CASE REPORT

Post-traumatic inoculation tuberculoid leprosy after injury with a glass bangle

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Summary A lesion of tuberculoid leprosy in an Indian lady presenting at the site of injury from a broken glass bangle is reported. The diagnosis was by classical clinical features and histopathology. The importance of the skin in leprosy transmission is emphasised.

Case Report

A 44 year-old Indian woman presented with a 2 month history of a skin lesion on her right hand. She was a coordinator in a school for slum children in this highly endemic region for 22 years. The lesion had started exactly over a site of an injury with her glass bangle, sustained about 2 years earlier. There was no family history of skin problems, or of any local or oral medication. Cutaneous examination showed a single, circular, raised, uniformly infiltrated, erythematous plaque around 3 cms in diameter, anaesthetic to temperature, touch and pain on the medial aspect of her right hand, near the wrist joint (Figure 1a).

There was no other skin lesion and systemic examination was normal. Histopathological examination revealed multiple compact non-caseating granulomas of lymphocytes, epitheloid cells and Langhans’ giant cells in the upper dermis almost touching the normal epidermis from below, with a similar infiltrate invading a nerve in deeper dermis (Figure 2).

Ziehl-Neelsen stain from the section and the slit smear examination from the lesion did not reveal any acid-fast bacilli. The mycotect multiplex polymerase chain reaction for M. tuberculosis DNA from the skin biopsy tissue was negative.

She was treated with paucibacillary multidrug treatment, dapsone 100 mg daily and rifampicin 600 mg once a month. The lesion regressed over 6 months (Figure 1b).
Discussion

Though the exact mode of leprosy transmission is unclear, most leprologists suggest that an airborne spread through the upper respiratory tract is likely in the majority of cases. If so, *M. leprae* probably enters the body through the nose and then spreads *via* the circulation to the skin and nerves.\(^1\) Reports of inoculation leprosy over the sites of tattooing and vaccination and the first description of the pseudo-koebner phenomenon in leprosy.\(^2\) – \(^7\) have contributed support to the alternative hypothesis that leprosy can be transmitted through inoculation, as have reports of leprosy lesions developing in a surgeon after operating upon a lepromatous leprosy patient,\(^8\) on a gynaecologist’s finger,\(^9\) and after traumatic injury.\(^10\),\(^11\) The appearance of the first leprosy lesion at the site of a dog-bite or inoculation in armadillos,\(^12\),\(^13\) and over the trauma-prone exposed sites of the body,\(^14\),\(^15\) are similar pointers. Single leprosy lesions were seen commonly on the trauma-prone posterior aspect of the arm as compared to the anterior aspect.\(^16\) Like other mycobacterial infections, including tuberculosis, leprosy can also be transmitted through abraded or traumatised skin.\(^17\) – \(^19\)

In the case reported here, the clinical features and the histopathological findings favour a diagnosis of leprosy and are against the diagnosis of cutaneous tuberculosis, foreign body

![Figure 1](image_url)
granuloma or sarcoidosis. The absence of *M. tuberculosis* DNA in mycotect multiplex DNA polymerase chain reaction from the skin biopsy tissue is also against tuberculosis. That the lesion developed 2 years after a traumatic injury, and its exclusive localisation to the site of the injury favour transmission through the skin, although it is difficult to ascertain the exact time of infection with *M. leprae*. It might have been at the time her bangle broke and cut her, or it might have been at an earlier time during her work in the slums, remaining latent until it localised in recently traumatised skin. The pseudo-isomorphic phenomenon of Koebner seen in warts and *molluscum contagiosum* due to inoculation of the causative agent through traumatised skin, has now been demonstrated in leprosy and is evidence for the skin as the site of entry of *M. leprae*. The previous reports of inoculation leprosy support the concept that the appearance of an initial leprosy lesion on an exposed, trauma-prone site on the skin, or at a site where the skin has been abraded, may be the result of direct inoculation of *M. leprae*. Many infectious multibacillary patients, discharging bacilli from the nose and skin, are diagnosed late. These bacilli can survive for several weeks outside the body, offering a potential transmission by inoculation. This might be happening more often than is realised, since the large surface-area of the skin provides an increased opportunity, for minor abrasions and trauma.

**References**


**Figure 2.** (a) Histopathology showing upper dermal compact non-caseating granulomas of lymphocytes, epitheloid cells and Langhans’ giant cells almost touching the epidermis from below (Haematoxylin and eosin; original magnification × 400), and (b) Similar granulomatous infiltrate as above, in linear fashion in mid dermis invading the nerve fibres (Haematoxylin and eosin; original magnification × 400).