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Delayed Diagnosis of Leprosy in A Seventeen Years Old Male Patient with No Sensory Loss for Nine Years in Zambia: A Case Report

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ABSTRACT

Leprosy is caused by a bacterium Mycobacterium leprae. The disease is classified by the World Health Organisation as a Neglected Tropical Disease. Disease. Diagnosis is based on presence of classical skin manifestations in form of skin nodules and neurological defects. In this case report we present an unusual case that was only diagnosed as Leprosy nine years after onset of the disease in Zambia, Southern Africa. The patient had skin lesions but no history of sensory loss. Patient made a remarkable clinical improvement just one month after being commenced on Multi Drug Therapy (MDT).

Keywords

Leprosy, Sensory loss, Paraesthesia, Skin.

Introduction

Leprosy is a chronic and systemic granulomatous disease caused by an obligate bacterium, *Mycobacterium leprae* [1]. The disease involves mainly the nervous system and the skin [2]. The disease frequently results in disability if early treatment is delayed [3]. It is classified by the World Health Organisation (WHO) as a Neglected Tropical Disease. Diagnosis is primarily clinical.

The key signs of Leprosy are hypopigmented or reddish patches of skin with a loss or alteration of sensation, enlarged peripheral nerves, and the demonstration of acid-fast bacilli on skin smears or skin biopsies. The presence of all the three signs has a sensitivity of 97% and a positive predictive value of 98% in the diagnosis of Leprosy [4]. However, there is a group of patients who have a pure nervous disease without associated skin involvement. In such patients a nerve biopsy is required to confirm the diagnosis.

We present a case of Leprosy whose diagnosis was initially missed and sometimes misdiagnosed as a non-infectious skin disease but eventually, after nine years, correctly diagnosed as Leprosy by laboratory investigations in Zambia, a country lowly endemic for Leprosy.

The case

A 17 years old man was admitted to Ndola Teaching Hospital in Zambia in June 2020 with a history of patchy swellings on the face, body, and all the limbs for nine years. He said the swellings were few in number and small in size at the onset but increased in both number and size over the course of nine years. The patient gave a history of "pins and needles" sensation in both hands and feet and also parts of the body. He denied experiencing any loss of sense to touch, hot and cold, and pain. In addition, the patient also complained of swelling of both legs and feet. Because of the swelling of both legs and feet, the patient had difficulties in walking.

On the past medical history, the patient said he had been taken to both private and government clinics at which he was sometimes given nutritional supplements which did not alleviate his condition.

On physical examination the patient was fully conscious and oriented in time, place, and person. Skin and musculoskeletal system examination revealed extensive nodular skin lesions over the whole face (leonine facies), trunk, and all extremities. Some of the nodules on the face and arms measured about 1.5cm in diameter. Some of the lesions on the face had bacterial superinfection. There was bilateral pitting pedal oedema. There was no evidence of

skin injury in form of skin cuts, burns, missing toes or fingers. Nervous system examination of skin revealed no sensory loss or alteration to touch and pin prick. A slit-skin smear from the ear lope was taken for acid-fast bacilli (AFB) light microscopy for *Mycobacterium leprae*. The test was positive for AFB leading to a diagnosis of Multibacillary Leprosy with paraesthesia. The patient was commenced on a 12-months course of Multi Drug Therapy (MDT) [5].

The regimen was as follows per month:
Day 1: Rifampicin-600mg, clofazimine-300mg, Dapsone-100mg, Day2-28: clofazimine-50mg once per day, Dapsone-100mg once per day (Figure 1). The patient was discharged from the hospital one week later. He was reviewed after one month. At the time of review, the patient had markedly improved (Figures 2 and 3). Pedal oedema had subsided, nodular lesions on the face, trunk, and extremities had markedly regressed. Paraesthesia had markedly reduced in intensity.

Figure 1: The 28-days MDT regimen for 12 months.

Figure 2: Leprosy nodules on the face (Leonine facies) one month after commencement of MDT.

Figure 3: Leprosy nodular lesions on the arm one month after commencement of MDT.

Discussion

Nerve function impairment at initial presentation in Leprosy is a common occurrence at rates as high as 55% [6]. The first neurological manifestation is often the development of sensory loss or paraesthesia in one or more cutaneous patches [7]. These neurological manifestations occur by the following mechanisms: involvement of the intracutaneous neural network, involvement of larger nerves in cooler locations, or inflammation with larger nerves during the course of the diseases when leprosy reactions occur. The involvement of the cutaneous nerve is the earliest manifestation of leprosy, and this results in a loss of thermal sensation, as the initial deficit, then progresses to involve other modalities such as pain and touch [8]. Sensory modalities sub served by larger fibres are lost in more advanced stages of the disease. Motor manifestations do occur during the latter stages of the disease [9].

In our patient the skin sensation to touch, cold and hot, and pain remained intact throughout the nine years' period prior to diagnosis and commencement of treatment. The only neurological disorder in our patient was the paraesthesia. The absence of classical Leprosy neurological impairment in form of sensory loss to touch, thermal, and pain, even with the presence of typical Leprosy cutaneous lesions, played a major role in the delay in raising the index of suspicion for Leprosy among medical staff that attended to our patient during the nine years' period. Delays in the diagnosis of Leprosy tend to be less severe in countries with more familiarity with this disease [10]. Increasing migration of people from countries with high rates of leprosy to those with low rates compounds the problem of unfamiliarity with the clinical picture of Leprosy leading to delayed diagnosis [11]. Even though Leprosy cases have drastically reduced in recent years with only very few cases detected globally, medical staff should have a high index of suspicion for Leprosy in patients presenting with classical nodular skin lesions of Leprosy with history of paraesthesia but absent sensory loss to touch, thermal, and pain.

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