

## A Case Report: The Undiagnosed Leprosy Presents with Chronic Ulcers

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### Abstract

**Background:** Leprosy is a rare infectious disease caused by *Mycobacterium leprae*, with an incubation period of 3–5 years. In its early stages, patients typically develop white or red patches on the skin, often accompanied by numbness in the affected areas. If the disease is not diagnosed and treated promptly, it can progress, leading to complications and potential disabilities.

**Objective:** To study the symptoms, complications, and diagnostic process of leprosy.

**Methodology:** A review of leprosy case reports from patients treated at La-ngu Hospital was conducted. The collected data were analyzed and interpreted.

**Results:** This case study presents a 65-year-old female patient with no underlying conditions who sought treatment for chronic wounds on her hands and feet, persisting for over three years since April 2020. She received antibiotic treatment and wound care, but some wounds did not improve. As a result, the patient underwent amputation of her right little finger to prevent the risk of bloodstream infection. In March 2023, she was diagnosed with *Lepromatous leprosy (LL)*. After receiving leprosy treatment, her chronic wounds gradually improved.

**Conclusion:** This case demonstrates how a patient with chronic wounds was diagnosed with lepromatous leprosy (LL) later than expected, which resulted in needless complications, including amputation. Early detection and effective treatment of LL greatly accelerated wound healing and stopped the disease's progression.

**Keywords:** Leprosy, Chronic wound

### Introduction

Leprosy is a chronic granulomatous disease affecting mainly the skin and nerve caused by the obligate intracellular pathogen *Mycobacterium leprae*. Diagnosis, Based on clinical signs and symptoms, hallmarks include loss of sensation within skin lesions, nerve swelling or pain, or demonstration of acid-fast bacilli in skin smears or biopsies.<sup>[4]</sup> The current WHO classification system (revised in 2017) divides Hansen disease into two main groups: (1) Paucibacillary leprosy – one to five skin lesions, without demonstrated presence of bacilli in a slit-skin smear or biopsy when assessed; and (2) Multibacillary leprosy – more than five skin lesions, nerve involvement (pure neuritis or with any number of skin lesions) or the presence of bacilli in a slit-skin smear or biopsy (with any number of skin lesions).<sup>[1]</sup> Incidence 174,087 new case detected worldwide in 2022. (21.8 per million).<sup>[6]</sup> In Thailand, incidence 180 new cases were detected in 2021 (0.03 per 10,000 persons), essentially

decreasing over the last 5 years.<sup>[7]</sup> According to the latest data from 2023, there are a total of 4 Leprosy patients in Satun province, with 2 new cases (0.061 per 10,000 person). Both of these patients were diagnosed with Leprosy after reaching a disability level 2. One of these cases was identified at La-ngu Hospital.<sup>[7]</sup>

### Case report

A 65-year-old Thai woman who presented chronic wounds on her hands and feet for 3 years. The patient received treatment with antibiotics and wound care and was often required to be hospitalized for intravenous antibiotics due to severe wounds on the little finger of the right hand, which was finally treated by amputation. After that, the patient had continuous follow-up appointments regarding the wound, which persisted intermittently without fully healing. In the second year of wound treatment, the patient was suspected by the physician to possibly have leprosy but was not referred for further investigation and did not receive treatment for leprosy.

On physical examination, there are infiltrated nodules with coalescence patterns towards the center of the face, madarosis (loss of eyebrows), and a saddle nose contributing to the appearance of leonine facies. Additionally, multiple erosive ulcers were observed on the left index finger, left middle finger, right index finger, right middle finger, and right ring finger. The right little finger has been amputated. The neurological examination showed hypotrophy and anhidrosis in both hands. No weakness was observed; however, there is decreased sensation in both hands. Both median nerves are palpated. For laboratory tests, Slit smear preparation of the lesions shows multiple acid-fast bacilli (over 1,000 in an average field)

This patient has been diagnosed with multibacillary leprosy, specifically lepromatous leprosy, and has been receiving continuous treatment at the secondary care hospital, Langu Hospital, with multi-drug therapy (Rifampicin 600 mg/month, Clofazipime 300 mg/day, Dapsone 100 mg/day). The total planned treatment duration is 24 months. After starting the medication, the patient has not experienced any new wounds.



Figure 1: Infiltrated nodules with coalescence patterns

towards the center of the face, madarosis, and a saddle nose



Figure 2: Multiple erosive ulcers

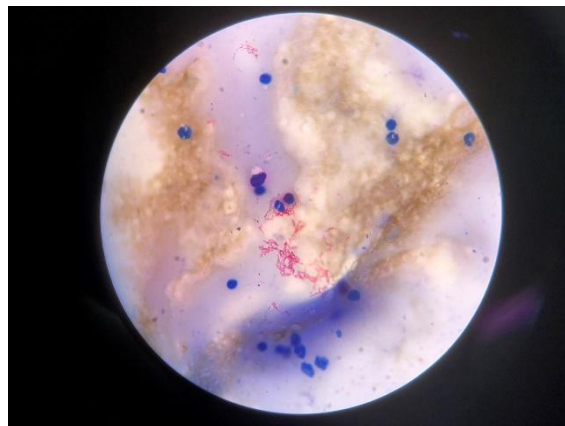


Figure 3: Slit smear reveals multiple acid-fast bacilli

## Discussion

Leprosy is a disease in which the causative agent, *Mycobacterium leprae*, was discovered in 1873 by Gerhard Armauer Hansen, a Norwegian physician. In addition, it is one of the oldest pathogens ever discovered by humanity, with evidence from molecular techniques using polymerase chain reaction (PCR) to detect specific sequences of *Mycobacterium leprae* DNA in ancient bones dated to AD 600, as described in 1994. Humans are the main natural reservoir of the bacillus. There are reports of armadillos and squirrels naturally infected by *Mycobacterium leprae*, with the hypothesis formulation that some cases could have been a consequence of contact with animals. However, the main route of transmission for *Mycobacterium leprae* is the respiratory tract. Leprosy presents with a variety of symptoms, primarily affecting the skin and the nervous system. It particularly affects the peripheral nerves, and it may also impact the facial and trigeminal nerves, as well as the endocrine dysfunctions.<sup>[4]</sup>

In terms of skin manifestations, it can range from hypopigmented macules to dermal infiltration and can lead to disability, depending on the variation type of leprosy (TT, BT, BB, BL, LL). Regarding the nervous system, it primarily attaches and invades Schwann cells associated with the peripheral nervous system<sup>[4]</sup>, which leads to damage to motor nerves, sensory nerves, and autonomic nerves in the peripheral nervous system. This nerve damage leads to disability in leprosy patients.

Leprosy can be diagnosed according to the criteria of the World Health Organization (WHO), which are based on the presence of at least one of the following cardinal features: (1) anesthesia in a hypopigmented or erythematous skin lesion; (2) enlarged peripheral nerve with associated loss of sensation and/or weakness; and (3) the presence of acid-fast bacilli in a slit-skin smear or biopsy.<sup>[5]</sup>

The treatment for leprosy recommended by WHO involves the use of a combination of drugs referred to as multi-drug therapy (MDT), consisting of three medications: dapsone, rifampicin, and clofazimine. The duration of treatment is six months for PB (paucibacillary) and 12 months for MB (multibacillary) cases. MDT became the standard treatment for leprosy in 1981 and has been supplied by WHO free of charge to all endemic countries since 1995.<sup>[5]</sup> This has impacted the prevalence; from over 5 million cases in the 1980s, there was a reduction to less than 200,000 cases in 2015.<sup>[2]</sup>

The current challenge for leprosy is the use of Information, Education, and Communication (IEC) to educate the public about leprosy to raise awareness of the early signs and the importance of treatment, as well as to promote coexistence with individuals who have leprosy within society. IEC must provide accurate information but should not create fear in the community; otherwise, IEC may result in more stigmatization.<sup>[3]</sup>

## Conclusion

Leprosy may be a relatively uncommon disease and is classified as a neglected tropical disease. It is often overlooked in quick diagnosis, with initial symptoms possibly being just small rashes accompanied by numbness. In Thailand, which is an eradicated area, the incidence rate is 0.03 per 10,000 people (An eradicated area is defined as having an incidence rate of less than 1 case per 10,000). Therefore, it may be a disease with which doctors are not familiar, leading to delayed diagnoses. As a result, many patients receive a diagnosis only after experiencing physical disabilities. According to data from the Ministry of Public Health in Thailand, there were 180 new leprosy patients reported in 2023, 22 of whom had already experienced disabilities. Consequently, the aim of writing this case report is to highlight the importance of awareness and timely diagnosis of leprosy to prevent the occurrence of disabilities in patients.<sup>[7]</sup>

In summary, we presented a 65-year-old female patient with chronic wounds on his hands and feet for 3 years, which resulted in complications requiring the amputation of his right little finger. The patient was later diagnosed with leprosy after receiving treatment with multi-drug therapy (MDT), which improved his chronic wounds. However, if we can recognize and diagnose the condition more promptly, it could help reduce the occurrence of disabilities in future patients.

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