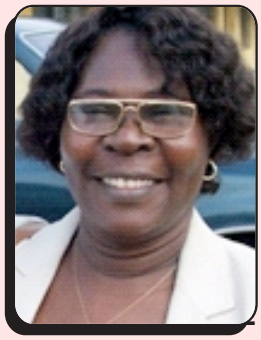
Misdiagnosed Leprosy:
A concern for the practicing Dermatologist



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ABSTRACT

Leprosy is an ancient disease that dates back to biblical times and has always been associated with stigma. Untreated, it results in profound damage to many parts of the body including the skin, nerves, bones, eyes and respiratory tract. Correct prompt diagnosis followed by correct chemotherapy is indispensible to avoid complications. Cases of misdiagnosis are found in literature as well as leprosy masquerading like other cutaneous diseases.
Two cases of Leprosy misdiagnosed and treated as chronic dermatitis and Tinea Corporis respectively before referral are presented. Clinical features and histology confirmed Hansen's disease at our clinic. Clinical expertise, high index of suspicion and histological confirmation may be required to make accurate diagnosis. There is need for prompt and early referral of patients to access expert care when needed. Training of health personnel in diagnosing leprosy in endemic areas should be put in place. Dermatological services with consultant dermatologist in attendance continue to play a major role in the early and prompt diagnosis of leprosy.

Keywords: Leprosy, misdiagnosis, prompt referral

INTRODUCTION

LEPROSY, first described in ancient Indian texts from the 6th century B.C., is a non-fatal, chronic infectious disease caused by *Mycobacterium lepra*, whose clinical manifestations are largely confined to the skin, peripheral nervous system, upper respiratory tract, eyes and testes (1). The disease should be suspected when a patient from an endemic area has suggestive skin lesions or peripheral neuropathy (1). There is evidence that delay in presentation and diagnosis is an important risk factor related to nerve function impairments, therefore, early diagnosis and treatment play an important role in prevention of nerve damage in a large proportion of leprosy patients (2).

Many cases of misdiagnosis of leprosy are recorded in literature as leprosy may present in an atypical manner and masquerade like any of its differential diagnosis (3, 4,5). This results in wrong diagnosis and delayed commencement of therapy. Being aware of possible misdiagnosis especially in endemic area can be the prompting of early referral of patients to appropriate centers for expert diagnosis and care (6).

CASE 1: Misdiagnosed as chronic dermatitis

A 30-year old female trader was referred to the dermatology clinic from the general outpatient department of the same hospital. She complained that she has had reddish flat and raised lesions on her face, upper and lower limbs for three years. The initial lesion was on the face gradually involving the limbs and trunk. The lesions were itchy, red and painful. There was no history of contact or history of recent travels. She noticed progressive loss of sensation in both lower limbs and could not feel hot sensation. She had seen several doctors in different clinics and had received numerous prescriptions with little or no improvement. Examination showed multiple plaques with reddish edges on the limbs, trunk and nodules in the face. Biopsy tissue confirmed the diagnosis of Lepromatous leprosy.

CASE2: Misdiagnosed as Tinea corporis

A 40-year old female presented with a 2years history of widespread, numerous, symmetrical and annular skin lesions which are raised at the edges. She had been

treated many times for Tinea corporis but with no response. All modalities of sensations were impaired over these lesions. The ulnar nerves were thickened and there was sensory loss over the extremities. Skin biopsy from an active looking lesion showed findings of borderline leprosy, with formation of ill-defined granulomas and presence of Mycobacteria leprae in macrophages and lymphocytes by modified Ziehl-Neelsen stain.

DISCUSSION

Despite the decline in the prevalence of Leprosy in the last 20years following WHO aggressive multidrug treatment programmes, the disease is still a public health challenge (7). One of the challenges is that of access to trained health personnel for correct diagnosis before treatment. Leprosy can masquerade, mimic and exist with other co-morbidities making diagnosis difficult for the inexperienced (3, 4, 5). Diagnosis may also be delayed with grave consequences. In Britain, diagnosis is frequently delayed, and patients typically see two or three specialists over a period averaging 18 months before the diagnosis is finally established (8).

The different manifestation of leprosy are well known : hypopigmented or erythematous patches, localized paresthesia, shooting pains, blisters of hands and feet, motor weakness, nasal stuffiness, epistaxis, synovial swelling of wrist, pedal edema, painless nodule, diminished over-excessive sweating have been reported (9).

The three cardinal signs for the clinical diagnosis of leprosy include anaesthetic/ hypoanesthetic skin lesion(s), thickened peripheral nerve(s) with impairment of sensations in the area supplied and Acid-fast bacilli in the skin smear (10).

Leprosy is associated with the occurrence of various skin lesions such as macules, papules, plaques, nodules, and even diffused infiltration, depending on the patient's immune response. Its presentation can therefore mimic many cutaneous diagnoses. The two cases we reported were seen by non dermatologist initially and diagnosed and treated for other skin conditions other than leprosy. The diagnoses are included in the differential diagnosis of leprosy. Case 1 was diagnosed to be a case of chronic dermatitis with joint involvement. Articular manifestations occur in approximately 1% of cases of leprosy (11). Direct invasion of joints and bones by Mycobacteria may lead to a destructive arthritis in lepromatous disease (12). Leprosy should be considered in the differential diagnosis of polyarthritis. Case 2 was diagnosed as Tinea Corporis. These cases illustrate the importance of prompt recognition and treatment of Hansen disease to prevent permanent disability and disfigurement. Leprosy can present in atypical forms. All differential diagnosis of annular lesions should have been considered in Case 2. Presentations as granuloma annulare like lesion and as erythema multiforme were documented in two cases of borderline leprosy in literature (6). Hansen's disease (leprosy) also has erythematous annular plaques with associated scaling, alopecia, and anesthesia (13). Leprosy has also been found to simulate Lichenoid eruption. The patient showed pruritic violet-colored papular lesions in the trunk and extremities. These are not characteristic of leprosy. The diagnosis of borderline leprosy was confirmed by means of bacilloscopy and histopathological examination (14). Leprosy has also been known masquerading acute Sarcoidosis. The clinical scenario closely mimicked connective tissue/immune complex disease complicated by the fact that the patient presented in a location where the incidence and prevalence of leprosy is extremely low (15).

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Uncommon variants of Lepromatous leprosy can mimic other cutaneous nodular lesions. A case was reported of Neurofibromatosis 1 with unusual hypopigmentation masquerading as Leprosy (16). The case occurred in association with symmetrical peripheral nerve enlargement and multiple hypopigmented macules strikingly limited to the Neurofibromas, with normal to minimally reduced sensations, evoking a strong clinical suspicion of co-existent Lepromatous leprosy. Leprosy was ruled out by microbiological, histopathological and electrophysiological studies. The case is interesting in

view of the hypopigmented macules overlying the Neurofibromas, which is an unreported feature of Neurofibromatosis.

Histoid Hansen's is an uncommon variant of Lepromatous leprosy with characteristic clinical, immunologic, and bacteriologic findings. One such case of Histoid leprosy confirmed by histopathology was mistakenly treated as eruptive xanthomas until he presented to the dermatologist (17).

Other Leprosy-like Skin Diseases that can be confused with true Hansen's disease include hypopigmented macules, Leucoderma, Vitiligo, Morphea, naevus achromous, Pityriasis Rosea, Pityriasis Alba, granuloma annulare, Xanthomatosis, cutaneous lymphoma, ringworm and Post Kalaazar Dermal Leishmaniasis to mention a few (18). Pityriasis Alba needs to be differentiated from indeterminate leprosy as both tend to appear on face, where to elicit sensory changes is difficult. Pityriasis alba, a non-specific dermatitis, commonly seen in children, has been regarded as a manifestation of atopic dermatitis though not always confined to atopics. Indeterminate leprosy has one to four lesions, bilateral and asymmetrical.

Ramesh et al reported cases of misdiagnosed leprosy in three patients who presented with neuritis of the great auricular nerve (19). Two of the patients were seen both by physicians and an otolaryngologist. One had prominent and tender cord along the neck with facial edema and history of fainting attack and the second had erythema and hyperaesthesia of the ear simulating vascular occlusion. In the third, cold abscess in the nerve that had persisted after anti-leprosy treatment was mistaken as tuberculous cervical lymphadenitis by a surgeon since aspiration had revealed acid-fast bacilli. They were all confirmed to be leprosy in Type 1 reaction by the dermatologist. They concluded that the probable reasons for misdiagnosis include rarity of involvement of the great auricular nerve and its proximity to main blood vessels, the need for careful interpretation of laboratory results.

All diseases of the peripheral nerves causing nerve damage or hypertrophy can mimic leprosy; including Peripheral Neuritis of Vitamin B deficiency and Vitamin B12 posterior column lesions of the spinal cord with loss of feeling in the lower limbs (20). Patients working in paint factories or other heavy metal industries dealing with lead or arsenic may develop a leprosy-like anesthesia and paralysis called Toxic neuritis (21). Many patients with ulcerated feet have been wrongly diagnosed as having leprosy because peripheral neuritis in diabetes can result in loss of feeling, particularly in the lower extremities which often produces trophic or plantar ulcers(22). A careful physical examination will reveal sugar in the urine and an increased level of blood sugar.

Lymphadenopathy is not exclusive to Leprosy. Leprosy can co-exist with other morbidities and other causes of lymphadenopathy including lymphoma(5). Clinicians practising in leprosy endemic areas should keep Lepromatous lymphadenitis in mind while investigating patients with lymphadenopathy. This disease can even mimic lymphoma clinically, as can be seen in the case report by Nipin et al (5). A 70-year-old male presented with multiple lymphadenopathy and a strong clinical suspicion of non-Hodgkin's lymphoma. Cervical and axillary nodes were excised and were sent for histopathological evaluation, which revealed aggregates of Lepra cells loaded with Lepra bacilli. Lymph nodes have been reported to be moderately enlarged in leprosy In the experience of W. H. Jopling and A. C. McDougall, enlargement is confined to phases of Lepra reaction which is characterized by marked swelling and tenderness, especially of femoral and inguinal groups (18). Lymph node involvement in Lepromatous leprosy has a very characteristic microscopic appearance. The main change is the progressive accumulation of large, pale, rounded histiocytes ('Lepra' or 'Virchow' cells), without granuloma formation and with minimal or no necrosis. Ziehl–Neelsen reactions demonstrate packing of the cytoplasm by acid-fast organisms. Nevertheless, it is very unusual to diagnose leprosy primarily by lymph node biopsy (23).

Dermatological services with consultant dermatologists in attendance continue to play a major role in the early and prompt diagnosis of leprosy (24). One study conducted in Ethiopia by Bekri et al. showed that referral delay after diagnosis could be from 1 to 12 months (25) and in Britain there can be a delay of up to 18months (8). The possession of knowledge and skills in the early diagnosis of leprosy by doctors working in dermatological services will partly determine whether or not a prompt diagnosis can be made and the patient referred, so that chemotherapy can be initiated in time (24). There should be aggressive efforts to improve the diagnostic skills of health workers in identifying leprosy patients and expediting prompt referral where indicated. ■

FIGURE 1 (A, B, C)
Patient 1 - lesions of lepromatous leprosy on the face, feet and hands of a female patient misdiagnosed and treated as chronic dermatitis for three years before referral

FIGURE 2A
Patient 2; lesions of leprosy on upper and lower limbs misdiagnosed as tinea corporis in a female

FIGURE 2B

REFERENCES

1. Gelber RH. Leprosy (Hansen's disease). In: Braunwald E, Fauci AS, Kasper DL et al. (eds). Harrison's principles of internal medicine, 15th edn. McGraw-Hill, New York, 2001, pp. 1035–1040.
2. Robertson LM, Nichols PG, Butlin R. Delay in presentation and start of treatment in leprosy: experience in an outpatient clinic in Nepal. Lepr Rev, 2000; 71: 511–516.
3. Dharmendra. A case of leprosy wrongly diagnosed as Neurofibroma. Lepr India 1952; 24:160-3.
4. Bentekan L, Hassam B. Atypical presentations of leprosy: Apropos of 2 cases. Acta Leprologica 1997; 10:195-8.
5. Nipin Bagla, Mandakini M. Patel, Rajnikant D. Patel & Mayur Jarag Lepromatous Lymphadenitis Masquerading As Lymphoma: Lepr Rev (2005) 76, 87–90
6. Sudip Das, Aloke Kr Roy, Chinmoy Kar, Parag Prasun Giri. A typical presentation of leprosy: A report of two cases. *Indian J Dermatol 2007:52(4):198*
7. Moschella SL. An update on the diagnosis and treatment of leprosy. J Am Acad Dermatol. 2004; 51(3):417-26.
8. Lockwood DNJ, Reid AJC. The diagnosis of leprosy is delayed in the United Kingdom. Q J Med 2001; 94:207–12.
9. Sharma VK. Leprosy: Classification and clinical features. IADVL Text book of Dermatology. 3rd ed. p. 1578-601.
10. WHO Expert Committee on leprosy. Seventh Report. WHO Technical Report Series No. 874. Geneva: World Health Organization; 1998.
11. Cossermelli-Messina W, Festa NC, Cossermelli W (1998) Articular inflammatory manifestations in patients with different forms of leprosy. J Rheumatol 25:111–119
12. Gibson T, Ahsan Q, Hussein K (1994) Arthritis of leprosy. Br J Rheumatol 33:963–966
13. Hsu S, Le EH, Khoshevis MR. Differential diagnosis of annular lesions. Am Fam Physician 2001; 64:289-96.
14. Sousa ARD, Costa CO, Queiroz HMC, Goncalves PES, Goncalves HS.Leprosy simulating lichenoid eruption: case report and literature review. An Bras Dermatol. 2010;85(2):224-6.
15. Patnaik MM,Hammerschmidt D, van Burik JA, Jessurun J, Smyth P. Lepromatous leprosy masquerading as acute sarcoidosis: a case report and literature review. Minn Med 2008 Nov; 91(11):30-3.
16. Khandpur S, Malhotra AK , Deepak KK, Verma KK. Neurofibromatosis 1 with Unusual Hypopigmentation Masquerading as Leprosy. JAPI 2004; 52: 1001-1003. www.japi.org
17. Puja Monga DDVL, Vandana Mehta MD, DNB, C Balachandran MD, Mary Mathew MD. Wade Histoid Leprosy masquerading as eruptive xanthomas; Dermatology Online Journal 14 (8): 21
18. Jopling WH, McDougall AC. The disease. In: Jopling WH, McDougall AC (eds). Handbook of leprosy, 5th edn. CBS Publishers, New Delhi, 2000, pp. 10–49
19. Ramesh V, Jain RK, Avninder S. Great auricular nerve involvement in leprosy: Scope for misdiagnosis. J Postgrad Med [serial online] 2007 [cited 2009 Jan 16];53:253-254 Available from: http://www.jpgmonline.com/text.asp?2007/53/4/253/37515
20. *Naushira Pandya, Mark Byle,; Scott Armistead.* An Uncommon Cause of Peripheral Neuropathy: *Arch Fam Med. 1998;7:85-87*
21. Heyman A, Pfeiffer JB, Willett RW, Taylor HM. Peripheral neuropathy caused by arsenical intoxication; a study of 41 cases with observations on the effects of BAL (2, 3, dimercapto-propanol). N Engl J Med. Mar 1 1956; 254(9):401-9.
22. McIntyre, B.R. and Deitch, E.A. Diabetic foot ulcers-pathophysiology and treatment. *Surg. Clinic. North America*1994; **4:**537-555.
23. Rosai J. Lymph nodes. In: Rosai J (ed.) Ackerman's surgical pathology, 8th edn. CV Mosby, St Louis, 1999, pp. 1661–1775.
24. Shu-Min Chen, Lin Zhang, Dian-Chang Liu & Hua-Xu Liu. Assessment of knowledge and skills in early diagnosis of leprosy and attitudes towards leprosy amongst doctors working in dermatological services, Shandong Province, People's Republic of China; Lepr Rev (2004) 75, 348–356
25. Bekri W, Gebre S, Mengiste A et al. Delay in presentation and start of treatment in leprosy: a case-control study of disabled and non-disabled patients in three different settings in Ethiopia. Int J Lepr, 1998; 66: 1–9.