



## Tattoo induced cutaneous tuberculosis: a rare occurrence

### KEYWORDS

Cutaneous tuberculosis, tattoo mark

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**ABSTRACT** *Cutaneous Tuberculosis is an uncommon form of extrapulmonary tuberculosis and is infrequently seen in dermatology practice. Primary inoculation tuberculosis occurs following direct inoculation of mycobacterium in the skin of a person through a breach in the continuity of skin from an abrasion of the skin, allowing the entry of tubercle bacilli. The causative organism of cutaneous TB is most often M. tuberculosis. We report a case of cutaneous tuberculosis in a 24 year old male over the dorsum of left hand occurring at the site of tattoo art.*

#### Introduction:

Primary cutaneous tuberculosis is reported at the site of skin injury following blunt trauma, needle stick injury, intralesional steroid injections, blepharoplasty, injury during autopsy on a tuberculotic cadaver, site of acupuncture, vaccination of Bacillus Calmette-Guérin (BCG), and rarely at site of tattoo inoculation.<sup>1</sup> Causative organism of cutaneous TB can be *M. tuberculosis*, *M. bovis*, *M. africanum*, *M. microti* and atypical mycobacteria. But *M. tuberculosis* is the most common organism. The incidence of cutaneous tuberculosis is reported to be less than 0.1% of the patients seen in dermatology clinics.<sup>2</sup>

#### Case report:

A 24 year old male had got tattoo art done on the dorsum of his right hand 1 year back by a road side tattoo artist. Patient developed hyperpigmented plaque measuring 4X2cms with multiple ulcers and crusting, with few areas of depigmentation over the tattoo area since 6 months

#### Fig 1 here



A biopsy was done to rule out tattoo granuloma, deep fungal infection and cutaneous tuberculosis. Biopsy showed dense chronic inflammatory infiltrate in the dermis along with granulomas composed of epithelioid cells, foreignbody, some with engulfed brown colored foreign material and Langhan's giant cells. No Acid fast bacilli or fungal elements were identified on special stains. A diagnosis of tattoo granuloma was given on histopathology.

In view of this he was treated with topical steroids, systemic steroids, antibiotics and liquid nitrogen cryotherapy with no improvement. A Mantoux test was done to rule out cutaneous tuberculosis which showed positive reaction of 24 mm. Chest X-Ray was normal. A therapeutic trial of antituberculous treatment (Isoniazid, Rifampicin, Pyrazinamide and Ethambutol) was given. With anti-tuberculous treatment there is significant improvement. The ulcers have healed with depigmentation with flattening of the plaque and crusting.

#### Fig 3 here



He has been asked to continue 4 months of Isoniazid and rifampicin.

**Discussion:**

Skin is resistant to tuberculosis and cutaneous tuberculosis occurs when there is a breach in the skin. Although most tattoo art nowadays is done in the professional studios in western countries, while in India it is still done by road side artists, increasing the risk for complications. Allergic reactions, granulomas, infections including cutaneous tuberculosis and malignancies are complications that can arise at site of tattoo art.

Cutaneous TB is an uncommon form of extrapulmonary TB. The incidence of cutaneous TB however in India has fallen from 2% to 0.15%, while it is rare in developed countries. But recently, there has been increase in the incidence of cutaneous TB as a result of resurgence of multidrug-resistant strains of *M. tuberculosis* and HIV pandemic.

Cutaneous tuberculosis can occur due to spread of infection from tuberculosis of an underlying contiguous structure or from direct injury of the skin. Direct inoculation of the infection can occur following blunt trauma, needle stick injury, intralesional steroid injections, blepharoplasty, autopsy on a tuberculotic cadaver, site of acupuncture, site of vaccination of Bacillus Calmette-Guérin (BCG). It has been rarely reported following tattoo inoculation. The most common causative organism of cutaneous TB is *M. tuberculosis*. Other strains include *M. bovis*, *M. africanum*, *M. microti* and atypical mycobacteria.

Cutaneous tuberculosis occurring at the site of inoculation usually occurs 2-4 weeks after inoculation and presents as an erythematous papule or nodule. Histopathology at this stage reveals acute non-specific inflammatory reaction and mycobacteria are easily detected by acid-fast bacilli stain. After 3 to 8 weeks, tuberculoid appearance and caseation necrosis may be seen in biopsy. The initially multibacillary form becomes paucibacillary as host immunity develops, and the tuberculin skin test becomes positive. During this time Mycobacteria are difficult to identify by acid fast stain for tubercle bacilli. In our patient, a biopsy revealed inflammatory cellular infiltration with granuloma and foreign body reaction and was negative for tubercle bacilli by acid fast stain, suggesting a diagnosis of Tattoo granuloma and a diagnosis of cutaneous tuberculosis was missed.

This condition needs to be differentiated from infection with atypical mycobacteria, sarcoidosis, foreign body granuloma, syphilis and sporotrichosis.<sup>3</sup> Sarcoidosis and foreign body granuloma do not present with caseation granuloma by histology. Our case did not show caseation necrosis and was negative for acid fast bacilli, hence the diagnosis was missed on histopathology. Syphilis can be excluded by a serological test, and on histopathological examination shows endarteritis obliterans and predominant plasma cell infiltration. PAS stain and fungal culture can exclude sporotrichosis. Atypical mycobacteris is more common than *M. tuberculosis*, and closely resembles infections with *M. tuberculosis*, and are difficult to distinguish from *M. tuberculosis* by clinical manifestation, acid-fast bacilli stain or histopathology. But can be differentiated from *M. tuberculosis* as they grow on routine bacterial culture within 2 to 3 weeks, unlike *M. tuberculosis* requires which grows on incubation for 6 to 8 weeks.<sup>4</sup> No culture was done in our case. The PCR assay for mycobacterium may be required to establish the diagnosis when the results of mycobacterial culture and histopathology are negative when clinically suspicious.<sup>5</sup>

The treatment of cutaneous tuberculosis is similar to tuberculosis of other organs. Multiple antituberculous drug regime (including isoniazid and rifampin) should be used in combination for a minimum of 6 months. The lesions usually heal with scarring within 1~3 months of treatment.

**Conclusion:**

Cutaneous tuberculosis is a rare complication of tattoo art. People should be made unaware of complications, including the risk of acquiring tuberculous disease through this possible route. Thorough evaluation and investigation of the skin lesion occurring at the tattoo site is required to establish the diagnosis.

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