



Case Report

Co-Existence of TB & Leprosy in the same patient – A Case Report

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Abstract

Leprosy is one of the more serious health issues in a number of developing countries. Although it seldom kills, leprosy is nonetheless a deforming, disabling and stigmatizing disease.^{1, 2} Tuberculosis is also a major public health problem affecting nearly one third of the global population. Though leprosy and tuberculosis are common infectious disease, yet co-infection of *Mycobacterium leprae* and *Mycobacterium tuberculosis* is rare possibly due to cross-immunity. A male patient of about 70 years presented with widespread shiny hypesthetic nodular lesions symmetrically located mainly in upper extremities, trunk and a little in lower extremities about 3 years back. Slit skin smear and histopathology studies showed significant amount of bacterial load which suggested lepromatous leprosy. About after one year of starting MDT treatment, the patient developed type-2 reaction of intermittent variety. During the episodic attacks of this reaction, the patient developed pulmonary TB supported by positive smear of sputum and patchy opacities of chest x-ray about 2½ years back

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Introduction

Leprosy is a chronic granulomatous disease affecting primarily the skin and the nervous system, caused by *Mycobacterium leprae*.

The spectrum of leprosy has two stable poles, the tuberculoid and lepromatous forms. The tuberculoid form (TT), the form of high cell-mediated immunity is characterized by less than five lesions (often only one) and very few organisms (Paucibacillary). On the other hand, the lepromatous form (LL) has very limited cell-mediated immunity against the organisms, lesions are numerous, and they contain many organisms (Multibacillary).

The tuberculoid lesion is anesthetic or hypesthetic and anhidrotic. The skin lesions are asymmetrically distributed, mainly located on the face, limbs or trunk.

The lepromatous lesions are characterized initially by multiple, poorly defined erythematous macules, papules, nodules and plaques. Lesions are widespread and they are usually rather symmetric in distribution. The most common sites of involvement are the face, buttocks and lower extremities.

Reactions are a characteristic and clinically important aspect of leprosy. Any type of leprosy may undergo a sudden inflammatory phase of exacerbation.³ Sometimes, the reactions may be ushered in by immunological changes following effective chemotherapy, may be precipitated by intermittent infections or may occur spontaneously.⁴ Two kinds of hypersensitivity occur, type- I and type-II lepra reaction.

Type-I lepra reaction is an example of type-IV hypersensitivity (allergic) reaction. It is associated with cell mediated immunity.

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Type-II lepra reaction (also called erythema nodosum leprosum) is humoral hypersensitivity reaction and it is an example of type-III hypersensitivity. This type of reaction tends to occur later during the course of treatment usually after one or two years.

Tuberculosis is an infectious disease, caused by the bacillus called Mycobacterium tuberculosis. Tuberculosis of the lungs or pulmonary tuberculosis is the most common form of TB and occurs in about 80% of the cases. Presence of tuberculi bacilli can be identified on microscopic examination of sputum specimens. Such patients whose sputum contains TB bacilli are known as smear-positive cases.

Case history

A male patient of about seventy years presented with widespread, shiny multiple nodular lesion symmetrically located in upper extremities and trunk about 3 years back. Few of the nodules showed hypesthesia. A few infiltrative lesions were present in ear lobules. In addition to, the patient showed mild swelling of whole body and complained of mild fever, muscle and big joint pain. The patient did not develop any deformity of eyes, hands or feet or any ulcer in his body. The patient was immunized in due time during childhood. He is poor farmer in occupation.

On examination, the peripheral nerves were neither enlarged nor tender. The legs showed mild oedema but the patient was normotensive.

Routine examination of blood, stool and urine were performed. Chest x-ray and renal function tests were also done. All the results were within the normal limits except slit skin smear which revealed bacterial load of 5+ to 6+ of AFB (Mycobacterium leprae). Biopsy of involved skin showed collection of many foamy histiocytes in the dermis. A narrow Grenz zone was present, the epidermis remained unremarkable.

Fite stain revealed moderate number of M. leprae (Single or in occasional field). The impression was Lepromatous leprosy. The patient was treated by MDT of anti-leprotic drugs. After one year of therapy, the patient started to develop multiple, painful erythematous nodules all over the body associated with pain in big joints and muscles. The patient developed fever and burning sensation of

limbs, such condition was considered as 'Erythema Nodosum Leprosum'. It was managed by complete bed rest and Aspirin, Prednisolone and increased dose of Clofazimine was used as medication. Such reaction happened several times and managed accordingly.

On August 2009, the patient developed cough and fever of about three weeks' duration. X-ray of chest revealed multiple patchy opacities in upper zone of lung fields, and sputum showed 3 plus (+) AFB (Mycobacterium tuberculosis). The diagnosis was established as 'Pulmonary tuberculosis' and it was treated by 4FDC.

Besides these, the patient developed multiple ring like itchy patches in lower part of trunk and abdomen which was considered as 'Dermatophytosis' and it was managed by systemic and topical antifungals. Amidst, the patient developed widespread papular lesions from head to leg with nocturnal itching, which was suggestive of 'Scabies' and it was solved by antihistamines, oral Ivermectin and several bouts of application of scabicial agents, such as Permethrin and Crothamiton combination along with proper maintenance of hygiene.



Pic-1: Shininess of hands and legs



Pic-2: Nodular lesions in forehead, arms and abdomen area.

Photograph of the patient

Discussion

Leprosy is one of the major public health problems of the developing countries. Once world wide in distribution, leprosy is now seen primarily in tropical and sub-tropical regions of Asia, Africa, Central and South America. The geographic distribution is probably related more to a lower standard of living and proper hygiene than to the warmer climate.^{5,6}

Early diagnosis and prompt therapy are the keystones in the strategy to control this chronic infectious disease.²

On the other hand, tuberculosis is one of the world's most widespread and deadly illness.⁷

Tuberculosis flourishes wherever there is poverty, crowding and chronic debilitating illness.⁸

Although the classic mycobacterioses, leprosy and tuberculosis, have been known since antiquity, there has been a recent world wide explosion in the incidence of mycobacterial infections.

Co-infection by two or more organisms is not uncommon. Generally, one organism weakens the patient and reduces the ability of the immune system to respond adequately or rapidly enough and this allows a more virulent organism to infect the patient.⁹

In modern times it was noted that up to 20% of patients with *Mycobacterium leprae* infection had concomitant tuberculosis infections diagnosed during the life of the patient.^{10, 11, 12}

The demonstration of the presence of both pathogens in bony specimen demonstrates that these diseases co-existed in the past, which is supported by palaeopathology.¹³

Besides these, the patient suffered from repeated attack of atypical scabies and also from superficial fungal infection which probably happened due to impaired immunity. Repeated administration of Prednisolone to alleviate the multi-attacks of lepra reaction possibly contributed to develop such superinfections.

Glucocorticoid administration (topical or systemic) may mask symptoms and signs of scabies, although the infestation remains freely transmissible. This often results in unusual clinical presentations such as atypical and wide distribution.¹⁴

In this case, the patient initially had suffered from lepromatous leprosy with several bouts of lepra-2 reaction which reduced cell mediated immunity that led to develop sputum positive pulmonary tuberculosis. Thus the patient became the prey of both mycobacterial infection which is rare incidence but not the rarest one.

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