Tuberculous chancre in the present-day scenario: a case report

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Cutaneous tuberculosis is an extrapulmonary form of tuberculosis characterized by distinct clinical and histopathological presentations. Tuberculous chancre, a form of primary inoculation tuberculosis, primarily affects individuals with no natural or acquired immunity against the tubercle bacilli. It is commonly acquired after minor trauma or any traumatic procedures. Initially, it starts as a papule or nodule that gets ulcerated. The ulcer is typically painless, has undermined bluish margins, is friable in nature, and heals with atrophic scarring. If left untreated, it can lead to various complications. The tuberculous chancre responds well to antituberculous therapy. The emergence of resistant strains and the AIDS epidemic led to a global resurgence of cutaneous tuberculosis in the last century. Hence, awareness of the clinical manifestations of cutaneous tuberculosis is necessary for its early diagnosis and management. We report a case of tuberculous chancre in a 45-year-old previously healthy male.

Keywords: tuberculosis, chancre, cutaneous tuberculosis

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INTRODUCTION

Cutaneous tuberculosis is a relatively uncommon entity that constitutes around 1.5% of extrapulmonary tuberculosis. *Mycobacterium tuberculosis* is the main etiological agent; occasionally, *M. bovis* and Bacillus Calmette–Guérin (BCG) vaccination are implicated [1]. Cutaneous involvement occurs as a result of exogenous inoculation, contiguous spread from the underlying focus, or through hematogenous spread from distant foci. The clinical manifestations vary depending on the infection route, the patient's immune status, the pathogenicity of the virulent strain, and whether the patient has previously been sensitized to the pathogen [2].

CASE PRESENTATION

A 45-year-old South Indian male farmer presented with a small, asymptomatic, raised skin-colored lesion over his right forearm for one month, which ulcerated after ten days. Later, he also developed two more similar swellings over his right forearm proximally, ten days after the development of the primary lesion. The patient was not aware of any trauma prior to the onset. His past medical history and family history were unremarkable. On examination, he had a single, well-defined ulcer with undermined edges and violaceous borders, floored with granulation tissue and yellowish slough. He had two non-tender, soft, skin-colored 1 by 1 cm proximal to the ulcer, associated with ipsilateral epitrochlear lymphadenopathy (Figure 1).

The tissue smears taken from the ulcer revealed a few acid-fast bacilli (Figure 2). The biopsy of the lesion showed the collection of histiocytes with many multinucleated giant cells forming ill-defined granulomas surrounded by lymphocytic infiltrates in the deep dermis (Figure 3). The tuberculin skin test was positive, with 15 mm induration after 48 hours. Chest radiograph and abdominal ultrasound

Figure 1. A single well-defined 1×1 cm ulcer with undermined edges and violaceous borders, floored with granulation tissue and yellowish slough. The arrow marks show skin-colored swellings proximal to the tuberculous chancre.

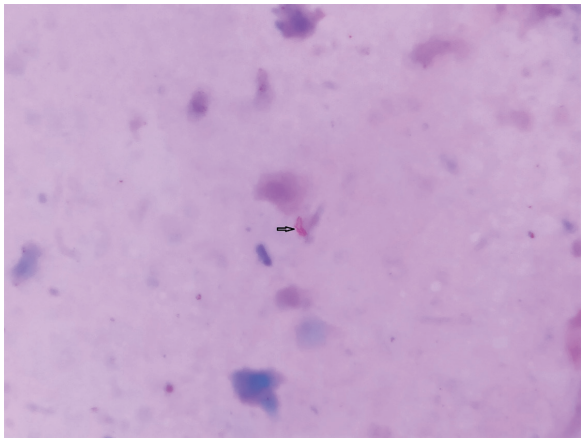

Figure 2. Acid-fast bacilli from the tissue smear.

did not find any other tuberculous foci. The acid-fast bacillus culture was negative.

The diagnosis of tuberculous chancre was made based on the clinical evolution of lesions supported by a positive tuberculin test, demonstration of acid-fast bacilli on cytology, and granulomatous histopathology. The patient was started on antituberculous therapy (rifampicin, isoniazid, pyrazinamide, and ethambutol) according to India's Revised National Tuberculosis Control Programme guidelines. The patient was reviewed after six weeks, and the ulcer healed with an atrophic scar (Figure 4).

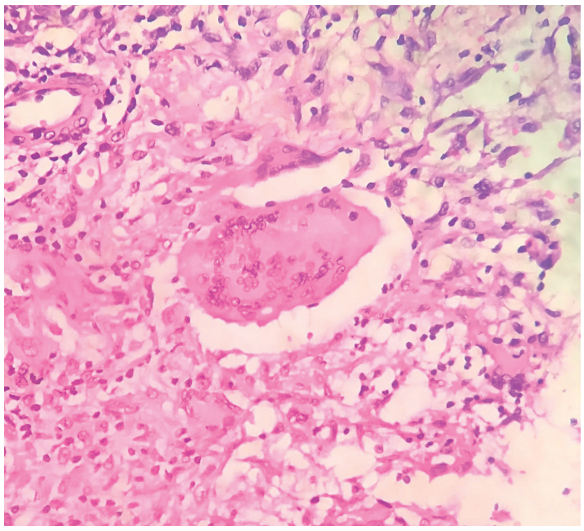

Figure 3. The deep dermis shows histiocytes' collection with many multinucleated giant cells forming ill-defined granulomas surrounded by lymphocytic infiltrates.

DISCUSSION

Cutaneous tuberculosis is classified by Beyt *et al.* into inoculation tuberculosis, secondary tuberculosis, hematogenous tuberculosis, and eruptive tuberculosis [3]. Based on the bacillary load, it can be classified into paucibacillary and multibacillary forms. The direct inoculation of the bacilli after trauma producing cutaneous tuberculosis at that site is relatively rare. It can cause tuberculous chancre, tuberculosis verrucosa cutis, and, very rarely, lupus vulgaris [2].

Tuberculous chancre requires a break in the normal skin barrier function of a person who has no natural or acquired immunity against the tubercle bacilli. Children, contacts of pulmonary tuberculosis-positive patients, individuals who did not receive BCG vaccination, and laboratory and healthcare workers are at increased risk of

Figure 4. The ulcer healed with atrophic scarring six weeks after initiating antituberculous treatment.

developing tuberculous chancre. The bacterium most commonly enters through minor abrasions or via needle-stick injuries after procedures such as tattooing, circumcision, ear piercing, intramuscular injection, tooth extraction, and acupuncture. Other reported modes of transmission include mouth-to-mouth artificial respiration, sexual transmission, and insect bites [2,4].

Usually, within 2–4 weeks after inoculation of the tubercle bacilli, a painless inflammatory papule or nodule develops, which soon evolves into an ulcer. The ulcer is typically painless, shallow, and friable, with undermined bluish margins, a coarse granulomatous base, and a tendency to bleed. By 3–8 weeks, lymphatic dissemination occurs, resulting in regional lymphadenopathy, which may break down to form a discharging sinus. The primary tuberculous complex of skin comprises the tuberculous chancre and the associated regional lymphadenopathy [4,5]. Tuberculous chancre has variable evolution and heals after 3 to 12 months with atrophic scarring [6]. In the eyes, it can produce shallow conjunctival ulcers or tumor-like granulomas. Other rare presentations include lid edema, lid ulcer, preauricular lymphadenitis, painless gingivitis, dactylitis, and paronychia [2].

The tuberculin skin testing is initially negative but becomes positive once the regional lymphadenopathy sets in [5]. On histopathology, the early lesion shows numerous bacilli with acute neutrophilic inflammation. By 3–6 weeks, caseating granulomas appear, coinciding with the disappearance of the tubercle bacilli [7]. The gold standard method of diagnosing cutaneous tuberculosis remains the culture of the organism, offering the additional advantage of assessing drug susceptibility. The polymerase chain reaction test has good sensitivity and specificity in diagnosing cutaneous tuberculosis, though its inability to distinguish the dead from live bacilli and its high cost limit its use [8].

The untreated tuberculous chancre can progress to lupus vulgaris, tuberculosis verrucosa cutis, scrofuloderma, or acute military tuberculosis. Hence, early diagnosis and treatment are imperative to avoid complications [4]. The differential diagnoses include sporotrichosis, blastomycosis, histoplasmosis, coccidioidomycosis, leishmaniasis, actinomycosis, syphilis, yaws, tularemia, cat scratch disease, and Buruli ulcers [2,9].

The role of the BCG vaccine in preventing cutaneous tuberculosis is not well established. However, according to Zodpey *et al.*, the BCG vaccine has an efficacy of 60.9% in preventing cutaneous tuberculosis. In the case of cutaneous tuberculosis, a rapid clinical response is usually observed once antituberculous treatment is started [8]. However, if there is no significant response within five weeks after starting antituberculous therapy, the possibility of other differential diagnoses or MDR-TB should be considered [10].

Though tuberculous chancre is rare, its incidence is often underestimated due to misdiagnosis. Hence, it warrants a high index of suspicion. The tuberculous chancre indicates the poor living conditions of the patient; the physician should ask about any close contact with active pulmonary tuberculosis patients or instruments contaminated with tubercle bacilli. In the HIV epidemic era where cutaneous tuberculosis is showing resurgence, a diagnosis of tuberculous chancre should be considered for any adult or child presenting with a painless, non-healing ulcer associated with regional lymphadenopathy.

Conflict of interest: None declared.

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