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Case Report

A Forgotten Disease Returns: Re-Emerging Leprosy in the Modern Era

Roaa Alosaimi[1], Abdulrahim Abdullahi[2], Ali albuhairy[3] and Nathirah H Alansari[1]

[1]Infectious Disease Consultant, HIV Center of Excellence, East Jeddah Hospital, Jeddah, Saudi Arabia
[2]Pediatric Infectious Disease, King Faisal Specialist Hospital & Research Center
[3]Medical Microbiology, East Jeddah Hospital, Jeddah, Saudi Arabia

***Corresponding Author:** Roaa Alosaimi, Infectious Disease Consultant, HIV Center of Excellence, East Jeddah Hospital, Jeddah, Saudi Arabia

Abstract

Background: Leprosy is a chronic infectious disease caused by *Mycobacterium leprae* or *Mycobacterium lepromatosis*. While rare in low-incidence countries like Saudi Arabia, it remains a significant public health challenge globally, particularly among migrant populations from endemic regions.

Case Presentation: A 51-year-old woman presented with a one-year history of progressive, symmetrical erythematous macules associated with tingling sensations. The lesions gradually spread from the upper extremities to the trunk, lower limbs, and face. Despite the use of over-the-counter topical treatments, the rash persisted. Clinical examination revealed multiple lesions with sensory deficits, and a skin biopsy demonstrated granulomatous inflammation with abundant acid-fast bacilli. Mycobacterial PCR testing was negative, but sputum samples also revealed acid-fast bacilli. A diagnosis of multibacillary leprosy was made.

Conclusion: This case highlights the need for a high index of suspicion for leprosy in patients with chronic skin lesions and sensory changes, particularly those from endemic regions. The declining incidence of leprosy globally has resulted in reduced clinical exposure, potentially delaying diagnosis. Early recognition and appropriate management are essential to prevent complications and improve outcomes.

Background

Leprosy, one of humanity's oldest infectious diseases, continues to pose medical and social challenges due to its potential to cause disfiguring complications and social stigma. These complications often lead to unnecessary isolation of patients, emphasizing the importance of early diagnosis and management to improve patients' quality of life.

In Saudi Arabia, leprosy has been recognized for decades, with a dedicated hospital established in 1963 to treat affected individuals (1). The persistence of leprosy cases in the country is largely attributed to its migrant population, with a significant proportion of cases occurring among expatriates (1).

Here, we present the case of a foreign woman with a prolonged history of a skin rash, ultimately diagnosed as leprosy, to highlight the diagnostic and clinical challenges associated with this condition.

Case report

A 51-year-old woman presented with a one-year history of progressive skin lesions. The rash initially appeared on her upper extremities and subsequently spread to her trunk, lower limbs, and face. The lesions were characterized as symmetrical, erythematous macules associated with tingling and "electrical" sensations over the affected areas. Despite the use of over-the-counter topical agents, the lesions persisted and gradually worsened. The patient reported no systemic symptoms such as fever, weight loss, or fatigue.

The patient had been working in Saudi Arabia for twelve years but originally resided in a forested region of Southeast Asia.

On physical examination, multiple erythematous macules were noted, predominantly on the extremities and trunk. Neurological examination revealed diminished sensation over some lesions. Systemic examination was otherwise unremarkable.

Laboratory evaluations, including complete blood count, liver and renal function tests, and inflammatory markers, were within normal limits. A skin biopsy from one of the lesions demonstrated granulomatous inflammation with a high density of acid-fast bacilli. Acid-fast bacilli were also identified in a sputum smear. However, polymerase chain reaction (PCR) testing for mycobacterial DNA was negative.

The constellation of clinical, histopathological, and microbiological findings led to a diagnosis of multibacillary leprosy.

The patient was started on multidrug therapy comprising rifampin, clofazimine, and dapsone, in accordance with World Health Organization (WHO) guidelines. She was counseled extensively on the nature of her disease, the importance of adherence to therapy, and the low risk of transmission following the initiation of treatment. Contact tracing and public health measures were initiated as per local protocols.

This case underscores the importance of maintaining a high index of suspicion for leprosy in patients with chronic skin lesions and sensory changes, particularly those from endemic regions. The negative PCR highlights the limitations of molecular diagnostics for Mycobacterium leprae and the ongoing reliance on histopathological and microbiological methods for definitive diagnosis.

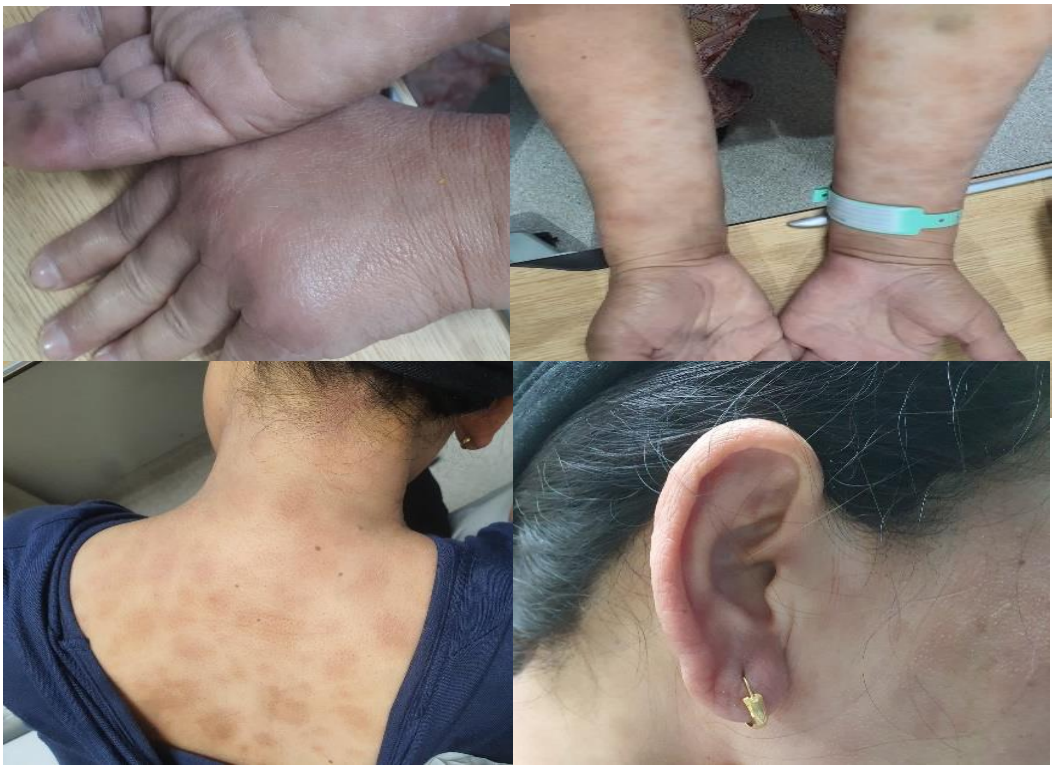

Figure 1: Clinical image shows multiple hypopigmented macules distributed across the upper back, arm , hand and , face . The lesions appear ill-defined, slightly erythematous, and vary in size.

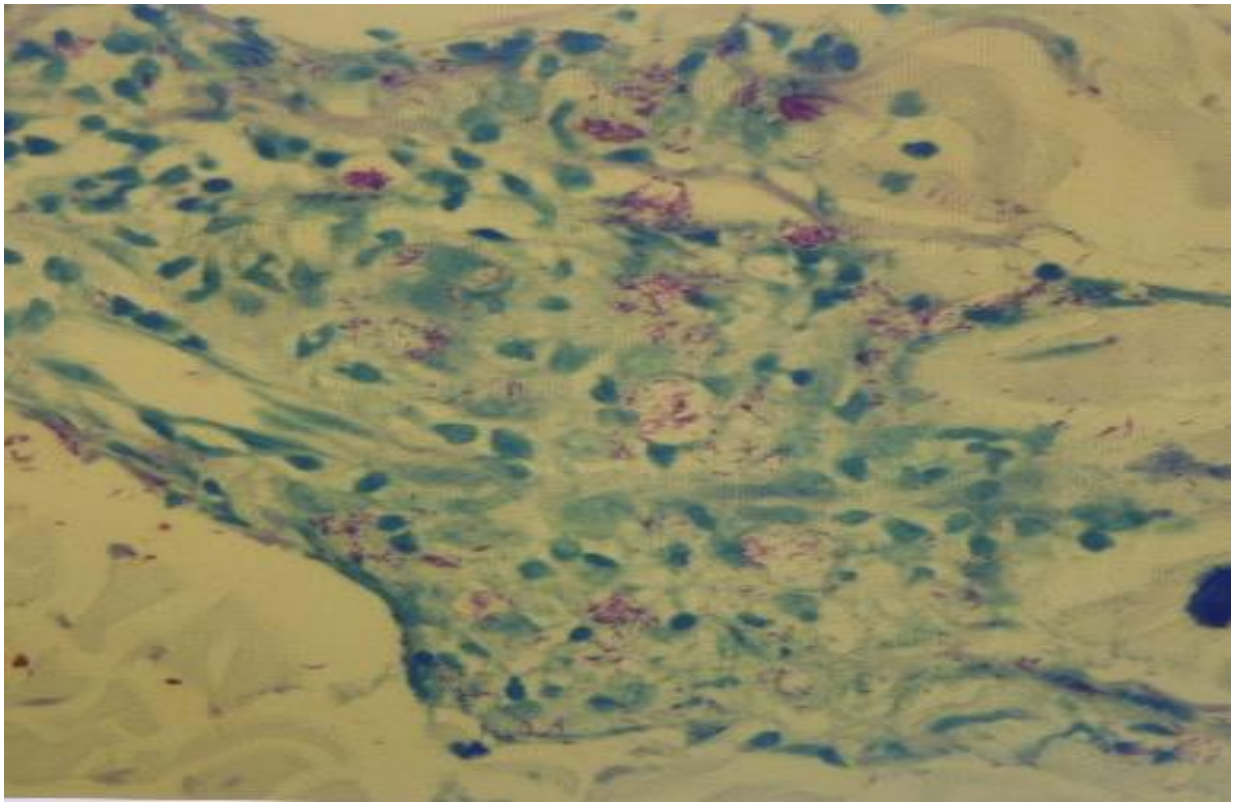

Figure 2: Histopathological image of a skin biopsy shows granulomatous inflammation with numerous foamy macrophages and lymphocytes. A special stain, Ziehl-Neelsen, highlights acid-fast bacilli (AFB) in red or pink against a blue-green background. The bacilli appear in clumps within macrophages, suggesting a multibacillary form of leprosy (lepromatous or borderline leprosy).

Discussion

Leprosy, a chronic infectious disease caused by Mycobacterium leprae or Mycobacterium lepromatosis, continues to challenge clinicians due to its variable clinical presentation and declining incidence. This case highlights the diagnostic complexities and public health implications of leprosy, particularly in regions with low prevalence.

The patient presented with symmetrical erythematous macules and sensory disturbances, consistent with multibacillary leprosy. Sensory changes are a hallmark of the disease, often resulting in unnoticed trauma and secondary complications such as ulcerations and disfigurement. Early recognition of these signs is crucial, as delays in diagnosis can lead to irreversible neurological damage and disability.

Histopathological examination remains the cornerstone of diagnosis. In this case, the skin biopsy demonstrated granulomatous inflammation with abundant acid-fast bacilli, characteristic of lepromatous leprosy. The negative Mycobacterial PCR underscores the limitations of molecular diagnostic techniques in detecting M. leprae, emphasizing the need for histopathology and clinical correlation.

Epidemiologically, Saudi Arabia has maintained a low incidence of leprosy, with a rate of 0.07 cases per 100,000 population. However, most diagnosed cases are of the multibacillary form, as observed in this case, and a significant proportion present with neurological deficits. The global decline in leprosy cases has led to reduced exposure among healthcare providers, which may contribute to diagnostic delays. This underscores the need for continued education and awareness among clinicians, especially in regions with migrant populations from endemic areas.

The treatment regimen of rifampin, clofazimine, and dapsone, as recommended by the World Health Organization (WHO), was initiated. Multidrug therapy is essential not only for bacterial clearance but also for preventing the development of drug resistance. Compliance with treatment and regular follow-up are critical to achieving optimal outcomes and reducing disease transmission.

This case underscores the importance of maintaining a high index of suspicion for leprosy, even in low-incidence settings. Physicians should consider leprosy in the differential diagnosis of chronic skin lesions with sensory changes, particularly in individuals from endemic regions. Early diagnosis and prompt initiation of therapy remain the cornerstone of effective management, preventing complications and ensuring better quality of life for affected individuals.

Year	2023	2022	2021	2020	2019
Total cases	24	28	28	16	32
Cases per 100.000	0.07	0.06	0.08	0.05	0.09

Table 1: Leprosy cases in Saudi Arabia

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