susceptible individual. However, the transmission rate is relatively low compared to other infectious diseases because it requires prolonged exposure and a specific immunological condition in the host (Aviana et al., 2022; Khan et al., 2025).

Pathophysiologically, *Mycobacterium leprae* has a specific tropism for Schwann cells in the peripheral nervous system (Krisdania, 2026; Fróes et al., 2026; This process causes demyelination and progressive nerve dysfunction, which then leads to symptoms such as numbness in certain skin areas. If nerve damage continues without intervention, irreversible deformities of the limbs can occur (Sjaaf et al., 2024). The clinical manifestations of this disease vary greatly depending on the patient's immune response to the bacteria. Skin lesions can appear as hypopigmented or erythematous patches accompanied by decreased sensitivity. In more severe cases, thickening of the peripheral nerves and involvement of other organs can be found, indicating further disease progression.

In clinical practice, this disease is classified into several types based on the bacillary load in the patient's body: paucibacillary (PB) and multibacillary (MB). The MB type generally has a higher bacterial load, a more severe course, and a greater risk of complications than the PB type. This classification is crucial in determining the appropriate therapeutic strategy for patients (Katoch, 2024; Moshkovich et al., 2025). Diagnosis is based on a combination of clinical findings, physical examination, and specific ancillary tests such as skin smears. In endemic areas, the presence of skin lesions with sensory disturbances is often sufficient to establish an initial diagnosis. This approach aims to accelerate case detection so that treatment can be initiated promptly before more severe nerve damage occurs.

The main therapy recommended globally is multidrug therapy (MDT), which consists of a combination of several antibiotics. This regimen has proven effective in killing bacteria, preventing drug resistance, and reducing the risk of community transmission. The success of therapy depends heavily on patient compliance with established protocols (Ju et al., 2022; Juarez & Kwatra, 2021). In addition to medical treatment, rehabilitation is also a crucial aspect of long-term management, especially for patients who are already disabled. Rehabilitation aims to restore physical function, increase independence, and reduce the social impact of stigma that persists in the community.

Social stigma against sufferers remains one of the biggest obstacles to controlling this disease. Many sufferers delay seeking treatment due to fear of social discrimination, resulting in their clinical condition worsening when they reach a health facility. Therefore, public education is a crucial aspect of community-based control strategies. Prevention and control efforts require a comprehensive approach, encompassing not only medical aspects but also social and educational ones. Raising public awareness, early detection, and timely treatment are key to

breaking the chain of transmission. With an integrated approach, it is hoped that the incidence rate can continue to be significantly reduced in the future.

Methods

This study used a descriptive case report design with the aim of providing an in-depth description of a single case of a patient with chronic infection due to *Mycobacterium leprae*. Case reports were chosen because they allow researchers to explore the disease course, clinical manifestations, and therapeutic response in detail within the individual context. This approach is also frequently used in medicine to document typical cases or cases of particular clinical value for learning (Sugiyono, 2020).

The subject of this study was one patient diagnosed based on clinical and supporting criteria as per World Health Organization guidelines. These criteria include the presence of skin lesions with sensory impairment, thickening of peripheral nerves, and/or bacteriological examination results supporting a diagnosis of leprosy. Case selection was conducted purposively based on considerations of completeness of clinical data and suitability to the research objectives (WHO Expert Committee on Leprosy: Seventh Report, 2025). Research data were obtained through direct observation of patients, medical interviews, and review of medical records at healthcare facilities. Observations were conducted to assess the patient's clinical condition, including skin lesions, neurological disorders, and symptom progression during the observation period. In addition, supporting data such as laboratory test results and documentation of multidrug therapy (MDT) were also analyzed to support a comprehensive case description (Lukito et al., 2024).

Data analysis was conducted using a qualitative descriptive approach by systematically describing the patient's clinical findings, starting with the history and physical examination, diagnosis, and treatment management and evaluation. The analysis results were then compared with relevant literature and clinical guidelines to strengthen the case discussion. This approach aims to provide a clear picture of the disease course and the effectiveness of the therapy administered in a real-life clinical context (Gomes et al., 2022).

Result and Discussion

The patient is a woman with the initials Mrs. S, aged 49 years, domiciled in Gowa with medical record number 211239 and first came on December 6, 2025. The patient is in the productive adult age group which epidemiologically still has a risk of chronic infectious diseases, especially those that attack the skin and peripheral nerves. This condition is important in understanding the course of the disease experienced by the patient, especially in cases with a history of long-term chronic diseases and prone to relapse.



Figure 1. Skin lesions on the body of an ENL patient

The patient presented with a primary complaint of the appearance of bumps on the face and hands that had been felt for the past few weeks. Initially, these small nodules developed into larger, inflamed lesions, some of which were eroded and ulcerated, and accompanied by significant pain, particularly when touched. In addition to the skin complaints, the patient also complained of systemic symptoms such as shortness of breath, decreased appetite, low-grade fever, weakness, and joint pain that interfered with daily activities. This picture indicates a systemic inflammatory process that is not limited to the skin but also involves the body's overall response (Amaliah H.R et al., 2023; Khumala et al., 2024).

The patient had a history of multibacillary (MB) Hansen's disease, diagnosed approximately three years prior. She had previously undergone multidrug therapy (MDT), but the medication was not completed. This discontinuation of medication is a significant risk factor for immunological reactions and disease recurrence. Furthermore, the patient had a history of close family contact, with her husband also suffering from Hansen's disease, increasing the likelihood of repeated exposure within the household (WHO Model Prescribing Information: Drugs Used in Leprosy, 2023). On physical examination, the patient appeared in a mildly ill general condition with *compos mentis* consciousness. Vital signs showed a blood pressure of 130/80 mmHg, a pulse rate of 90 beats per minute, a respiratory rate of 20 breaths per minute, a temperature of 37°C, and an oxygen saturation of 99%. The patient's hemodynamics were relatively stable, but systemic complaints continued to indicate an ongoing active inflammatory process.

Dermatological examination revealed lesions scattered over the facial region, right and left upper extremities, and posterior trunk in a generalized distribution. The lesions were annular in shape, varying in size from nummular to plaque-like. Efflorescence included erythematous nodules, erosions, excoriations, and pustules, reflecting an active inflammatory skin process. This picture is consistent with an Erythema Nodosum Leprosum (ENL) reaction, a form of complex immune reaction that can occur in patients with multibacillary Hansen's Morbus (Diaz et al., 2023; Sethi et al., 2026).

Supporting examinations in the form of a slit skin smear did not show specific results in this case. However, in establishing a diagnosis of Morbus Hansen, laboratory tests cannot stand alone but must be combined with clinical findings such as skin lesions with impaired sensibility and a supporting medical history. Therefore, the diagnosis is still established based on the integration of history taking, physical examination, and a comprehensive clinical evaluation according to WHO guidelines (WHO Expert Committee on Leprosy: Seventh Report, 2025). Based on the overall findings, the patient was diagnosed with Morbus Hansen type multibacillary (MB) with Erythema Nodosum Leprosum (ENL) reaction. This condition is a complex immune reaction that occurs due to the body's immune response to *Mycobacterium leprae* antigens, especially in patients with a high bacterial load or a history of incomplete treatment. This reaction is characterized by the appearance of painful nodules accompanied by systemic symptoms such as fever and weakness (Chen et al., 2022; Suari & Hidajat, 2022).

Differential diagnoses considered include non-leprosy erythema nodosum, Sweet's syndrome, and granuloma annulare. These three conditions present with erythematous nodular lesions that can mimic ENL, requiring careful clinical analysis to differentiate them. Diagnosis relies heavily on the correlation between the patient's medical history, clinical presentation, and inflammatory response (Alrehaili, 2023; Prakoeswa et al., 2023). Patient management includes symptomatic and anti-inflammatory therapy to control the ENL reaction. The patient received supportive therapy in the form of Neurosanbe drip and topical Fusycom, applied to the skin lesions in the morning and evening. Additionally, topical desoximetasone was applied at night to help reduce local inflammation in the affected skin. The patient was also given 4 mg of methylprednisolone with a 2-2-1 regimen on the first day and continued at the same dose until the third day. Corticosteroid administration aims to suppress the excessive inflammatory

response in ENL, thereby reducing clinical symptoms. The patient's HbA1c examination results of 4.5 indicate that there are no diabetic metabolic disorders that can worsen the inflammatory process (Pedoman Nasional Pelayanan Kedokteran (PNPK) Tata Laksana Kusta, 2019).

The results of the study indicate that leprosy (Morbus Hansen) is a chronic infectious disease caused by *Mycobacterium leprae* with a variety of clinical manifestations that are greatly influenced by the patient's immune response. Based on the classification used, leprosy is divided according to the Ridley-Jopling system into five main types, namely tuberculoid (TT), borderline tuberculoid (BT), mid-borderline (BB), borderline lepromatous (BL), and lepromatous (LL). In addition, the WHO simplified the classification into paucibacillary (PB) and multibacillary (MB) based on the number of skin lesions and the results of the bacterial index, which are used as the basis for determining therapy. Clinically, leprosy is characterized by the presence of skin lesions in the form of hypopigmented or erythematous patches accompanied by decreased or even loss of sensibility. In addition, peripheral nerve involvement is also found, characterized by nerve thickening, sensory and motor disorders, and deformities such as claw hand and foot drop in advanced cases. Other manifestations can include eye disorders such as lagophthalmos due to facial nerve damage, which can lead to corneal ulceration and even blindness if not treated properly.

The study also showed that leprosy diagnosis is based on a combination of clinical, bacterioscopic, histopathological, and serological examinations. Clinical examination is the primary method for establishing the diagnosis, supported by acid-fast bacilli (AFB) examination using skin scrapings and tissue biopsies to assess the histopathological picture. In the tuberculoid type, epithelioid granulomas with few bacilli are found, while in the lepromatous type, Virchow cells with a very large number of bacilli are found. In supporting aspects, bacteriological examination using Ziehl–Neelsen or Fite–Faraco staining indicates the presence of a bacterial index, which forms the basis for classifying the disease as PB or MB. In addition, serological examinations such as anti-PGL-1 can also be used as a support in doubtful cases. The results of these examinations significantly determine the treatment strategy that will be administered to patients.

Leprosy is managed with Multi Drug Therapy (MDT) consisting of a combination of rifampicin, dapsone (DDS), and clofazimine. In MB cases, therapy is given longer than PB, with the aim of preventing drug resistance and breaking the chain of transmission. Evaluations are carried out periodically through clinical and bacteriological examinations to assess the response to therapy until the patient is declared clinically cured. Overall, the prognosis of leprosy is greatly influenced by the speed of diagnosis and the accuracy of treatment. Complications can include permanent nerve damage, deformities, and eye disorders that can lead to blindness. Therefore, early detection, appropriate treatment, and public education are important factors in preventing disability and reducing transmission rates in the community.

Thus, this case illustrates multibacillary Hansen's disease with an ENL reaction occurring in a patient with a history of incomplete treatment and risk factors for close family contact. This situation emphasizes the importance of long-term therapy adherence, early detection, and ongoing monitoring to prevent complications and more severe immunological reactions. Appropriate and comprehensive treatment is essential to improve the patient's quality of life and prevent long-term disability (WHO Model Prescribing Information: Drugs Used in Leprosy, 2023).

Conclusion

Leprosy (Morbus Hansen) is a chronic infectious disease caused by *Mycobacterium leprae* with highly variable clinical manifestations depending on the patient's immune response. This disease primarily affects the skin and peripheral nerves, causing loss of sensation, nerve

thickening, and in severe cases, permanent disability. Accurate classification using the Ridley–Jopling and WHO systems is crucial for determining the appropriate therapeutic approach. Early diagnosis supported by clinical, bacteriological, histopathological, and serological examinations plays a crucial role in preventing complications and breaking the chain of transmission. Multidrug Therapy (MDT) is the most effective standard of care for curing the disease, preventing relapse, and avoiding drug resistance.

It is recommended that early detection programs be strengthened through public education and routine screening, especially in endemic areas, to reduce delays in diagnosis and disability rates. Health workers are expected to improve their skills in recognizing early signs of leprosy and ensuring proper classification to ensure appropriate therapy. Furthermore, patient adherence to MDT treatment needs to be continuously monitored and supported through counseling and family involvement. Public awareness campaigns are also crucial to reduce stigma and discrimination against people with leprosy, enabling them to seek treatment more quickly and achieve better health outcomes.

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