Delayed Diagnosis of Leprosy in a Non-Endemic Area: Lessons from a Retrospective Case Series

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Introduction

- Hansen's Disease, or leprosy, is a chronic infection caused by *Mycobacterium leprae* that leads to permanent damage of the skin, peripheral nerves, and eyes.
- The epidemiology of leprosy has been thoroughly investigated in endemic countries, with ~83% of new cases globally arising from India, Brazil, and Indonesia.[1]
- Similar epidemiologic studies in the Unites States are lacking, where fewer than 200 cases of leprosy are diagnosed each year.[1]
- We sought to assess the epidemiologic and clinical characteristics of leprosy cases seen at three large Boston teaching hospitals.

Methods

- We conducted a retrospective analysis of all patients age ≥18 diagnosed with leprosy as defined by ICD codes at three academic medical centers from 1980 to 2017.
- Each record was independently reviewed for accuracy of the clinical and laboratory findings for each patient.
- Demographic, clinical, and laboratory data were extracted and analyzed.

Results

- In total, 116 records were reviewed.
- 27 cases of leprosy were identified.
- The majority (88.9%) of patients were immigrants.
- Most patients originated from South America (33.3%), the Caribbean (18.5%), Sub-Saharan Africa (18.5%), and South Asia (14.8%).

Results

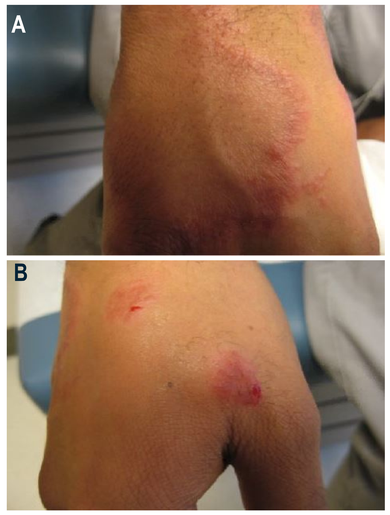

Figure 1. Annular pink plaques with central hypopigmentation (A) and pink to violaceous plaques (B) on the bilateral hands. Lesions were consistent with leprosy on skin biopsy.

Patient Characteristics	
Characteristic	**N=27 (%)**
Male	18 (66.7)
Mean age, years	40 (19-62)
Immigrant	24 (88.9)
Ethnicity	
Hispanic	13 (48.1)
Asian	6 (22.2)
African	5 (18.5)
Black	1 (3.7)
White	1 (3.7)
Region of origin	
South America	9 (33.3)
Caribbean	5 (18.5)
Sub-Saharan Africa	5 (18.5)
South Asia	4 (14.8)
Southeast Asia	2 (7.4)
Oceania	1 (3.7)
North America	1 (3.7)
Prior diagnosis	14 (51.9)

Table 1. Summary of demographic characteristics of patients diagnosed with leprosy from 1980 to 2017.

Results

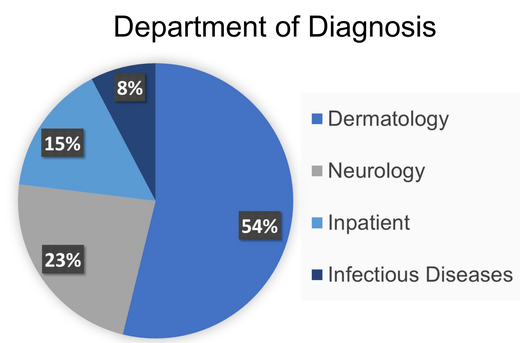

Figure 1. Proportion of cases diagnosed by department of clinician.

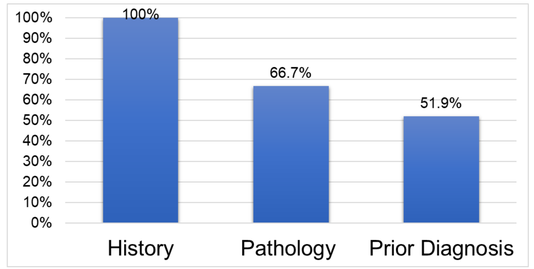

Figure 2. Method of diagnosis utilized by clinicians. Multiple methods were used in some cases resulting in total percentages greater than 100%.

Clinical Characteristics	
Characteristic	**N=27 (%)**
Symptoms	
Cutaneous	24 (88.9)
Neurologic	18 (66.7)
Cutaneous & Neurologic	16 (59.2)
Arthritis	2 (7.4)
Leprosy Type	
Borderline Tuberculoid	10 (37.0)
Borderline Lepromatous	5 (18.5)
Lepromatous Leprosy	6 (22.2)
Unknown	6 (22.2)
Misdiagnosed	15 (55.6)
Median time from symptom onset to diagnosis, months	25 (2-180)

Table 2. Summary of clinical characteristics of patients diagnosed with leprosy from 1980 to 2017.

Results

- Both cutaneous and neurologic involvement was commonly observed (59.2%).
- For cases of newly diagnosed leprosy, 53.8% of diagnoses were made by dermatologists, 23% by neurologists, 15.4% by an inpatient team, and 7.7% by infectious diseases physicians.
- Diagnosis was made by skin or nerve biopsy in 66.7% of cases.
- A prior diagnosis of leprosy was present in 51.9%.
- Fifty-six percent of patients had been incorrectly diagnosed by other healthcare providers prior to their leprosy diagnosis.
- The median time from symptom onset to diagnosis was 25 months (range, 2-180).

Conclusions

- Though not endemic to the United States, leprosy remains a clinical problem, particularly in immigrant populations.
- We observed that a sizeable proportion of leprosy cases were initially misdiagnosed by physicians, frequently resulting in months-long delays in diagnosis.
- Clinicians should have a high index of suspicion for leprosy in immigrants from endemic countries with cutaneous lesions and neuropathy.
- Opportunities for enhanced clinician awareness, targeted education, and multidisciplinary management exist.

References

1. Global leprosy update, 2016: accelerating reduction of disease burden. Wkly Epidemiol Rec. 2017;92(35):501-19.