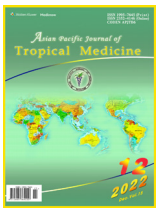

Case Report

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Diagnostic dilemma in a patient with chronic non-healing ulcer on leg: A case report

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ABSTRACT

Rationale: Though cutaneous tuberculosis accounts for a small proportion of all tuberculosis cases, it becomes an important health issue considering its high prevalence in tropical countries. Due to its myriad clinical manifestations, it becomes difficult to diagnose and may pose a great diagnostic dilemma.

Patient concerns: A 17-year-old male complaint of ulcer-proliferative lesion on the left lower leg for 5 years. There was no history suggestive of tuberculosis. On cutaneous examination, single well-defined erosiocrustive plaque of size 14 cm×13 cm with yellowish adherent crust presented over the left lower leg. The underlying surface shows ulceration after removing the crust.

Diagnosis: Ulcerative *Lupus vulgaris*.

Interventions: Anti-tubercular drug therapy (isoniazid, rifampicin, pyrazinamide and ethambutol).

Outcomes: Lesion showed dramatic improvement after one month of anti-tubercular therapy.

Lessons: Dermatologists should be aware of variable clinical presentations of cutaneous tuberculosis so as to diagnose it timely and correctly.

KEYWORDS: Cutaneous tuberculosis; Mantoux; Ulcerative *Lupus vulgaris*

1. Introduction

Cutaneous tuberculosis (TB) accounts for 1.5% of all extrapulmonary TB cases[1]. Although it represents only a small proportion of all cases of TB; nevertheless, considering the high prevalence of TB in India, the number becomes significant. According to WHO global tuberculosis report 2017, TB in pediatric age group in India accounts for 8.9% of all cases[2]. It continues to be one of the most elusive and difficult disease for dermatologists to diagnose due to its variable clinical presentations. Herein, we report a case of chronic non-healing ulcer on leg which later turned out to be cutaneous TB.

2. Ethical approval and consent to participate

Informed consent was obtained from the patient for the publication of this case report and any accompanying images.

3. Case report

A 17-year-old male patient complained of ulcer-proliferative lesion on the left lower leg for 5 years. Initially the lesion was around the size of a pea. There was a history of pus and blood discharge on and off from the lesion. The patient had no history of trauma, fever, weight loss, night sweats, chronic cough and diarrhoea. He had no history of diabetes mellitus, hypertension or any other chronic illness. The patient and his family members had no history of TB. He did not receive bacille Calmette-Guerin vaccination. He received multiple treatment in the form of oral antibiotics as well as homeopathic medicine for the last two years without any improvement.

General physical examination was within normal limits. On

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cutaneous examination, single well-defined erosiocrustive plaque of size 14 cm×13 cm with yellowish adherent crust presented over the left lower leg (Figure 1A). On removing the crust, underlying surface showed ulceration. Periphery of the plaque showed brown to black colored pigmentation. On palpation, tenderness was present. There was no lymphadenopathy. Rest of the cutaneous and systemic examination was within normal range.

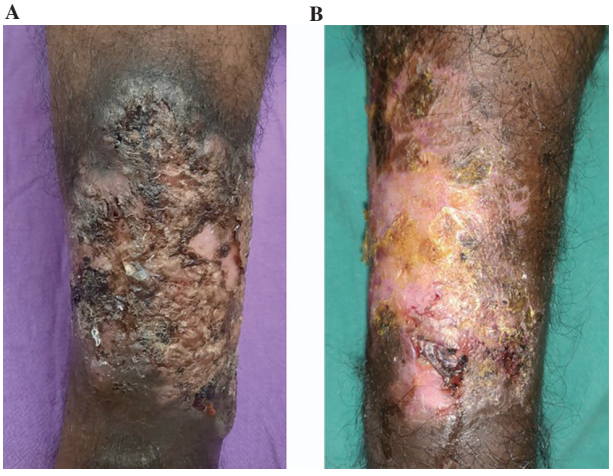

Figure 1. (A) Well-defined erosiocrustive plaque with yellowish adherent crust and brown to black colored pigmentation in the periphery present over the left lower leg and (B) dramatic improvement in the ulcer after 1 month of anti-tubercular treatment in a 17-year-old male patient.

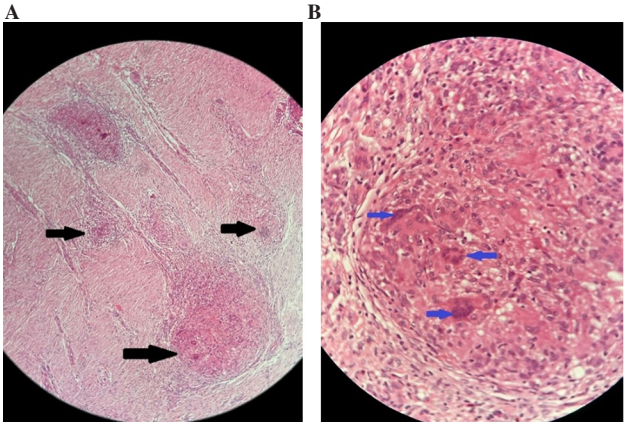

Figure 2. (A) Epitheloid cell granuloma (black arrow) in the dermis (hematoxylin and eosin staining, 40×magnification); (B) higher magnification showing foreign body giant cells (blue arrow). (hematoxylin and eosin staining, 400× magnification).

On the basis of history and examination, differential diagnosis of ulcerative *Lupus vulgaris*, pyoderma gangrenosum, vasculitic ulcer and deep fungal infection were kept. Complete blood count, liver function test, kidney function tests and fasting blood glucose were within normal limits. Hepatitis B surface antigen (HBs Ag), hepatitis C antibodies (anti-hepatitis C virus) and HIV were negative. Erythrocyte sedimentation rate was raised. Mantoux was 12 cm×12 mm. ANA, c-ANCA and p-ANCA were within normal range. Chest X ray, ultrasound abdomen and ultrasound doppler of bilateral lower limb (arterial and venous) were within normal range.

An initial skin biopsy from the ulcer showed pigment incontinence, perivascular and peri appendageal chronic inflammatory infiltrate. In view of the non-specific changes repeat skin biopsy was done from the ulcer which showed hyperkeratosis. Mid dermis showed epitheloid cell granuloma (Figure 2A) along with foreign body giant cells (Figure 2B). However, stain for acid fast bacilli was negative. Truenat tuberculosis test of biopsy specimen was negative. Culture for bacteria shows *Mycobacterium tuberculosis* complex. However, species identification could not be done. Fungal culture was negative.

On the basis of history, examination and investigations, the patient was diagnosed as ulcerative *Lupus vulgaris* (LV) and started on anti-tubercular drug therapy consisting of isoniazid, rifampicin, pyrazinamide and ethambutol. After one month of anti-tubercular drug therapy, the ulcer showed dramatic improvement (Figure 1B).

4. Discussion

Cutaneous TB is pleomorphic in nature. Morphological variation can range from infiltrated papule to nodule to plaque to ulcer. Differential diagnosis of ulcer over the lower limb includes Buruli ulcer, scrofuloderma, TB gumma, LV, pyoderma gangrenosum and venous ulcer. LV is the most common form of cutaneous TB in adult while scrofuloderma is most common type in children[3]. Scrofuloderma arises due to the contiguous spread of an underlying TB focus to the overlying skin and histopathology shows poorly formed granulomas with intense caseation necrosis and acid fast bacilli[4]. Tuberculous gumma results from disseminated infection by the hematogenous route. Clinically it presents as dermal or subcutaneous nodules which break down to form sinuses or undermined ulcers. Presence of tubercules with widespread caseation necrosis and copious amount of acid-fast bacilli is seen on histopathology[4]. Pyoderma gangrenosum is a type of neutrophilic dermatosis characterized by the painful cutaneous ulcer with violaceous and undermined border. Histopathology typically shows dense neutrophilic infiltrate with suppuration[5]. Buruli ulcer is caused by *Mycobacterium ulcerans*, which is classified under atypical *Mycobacterium*. It is characterized by the presence of deep ulcer with undermined edges. Confirmation of diagnosis requires isolation of *Mycobacterium ulcerans* in culture or positive PCR[6]. Venous ulcers usually have well-defined borders with surrounding skin may be hyperpigmented or erythematous. Ankle edema and varicose veins are commonly found. Ultrasound doppler is done

to characterize venous abnormalities[7]. On the basis of history, examination and investigations of the above differential diagnosis were excluded and diagnosis of LV was made. LV is acquired either exogenously by direct inoculation of *Mycobacterium tuberculosis* into the skin or endogenously by hematogenous or lymphatic spread from an underlying infected focus in a sensitized host with moderate to high immunity. It typically presents as well-defined skin colored to erythematous plaque with healing and scarring in one area and activity in another area. Various morphological variants of LV have been described such as classic plaque, hypertrophic, ulcerative, atrophic and papulonodular. Plaque type is the most common form whereas ulcerative variant is least common[8]. Our patient was also diagnosed as ulcerative LV which is a rare variant. In India, LV is mostly seen in the lower half of the body, involving legs, buttock, thigh, knees and foot[3]. Similarly, our patient also had lesion on the lower leg. Histopathology of LV typically shows tuberculoid granulomas composed of epitheloid cells, giant cells and lymphocytes with scant or absent central caseation. Tubercle bacilli are difficult to demonstrate. Similar histopathological findings were noticed in our patient also.

Ulcerative form of LV is the least common type. It is characterized by necrosis, scarring and ulceration. Destruction of deep tissue and cartilage may lead to gross deformities and contracture. Rarely squamous cell carcinoma has also been reported. There are few case reports of ulcerative LV on the lower limb[9-11]. It should be differentiated from other causes of ulcer on the lower limbs as discussed above. Correct diagnosis requires histopathological examination, culture and exclusion of other causes.

5. Conclusions

Dermatologists must be aware of the myriad clinical presentation of cutaneous TB. The present case is highlighted due to rare incidence of ulcerative *Lupus vulgaris* and the large size of the ulcer, which in long term may lead to disfigurement, deformity and squamous cell carcinoma. In a country like India, where TB is endemic, dermatologists should have a high index of suspicion to diagnose it correctly and prevent any further deformity.

Conflict of interest statement

The authors declare that there is no conflict of interest.

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Authors' contributions

MV: Concept, design, literature review, editing, supervision; MA: Concept, design, writing-original draft, literature review, editing; SS: Concept, design, editing. All author read and approved the final manuscript.

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