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**Case Report**

# Multifocal tuberculosis verrucosa cutis

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## Abstract

Tuberculosis Verrucosa Cutis (TBVC), a verrucous form of cutaneous tuberculosis, occurs from inoculation of tubercle bacilli into the skin of a previously sensitized patient with moderate to high degree of immunity. This disease is now rare in western countries and in India; the incidence of cutaneous tuberculosis has fallen from 2% to 0.15%. However two recent studies from the Indian subcontinent have reported the prevalence of cutaneous tuebrculosis as 0.7% (Varshney et al) and 0.26% (Patra et al)

This case is reported to demonstrate the indolent and extensive nature of tuberculosis verrucosa cutis in an immunocompetent individual and to highlight the importance of histopathology and empirical antitubercular therapy as an adjunct diagnostic tool.

**Keywords: TBVC, Cutaneous TB, Multifocal**

## Case synopsis

A 48-year-old man presented with a 15-year history of slowly enlarging asymptomatic plaques over the bilateral feet and buttocks. He initially noticed pea sized painless skin colored papules over his bilateral soles, which gradually increased in size over months. Similar lesions also appeared over the buttocks. The patient denied a history of trauma to the feet even though he used to frequently walk barefoot. There was a history of intermittent discharge of yellow colored pus from the lesions. There was no history of evening temperature elevations, night sweats, chronic cough, or weight loss. One of the patient's close relatives had untreated pulmonary tuberculosis. The patient was otherwise healthy. The patient had been treated initially for a few months with many topical agents (unknown nature) by local practitioners, but with no benefit. Owing to the slow progression of his condition he did not seek medical advice any further. General physical examination was normal with no evidence of lymphadenopathy. A BCG scar was present over the left deltoid region.

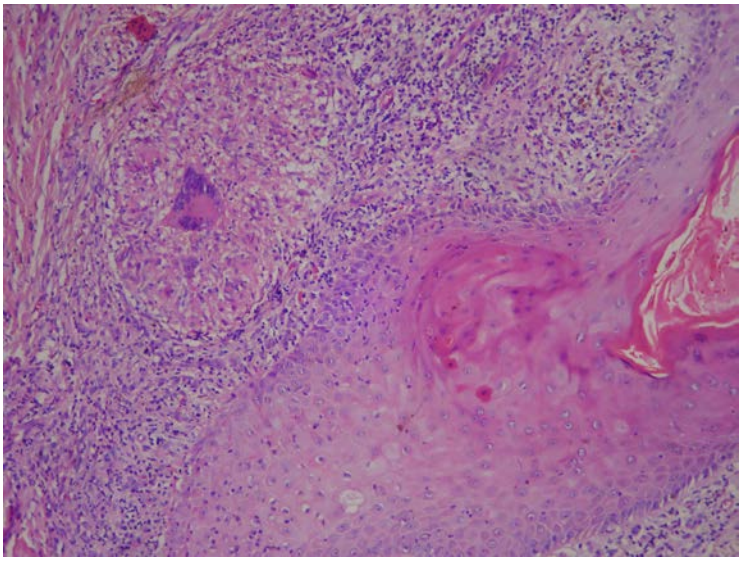
**Figure 1.** Verrucous plaques over bilateral buttocks and extending over right thigh

Cutaneous examination revealed well defined, hyperkeratotic verrucous plaques present over the entire surface of bilateral buttocks and feet. The plaque over the buttocks extended 15 cm over the anterior aspect of the

upper third right thigh and 20 cm over the posteromedial aspect of right thigh in an irregular manner. The plaques over the feet covered almost the entire sole. The surface had a dusky red color with presence of fissures discharging purulent material. Areas of atrophy and scarring were present in between. Black dots could be seen at a few places. The borders were irregular and raised. On palpation the plaques were firm, non-tender, and of normal temperature. The rest of systemic examination was within normal limits.

**Figure 2.** Verrucous plaques over bilateral feet. **Figure 3.** Verrucous plaques over bilateral soles

Standard tuberculin purified protein derivative tested highly positive (24mm x 12mm); erythrocyte sedimentation rate (Westergren) was 40 mm/1 hr; C- reactive protein was 12 mg/l; total and differential leukocyte count, hemogram, blood sugar, HbA1C, x-ray of the chest, and ultrasound of abdomen were normal. Radiographs of feet and buttocks showed soft-tissue swelling without bony involvement. Antibodies/antigen for human immunodeficiency virus, HIV 1 and II, were nonreactive. A 10% potassium hydroxide mount (KOH) from a scraping from the margin of the plaque was negative for mycelia/spores.



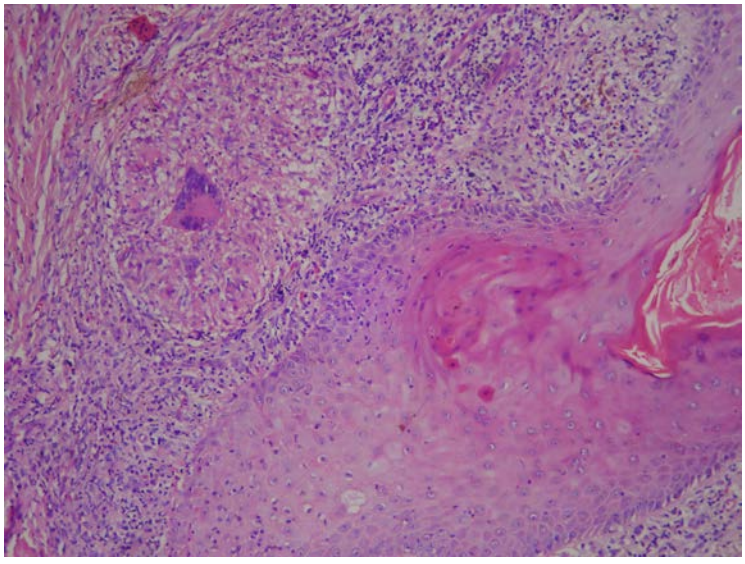


**Figure 4.** H&E (100 X): hyperkeratosis, acanthosis, pappillomatosis, dermal epitheloid cell granuloma **Figure 5.** H&E (400X): dermal epitheloid cell granuloma with overlying hyperkeratosis

Hematoxylin-eosin stained sections from the plaques depicted marked hyperkeratosis, mild to moderate acanthosis, and papillomatosis. Dermis showed mononuclear infiltrate mainly in the upper part. Epithelioid cell granulomas comprising Langhans giant cells were prominent in mid dermis. Ziehl Neelson stain and PCR for mycobacteria was negative. Periodic acid Schiff (PAS) staining for fungus was negative. Culture for mycobacteria and fungi revealed no growth after 6 weeks.

Based on these clinical features, histopathology and Mantoux test, a diagnosis of tuberculosis verrucosa cuits was made. The patient was treated with six months of therapy with INH 300mg plus rifampicin 600mg supplemented with an initial 2 months

of ethambutol 1000mg plus pyrazinamide 1500mg daily. The patient was evaluated every week. The perceptible regression of all the lesions at 4 weeks prompted the continuation of the treatment to complete the scheduled regimen for a period of 6 months. (Figures 6, 7, 8).

A complete resolution of lesions was recorded after completion of the therapy.

**Figure 6.** Resolution of the verrucous plaques post anti-tubercular therapy

**Figure 7.** Resolution of the verrucous plaques post anti-tubercular therapy

**Figure 8.** Resolution of the verrucous plaques post anti-tubercular therapy

## Discussion

Cutaneous tuberculosis forms a small proportion of extrapulmonary tuberculosis. TBVC is a form of secondary (reinfection) tuberculosis occurring in presensitized individuals with a moderate to high degree of immunity. It has been known as prosector's wart, verruca necrogenica, anatomic tubercle, lupus verrucosus, and butcher's wart [1]. The incidence of cutaneous tuberculosis has fallen from 2% to 0.15% [2]. It commonly occurs on hands but children have predilection for lower extremities [3].

The lesions are typically asymptomatic and start as a small papule or papulo-pustule progressing to warty or hyperkertotic plaques. The center may involute to leave behind a white atrophic scar. The plaques are firm and the verrucous surface often has fissures and may discharge pus. Regional lymph nodes are not usually enlarged [1]. Hematogenous [4], tumor-like [3,5], and exuberant granulomatous [5] have also been described. Psoriasiform, sporotrichoid, and keloidal appearances of tuberculosis verrucosa cutis have also been reported and sometimes it can even clinically mimic lupus vulgaris [6].

The histopathological features are characterized by marked pseudoepitheliomatous hyperplasia of the epidermis with hyperkeratosis and a dense inflammatory cell infiltrate consisting of neutrophils, lymphocytes, and mid dermal epitheloid cell granuloma [1,7].

The clinical differential diagnosis of tuberculosis verrucosa cutis includes chromoblastomycosis and verrucous carcinoma, which can be differentiated histopathologically by the presence of 6-l2 μm round to oval muriform bronze-colored forms with central hyperplasia septation (sclerotic bodies) in the former and the presence of exophytic and endophytic epithelial proliferations forming crypts and sinuses with minimal atypia and few mitotic figures in the latter [8].

The laboratory diagnosis of paucibacillary forms of cutaneous tuberculosis such as tuberculosis verrucosa cutis and lupus vulgaris is difficult. Acid fast bacilli are rarely demonstrable and culture has low sensitivity in detecting these organisms. Demonstration of acid-fast bacilli on the smear prepared from the material of the lesion or culture on Lowenstein–Jensen medium seldom yields positive results [9]. The role of polymerase chain reaction (PCR) tuberculosis verrucosa cutis in the

diagnosis is still uncertain, although according to some authors the detection of the bacilli by polymerase chain reaction is highly sensitive and specific [10]. Various workers have reported their results with DNA PCR in diagnosis of cutaneous tuberculosis. Tan et al found that the PCR was 100% sensitive and specific in multibacillary cutaneous tuberculosis but in paucibacillary tuberculosis, DNA-PCR positivity rates were 55% for tuberculosis verrucosa cutis and 60% for lupus vulgaris[11]. The overall sensitivity was found to be 73%.[15] A recent study from India showed that the sensitivity of DNA PCR is 25% in the diagnosis of cutaneous tuberculosis[12] [In the event of inconclusive specific tests, the diagnosis is based on correlation between clinical appearance and histopathological findings along with clinical response following antituberculous treatment [13]

To the best of our knowledge only two such cases of multifocal tuberculosis verrucosa cutis had been reported earlier in immunocompetent and otherwise healthy individuals [14,15].

Prasad *et al*. in 2002 reported a similar case with multifocal involvement but the patient had microcytic normochromic anemia with a hemoglobin 5.6 g% [16].

**Table 1.** Cases of multifocal tuberculosis verrucosa cutis

| Author/Year | Age/ Sex | Country | Duration | Site | Histology | Culture for mycobacteria | Response to ATT |
|---|---|---|---|---|---|---|---|
| Rajan J et al, 2011[13] | 17,M | India | 2 years | Left foot | Marked hypertrophy of the epidermis and mid-dermal granulomata with Langhans giant cells | N.A. | + |
| Damevska K et al,2013[14] | 65, F | Macedonia | 60 years | Bilateral upper limbs and right lower limb | Granulomatous inflammation in dermis with small amounts of caseation necrosis | Negative | + |
| Prasad et al, 2002[15] | 35, M | India | 2 years | Left hand; left foot | Hyperkeratosis, acanthosis and mid-dermal tuberculoid granulomas | Negative | + |
| Present case | 48, M | India | 15 years | Bilateral buttocks, feet | Marked hyperkeratosis, acanthosis, papillomatosis. Upper dermal mononuclear infiltrate. Mid dermal epithelioid cell granulomas comprising Langhans giant cells | Negative | + |

M: male; F: female; ATT: antitubercular therapy; N.A.: not available

# Conclusion

In cases of strong suspicion of M. tuberculosis infection and inconclusive specific tests, a therapeutic trial of anti-tubercular therapy can aid in the diagnosis. This case highlights the significance of histopathology and empirical anti-tubercular therapy in diagnosing cases of paucibacillary cutaneous tuberculosis. Moreover, the case is unusual because of the extensive involvement in an immunocompetent individual.

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