Case report

Bone involvement in leprosy: Early changes

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Abstract

Leprosy (Hansen disease) is a slowly progressive, infectious, chronic granulomatous disease caused by Mycobacterium leprae. Bone involvement is one of the principal prognostic factors in leprosy. Imaging in leprosy could aid in the diagnosis of bone disease. Here, authors present a case of leprosy with trophic ulcer and its radiological changes.© 2015 Beijing You’an Hospital affiliated to Capital Medical University. Production and hosting by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

Keywords: Leprosy; Mycobacterium leprae; Bone involvement; X-ray

1. Introduction

Leprosy (Hansen disease) is a slowly progressive, infectious, chronic granulomatous disease caused by Mycobacterium leprae. It can be complicated by the appearance of lepra reactions. Most frequently affected are the skin and superficial peripheral nerves [1]. Bone disease is one of the principal prognostic factors and occurs in 15%—29% of patients. Higher percentages (40%—95%) have been reported in the literature, in part because such data come from subjects in leper colonies, which therefore covered only selected cases [2]. Trophic ulcer is defined as chronic ulceration of anesthetic skin. The term trophic or plantar for ulceration was coined by Price [3]. Formation of trophic ulcer is spontaneous in the majority of cases (90%). This may be because minor trauma might not have been appreciated, as soles would be anesthetic or hypoesthetic [4]. We hereby presented a case of leprosy with trophic ulcer and its radiological changes.

2. Case report

A 45 year old male presented with wounds on left foot since 1 month. There was no history of trauma to the site. Besides, the wounds were not associated with fever or other systematic involvement. Examination revealed an ulcer over the ball of great toe with punched out margins, granulation tissue on the floor and hyperkeratotic edge. It measured approximately 2 × 2 cm. The great and 5th toe were lost (Fig. 1). Multiple, large hypopigmented anesthetic patches were observed all over the body with asymmetrical distribution. The patient was provisionally diagnosed with borderline tuberculoid leprosy which was confirmed by slit skin smear and skin biopsy. X-ray of both feet in antero-posterior and lateral direction showed acroosteolysis, bony auto-amputation of phalanges of 1st and 5th toe. Primary periosteal reaction was observed in 1st metatarsal and ice-candy appearance or penicilling effect was observed in 5th metatarsal. Besides soft tissue changes and bony resorption were noted (Fig. 2). The patient was given multidrug therapy for one year.

3. Discussion

Radiological changes of leprosy have been studied extensively by various authors [5—7]. Plantar ulcers, osteomyelitis,
reactive periostitis and other neuropathic changes in the tarsal bones are again the result of prolonged anesthetic changes in the feet, exposed to variety of injuries by leprosy patients [7].

Specific bone changes owing to direct invasion by M. leprae include formation of bone cysts, honeycombing, enlarged nutrient foramina, subarticular erosion, concentric cortical erosions, and primary periostitis. Healing is characterized by sclerosis. The granulation tissue could invade into the cortex of the bone as tongue-like processes and gradually destroy the bony trabeculae, with subsequent absorption leading to formation of carious lesions. Newly formed osteoid tissues are destroyed and dense fibrosis may be formed along with healing [7]. As previously mentioned, infection could be carried to the bone by the vascular supply and that marked destruction and cystic degeneration may follow.

4. Conclusion

Leprosy affects simultaneously both soft tissues and bones through different pathogenic pathways. Hence clinicians should possess knowledge about bone involvement in leprosy which can take place early in the disease course. Radiological imaging of the involved part should incorporate in the investigative protocol of leprosy.

References


Fig. 1. Trophic ulcer on the ball of great toe in left foot.

Fig. 2. X-ray showing primary periosteal reaction in 1st metatarsal, ice-candy appearance in 5th metatarsal and soft tissue changes.