WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

An Expanded Analysis on Leprosy: Clinical Diagnosis and Management

Tawheed Mushtaq [1]*, Mr.Kamalesh Mistry [2]*, Ms.Tanya Sharma [3]*, Suhail Ahmad Baba[4]*

[1*]Research Scholar, Department of Pharmacy, Faculty of Pharmaceutical Science, Mewar University, Gangrar, Chittorgarh 312901, Rajasthan, India. Tawheedmushtaq64@gmail.com

[2*]Assistant Professor, Department of Pharmacy, Faculty of Pharmaceutical Science, Mewar University, Gangrar, Chittorgarh 312901, Rajasthan, India. drkamaleshmistry@gmail.com

[3*] Head and Assistant professor,Department of Pharmacy, Faculty of Pharmaceutical Science, Mewar University, Gangrar, Chittorgarh 312901, Rajasthan, India. 28taney@gmail.com

[4*]Student ,Department of Pharmacy, Faculty of Pharmaceutical Science, Mewar University, Gangrar, Chittorgarh 312901, Rajasthan, India. Ahmadsuhail1019@gmail.com

***Corresponding Author:**

Tawheed Mushtaq, Research Scholar, Department of Pharmacy, Faculty of Pharmaceutical Science, Mewar University, Gangrar, Chittorgarh 312901, Rajasthan, India. Tawheedmushtaq64@gmail.com

ABSTRACT

Leprosy, or Hansen's disease, is a chronic infectious condition caused by Mycobacterium leprae. Although curable with multidrug therapy, it remains a significant concern in many parts of the world due to diagnostic delays, stigma, and persistent transmission. This review explores the clinical features, diagnostic strategies, management protocols, and public health challenges associated with leprosy. Emphasis is placed on the need for early diagnosis, psychosocial support, and comprehensive management strategies to control and ultimately eliminate the disease.

Keywords: Leprosy, Hansen's disease, Mycobacterium leprae, multidrug therapy, diagnosis, stigma, global health

1. Introduction

Leprosy is one of the oldest known diseases, yet it remains a global health concern, particularly in low- and middle-income countries. Caused by Mycobacterium leprae, the disease primarily affects the skin, peripheral nerves, and mucosa. Although the global burden has significantly declined due to effective multidrug therapy (MDT), thousands of new cases continue to emerge annually, with India, Brazil, and Indonesia accounting for the majority [1].

2. Etiology and Transmission

Mycobacterium leprae is a slow-growing, intracellular bacillus with a strong predilection for cooler regions of the body. The organism is primarily transmitted via respiratory droplets during prolonged close contact. While most individuals possess innate immunity to the bacterium, those who develop the disease often have a genetic or immunologic susceptibility [2,3]. The incubation period can range from several months to over two decades, complicating efforts at disease surveillance and prevention [4].

3. Clinical Manifestations

The clinical spectrum of leprosy is broad and largely determined by the host's immune response. The Ridley-Jopling classification system defines five clinical forms: tuberculoid (TT), borderline tuberculoid (BT), mid-borderline (BB), borderline lepromatous (BL), and lepromatous leprosy (LL) [5]. The hallmark signs include:

- Hypopigmented or erythematous patches with sensory loss.
- Thickened peripheral nerves.
- Muscular weakness and deformities in advanced stages.

Nerve involvement is a central feature, often leading to sensory and motor deficits that result in disability.

4. Diagnostic Approaches

Diagnosis relies on a combination of clinical examination and laboratory testing. The World Health Organization (WHO) recommends the diagnosis of leprosy based on one or more of the following criteria:

- Hypopigmented or reddish skin lesions with definite loss of sensation.
- Thickened peripheral nerves with sensory or motor loss.
- Detection of acid-fast bacilli in slit-skin smears or biopsies [6].

While clinical diagnosis remains the standard in endemic regions, newer diagnostic techniques such as polymerase chain reaction (PCR) and serological assays (e.g., PGL-1 antibody tests) offer improved sensitivity, especially in early or indeterminate cases [7].

5. Classification for Treatment

WHO has simplified the clinical classification for treatment purposes into:

- Paucibacillary (PB) leprosy: ≤5 skin lesions, negative skin smears.
- Multibacillary (MB) leprosy: >5 lesions, or positive smears [8].

This operational classification guides the choice and duration of MDT regimens.

6. Treatment and Management

The WHO MDT regimen remains the cornerstone of leprosy treatment:

- PB cases: 6-month regimen of rifampicin and dapsone.
- MB cases: 12-month regimen of rifampicin, dapsone, and clofazimine [9].

The drugs are provided free of charge through WHO programs. Management of leprosy reactions—particularly reversal (Type 1) and erythema nodosum leprosum (Type 2)—requires immunosuppressive therapy. Corticosteroids are commonly used, and thalidomide may be indicated for severe Type 2 reactions [10].

7. Psychosocial Considerations

Beyond physical impairments, leprosy is deeply stigmatized, often leading to social exclusion, unemployment, and psychological distress. Individuals affected by the disease frequently face discrimination, even after successful treatment [11]. Addressing the stigma through education and community engagement is essential to ensure adherence to therapy and social reintegration.

8. Prevention and Control Strategies

Preventive strategies include early detection of cases, active contact tracing, and chemoprophylaxis. Single-dose rifampicin given to household contacts has shown significant efficacy in reducing transmission [12]. The BCG vaccine provides partial protection against leprosy and is widely used in endemic countries [13].

9. Global Elimination Goals and Future Directions

Although WHO achieved the global elimination target (less than 1 case per 10,000 population) in 2000, pockets of high endemicity persist. Continued investment in surveillance, diagnostics, and integrated public health strategies is necessary [14]. Emerging research into leprosy vaccines, shorter drug regimens, and improved diagnostics holds promise for future control efforts.

10. Conclusion

Leprosy, while curable, continues to pose significant public health and social challenges. A multidimensional approach—combining timely diagnosis, effective treatment, psychosocial support, and preventive strategies—is essential for controlling transmission and improving patient outcomes. Global efforts must remain focused on the dual goals of medical cure and social inclusion.

REFERENCES

1. World Health Organization. Global leprosy update 2023: time to step-up prevention initiatives. Geneva: WHO; 2023.
2. Scollard DM, Adams LB, Gillis TP, et al. The continuing challenges of leprosy. Clin Microbiol Rev. 2006;19(2):338–381.
3. Lockwood DNJ, Suneetha S. Leprosy: too complex a disease for a simple elimination paradigm. Bull World Health Organ. 2005;83(3):230–235.
4. Rao PS, Darlong J, Timothy M. Towards elimination of leprosy: is the target attainable? Indian J Med Res. 2020;151(5):431–433.
5. Ridley DS, Jopling WH. Classification of leprosy according to immunity. Int J Lepr Other Mycobact Dis. 1966;34(3):255–273.
6. WHO. Guidelines for the diagnosis, treatment and prevention of leprosy. New Delhi: WHO; 2018.
7. Martinez AN, Talhari C, Moraes MO, Talhari S. PCR-based techniques for leprosy diagnosis: from the laboratory to the clinic. PLoS Negl Trop Dis. 2014;8(4):e2655.
8. WHO Expert Committee on Leprosy. Eighth Report. Geneva: WHO Technical Report Series 968; 2012.
9. Penna GO, Buhrer-Sékula S, Kerr LRS, Stefani MMA. Leprosy treatment: present, past and future. Rev Soc Bras Med Trop. 2021;54:e06082020.
10. Walker SL, Lockwood DN. Leprosy type 1 (reversal) reactions and their management. Lepr Rev. 2008;79(4):372–386.
11. van Brakel WH, Sihombing B, Djarir H, et al. Disability in people affected by leprosy: the role of impairment, activity, social participation, stigma and discrimination. Glob Health Action. 2012;5:18394.
12. Moet FJ, Pahan D, Oskam L, Richardus JH. Effectiveness of single dose rifampicin in preventing leprosy in close contacts: a cluster randomized controlled trial. Lancet. 2008;371(9627):968–979.
13. Setia MS, Steinmaus C, Ho CS, Rutherford GW. The role of BCG in prevention of leprosy: a meta-analysis. Lancet Infect Dis. 2006;6(3):162–170.
14. WHO. Towards zero leprosy: Global leprosy strategy 2021–2030. Geneva: World Health Organization; 2021.