

## Case Report

# Tattoo: inoculating lupus vulgaris

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### ABSTRACT

Tattooing remains a common custom in various countries and cultures. Tattooing has been practiced in India since ancient era. It has tremendous religious and spiritual significance. In addition, tattooing for cosmetic purposes has become quite popular in recent times. With this increasing trend, there is also an increased risk of adverse effects. A tattoo is the deposition of exogenous pigment in to the dermis. Decorative tattoos are more common. Cutaneous reactions to tattoos are uncommonly reported in literature. We report an uncommon occurrence of tattoo inoculated cutaneous tuberculosis presenting as lupus vulgaris in young adult who responded to standard antitubercular therapy.

**Keywords:** Tattoo, Lupus vulgaris, Atypical mycobacteria, Cutaneous reactions

### INTRODUCTION

Tattoos are very popular in society today with their prevalence varying depending on the age group, ethnicity and location demographics, with the range thought to be between 5% to 40% in adults.<sup>1</sup> Tattoos can be classified as traumatic, cosmetic or decorative and their placement can be professional or amateur.<sup>2</sup> Cutaneous reactions are generally attributed to the metallic salts used in the preparation of the pigment. Allergic reactions to a particular pigment can manifest in several ways including allergic contact dermatitis and photoallergic dermatitis. Here, we have described a case of lupus vulgaris developing to black ink tattoo.

### CASE REPORT

An 18-year young man presented to the dermatology outpatient department at a tertiary care centre with complaints of reddish swelling over the tattoo site for last 6 months. He had been tattooed around 10 months back. After 4 months he developed redness and swelling over the tattoo which gradually progressed to involve whole

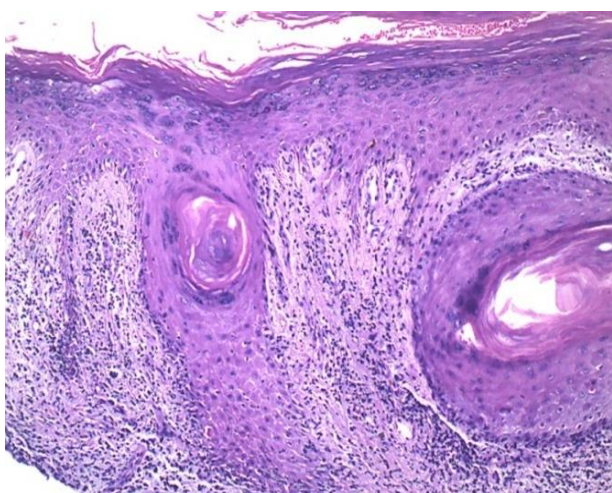
tattoo site. There were no other significant complaints in either the patient or in any other family members. On examination a single star shaped, scaly, erythematous plaque, confined to the pigment margins of tattoo, over the dorsal aspect of right hand was seen (Figure 1). His routine investigations and chest x-ray were normal. Montoux test was negative. There was no lymphadenopathy. His systemic examination was unremarkable.

We considered the possibilities of tattoo inoculated lupus vulgaris, subcutaneous mycosis, tattoo granuloma and tattoo sarcoidosis. Biopsy shows nodular tuberculoid granulomatous inflammation throughout the dermis. Granuloma consists of lymphocytes, plasma cells, histiocytes and epithelioid cells. Overlying epidermis shows moderate spongiotic psoriasiform changes (Figure 2). Examination of periodic acid-Schiff (PAS) stained slides failed to reveal any organisms. The diagnosis of lupus vulgaris is made on clinical and histopathological grounds. Anti-tubercular therapy comprising rifampicin, isoniazid, ethambutol and pyrazinamide for the first 2 months followed by rifampicin and isoniazid for 4

months was instituted and clinical improvement with scarring and residual tattoo pigment was evident at 6 months.



**Figure 1: Star shaped erythematous, scaly plaque over dorsum of right hand.**



**Figure 2: Histopathology showing nodular tuberculoid granulomatous inflammation throughout the dermis consists of lymphocytes, plasma cells, histiocytes and epithelioid cells. (H and E, 40 X).**

## DISCUSSION

Complications resulting from decorative tattoos are rare, but the incidence is increasing due to unregulated practices and variability in ink composition. Tattoo reactions can be divided into three main categories: inflammatory, infectious, and neoplastic. The most common skin reactions to tattoo reported in the literature include (1) a transient acute inflammatory reaction (focal oedema, pruritus, papules, or nodules) due to trauma of the skin with needles (2) medical complications such as superficial and deep local infections, systemic infections, allergic contact dermatitis, photodermatitis, granulomatous and lichenoid reactions, and (3) skin diseases localized on tattooed area (eczema, psoriasis,

lichen, and morphea).<sup>3</sup> Complications of tattoos can also be divided into cutaneous or systemic and can have an impact on the quality of life.<sup>4</sup> Cutaneous complications can occur either immediately or be delayed hypersensitivity reaction to tattoo ink. The infection may be introduced into the skin during the breach of the epidermal barrier. By using previously used and infected tattoo needle transmission of tuberculosis, syphilis, leprosy, hepatitis, HIV, vaccinia and HPV has also been recorded.

Next to these inflammatory skin reactions we have to consider also the possibility of the development of cutaneous conditions such as pseudolymphomatous reactions and pseudoepitheliomatous hyperplasia. The evolution in neoplastic lymphoma, squamous cell carcinoma, leiomyosarcoma, melanoma and keratoacanthoma is a rare outcome, since these neoplastic condition usually appears when they are fully evolved and not with “pre-malignant” condition.

Pathogenic mechanisms implicated in reactions to tattoo pigments include a localized, T-cell mediated, delayed hypersensitivity response (lichenoid and sarcoidal reaction). In addition, allergic reactions have been observed in the form of type I and III reactions, according to Coombs and Gell classification.<sup>5</sup>

Inoculation tuberculosis has been reported with various practices like piercing, sharing of infected syringes or needles, sexual intercourse, venepuncture, tooth extraction and tattooing. The factors implicated in the pathogenesis of tattoo inoculation tuberculosis include disruption of the skin barrier and unhygienic practices like sharing the same needle and ink and dilution of ink with tap water or saliva harboring mycobacteria. Tattoo inoculation lupus vulgaris is uncommon and there are only a few previous reports of the condition.

Dhawan et al reported tattoo inoculated lupus vulgaris in two brothers 3 months after tattooing.<sup>6</sup> Ghorpade reported three cases of cutaneous tuberculosis that presented 4–12 months after tattooing wherein the patients developed multiple papules and plaques overlying and extending beyond the tattoo site.<sup>7</sup> Recently, cutaneous non-tuberculous mycobacterial infections caused by *Mycobacterium haemophilum*, *Mycobacterium chelonae*, and *Mycobacterium fortuitum* at the tattoo site have been reported.<sup>8-10</sup>

Reactions to tattoos are increasingly being encountered in clinical dermatological practice. It is important for dermatologists to be aware of these reactions as their occurrence is bound to rise in future with increasing popularity of tattooing as a body art.

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