

Case Report

Tuberculosis verrucosa cutis: case report of a diagnostic challenge

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ABSTRACT

Cutaneous tuberculosis occurs by either exogenous inoculation in a previously sensitized or non-immune host or endogenous spread from an internal focus by contiguous, hematogenous or lymphatic route. Inoculation occurs at sites of minor wounds or abrasions, sometimes from the patient's own sputum. Cutaneous tuberculosis includes lupus vulgaris and tuberculosis verrucosa cutis (TVC) at one end and scrofuloderma and tuberculosis cutis orificialis at the other end with decrease in cell-mediated immunity across the spectrum. Of various cutaneous forms, we report a case of tuberculosis verrucosa cutis in a 14 year old girl who presented with a hyperpigmented verrucous plaque over foot since three years. Histopathological characteristics, GeneXpert and response to antitubercular therapy confirmed the diagnosis.

Keywords: Cutaneous tuberculosis, Tuberculosis verrucosa cutis, Daily fixed dose combination

INTRODUCTION

Tuberculosis continues to be a major public health problem in both developing and developed countries, more so with the advent of human immunodeficiency (HIV) syndrome.¹ Cutaneous tuberculosis constitutes a minor proportion (1.5%) of extrapulmonary tuberculosis.² It is a mycobacterial infection caused by *Mycobacterium tuberculosis* (in a majority of cases) or *Mycobacterium bovis* and under certain conditions the *Bacillus Calmette Guerin* (BCG), the attenuated strain of *M. bovis*. Current prevalence of cutaneous tuberculosis in India is 0.7% of all skin out-patients.³ Tuberculosis verrucosa cutis (TVC) was originally termed *verruca necrogenica* by Wilks and Poland in 1862. Other synonyms employed for this condition are warty tuberculosis, lupus verrucosa and tuberculosis cutis verrucosa. High risk groups are physicians, pathologists, laboratory workers, farmers, butchers and veterinarians (synonyms: prosector's wart,

post-mortem wart, anatomical tubercle, cadaver wart and butcher's wart). Laennec published the first description of a prosector's wart in 1826, based on his own disease contracted in the autopsy room. Most cases of TVC are due to exogenous re-infection in individuals with marked cutaneous hypersensitivity and good cell mediated immunity.

TVC shows a male preponderance (M:F ratio 2:1). The asymptomatic lesions usually occur at sites of trauma and have frequently been reported on the hands in Europe and on the lower limbs in the eastern countries. In India, walking barefoot and the habit of spitting are considered predisposing factors.⁴ Children living in lower socioeconomic environment are generally malnourished and get infected by playing or sitting on ground contaminated with tuberculosis sputum. Lesions are commonly seen over feet in pediatric population, while arms are more likely to be involved in adults.⁵ Herein we

report a female child presenting with a verrucous lesion on foot.



Figure 1: Well defined, hyperkeratotic, verrucous plaque of size 8 cm × 6 cm, on the right foot.



Figure 2: Resolving plaque after intensive phase of ATT.

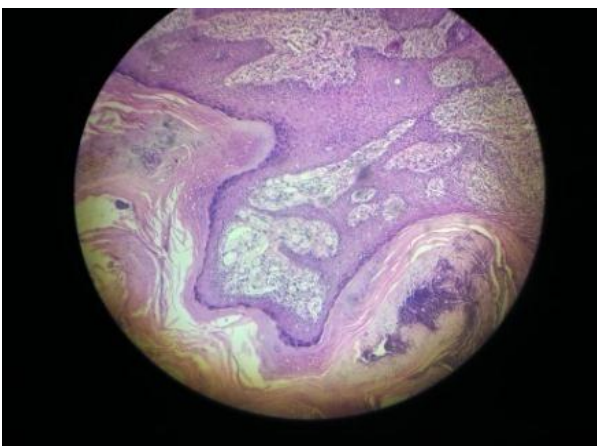


Figure 3: Histopathology from skin lesion showing marked hyperkeratosis, parakeratosis and acanthosis. (H & E, 10 X).

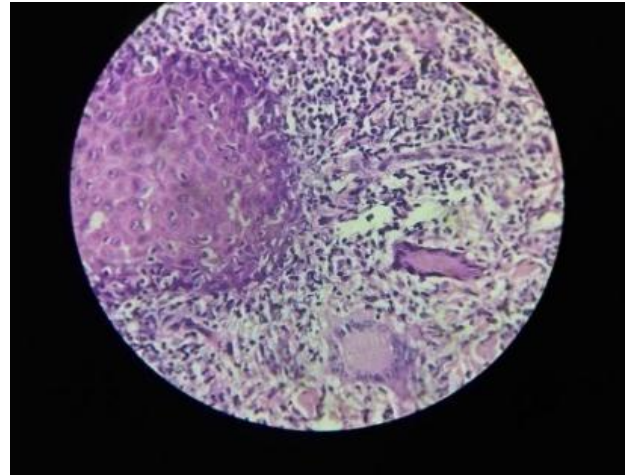


Figure 4: Dense and diffuse collection of lymphocytes, plasma cells and few Langhans giant cells H & E, 40X.

CASE REPORT

A 14 year old female adolescent came with an elevated, asymptomatic lesion over right foot gradually increasing in size over the past 3 years. She hailed from a family with low socio-economic status living in a crowded slum area and her younger sister was on anti-tuberculous treatment (ATT) since five months for tuberculous cervical lymphadenopathy. The patient denied personal history suggestive of tuberculosis. The lesion had been treated with repeated courses of oral and topical antibiotics and steroids without relief. Her general and systemic examination was unremarkable. BCG scar was noted over left deltoid. Dermatological examination revealed a single non-tender, oval, thick, firm hyperpigmented plaque with verrucous surface and central erythematous zone, approximately 6 cm × 4 cm in size over dorsum of right foot proximal to fourth and fifth toes, extending to involve little toe (Figure 1). There was no discharge on manipulation. Diascopy was not contributory. Regional (inguinal) lymph nodes were not palpable. Clinical differential diagnoses considered were cutaneous tuberculosis, viral wart, deep fungal infection (blastomycosis, chromoblastomycosis, chromomycosis), verrucous carcinoma, inflammatory dermatoses (lichen simplex chronicus and hypertrophic lichen planus). Routine investigations like hemogram, erythrocyte sedimentation rate were normal. Sputum for Acid fast bacilli (AFB), Mantoux test and HIV serostatus were negative. Other radiological investigations revealed no abnormalities. Histopathological examination of lesional skin was performed. The epidermis showed hyperkeratosis, parakeratosis, papillomatosis and irregular acanthosis (Figure 3). Superficial dermis revealed dense and diffuse collection of lymphocytes, plasma cells and few polymorphonuclear cells along with few Langhans giant cells (Figure 4). Well-formed granulomas and caseation necrosis were not seen. Fungal and mycobacterial stains and cultures were negative. A positive GeneXpert assay (PCR) helped us to clinch the diagnosis. She was started on six months anti-tuberculous

treatment with fixed dose combination (Isoniazid 75 mg + Rifampicin 150 mg + Pyrazinamide 400 mg + Ethambutol 275 mg) 2 tablets daily for 2 months in intensive phase followed by continuation phase (Isoniazid 75 mg + Rifampicin 150 mg + Ethambutol 275 mg) fixed dose combination 2 tablets daily for next 4 months. Currently she has completed intensive phase with significant regression of the lesion (Figure 2). Additionally, one session of cryotherapy with liquid nitrogen has been performed to hasten resolution of residual lesions.

DISCUSSION

Cutaneous TB has re-emerged during the last couple of decades with increasing incidence of pulmonary TB and MDR-TB.⁵ Children and immunocompromised adults are at higher risk for cutaneous TB which may present in diverse clinical forms. Four major categories are recognized: (1) Inoculation from an exogenous source (tuberculous chancre, tuberculosis verrucosa cutis) (2) Endogenous cutaneous spread, contiguous or by autoinoculation (tuberculosis orificialis, scrofuloderma) (3) Hematogenous (lupus vulgaris, acute military, tuberculous gumma/abscess) (4) Tuberculids (lichen scrofulosorum, erythema induratum, papulonecrotic tuberculid, erythema nodosum).⁶ Of all the clinical types, scrofuloderma is the most commonly encountered followed by lupus vulgaris and then TVC.²

Most cases of TVC are due to accidental exogenous inoculation of *M. tuberculosis* in previously infected or sensitized individuals with moderate to high degree of slowly evolving cell mediated immunity. Lesions begin as an asymptomatic warty papule which may be mistaken for a viral wart. Slow growth and irregular peripheral extension results in central involution with an atrophic scar or a massive papillary excrescence with fissures. Pus discharge may be present. Lesions are usually solitary without regional lymphadenopathy unless secondary bacterial infection occurs. In the absence of treatment, lesions are indolent, persisting for years with eventual spontaneous resolution and scarring. The number of bacteria within the lesions is small (paucibacillary) attributable to high levels of CMI and this renders diagnosis all the more challenging. The major caveat is the frequently atypical clinical presentations simulating other infective, inflammatory or neoplastic conditions which results in delay or deprivation of treatment. Differentiation of cutaneous TB from other granulomas of skin (sarcoidosis, leprosy, fungal or non-tuberculous mycobacteria) is difficult because of insufficient AFB in the tissue, as seen in our case.⁷ To further confound the diagnosis, tubercle bacilli were conspicuously absent on microscopy and histopathology and Mantoux test was negative. Thus, quite often, more than one procedure is required for confirmation. The GeneXpert MTB/RIF test based on real time PCR has been demonstrated to be rapid with a high sensitivity in smear negative pulmonary TB (especially HIV co-infection).⁸ Although these

characteristics make it a potentially attractive tool for extra-pulmonary specimens like skin, reports of its utility have been conflicting.⁹ Fortunately, in our case, GeneXpert came to the rescue by clinching the diagnosis where smear microscopy, culture and histopathology failed.

In cases with strong clinical suspicion but negative or equivocal laboratory tests, the dramatic response to ATT (improvement within 4 weeks) is considered a valuable diagnostic criterion.¹⁰ Standard ATT is the treatment of choice and lesions usually resolve by 4-5 months except in the event of isoniazid or rifampicin resistance (which is rare in cutaneous TB). According to updated RNTCP guidelines, daily fixed dose combination is prescribed as per appropriate weight bands.¹⁰

Surgical excision, cryotherapy, electrocautery and curettage may also be performed to debulk hypertrophic and verrucous lesions.

The aim of this case report is to emphasize that without a high index of suspicion and meticulous use of all available diagnostic facilities, cutaneous TB may remain undiagnosed and untreated for lengthy periods even in high-burden settings like India.

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REFERENCES

1. Padmavathy L, Rao LL, Pari T, Ethirajan N. Lupus vulgaris and tuberculosis verrucosa cutis (TBVC)-clinical, pathological and epidemiological study of 71 cases. *Indian J Tuberculosis.* 2008;55:203-9.
2. Singhal A, Sonthalia S. Cutaneous TB in children: the Indian perspective. *Ind J Dermatol Ven Lep.* 2010;76:494-503.
3. Yates VM, Walker SL. Mycobacterial infections. *Rook's Textbook of Dermatology.* 4 Volume. 9th edition. Wiley-Blackwell; 2016.
4. Padmavathy L, Rao LL, Ethirajan N, Rao R. Tuberculosis verrucosa cutis: foot with miliary tuberculosis. *Indian J Tuberc.* 2007;54:145-8.
5. Abdalla CM, de Oliveira ZN, Sotto MN, Leite KR, Canavez FC, de Carvalho CM. PCR compared to other laboratory findings and to clinical evaluation in the diagnosis of tuberculosis and atypical

- mycobacteria skin infection. *Int J Dermatol.* 2009;48:27–35.
6. Janjua SA, Kachemoune A, Guillen S. Tuberculosis verrucosa cutis presenting as an annular hyperkeratotic plaque. *Cutis.* 2006;78(5):309-16.
 7. Bravo FG, Gotuzzo F. Cutaneous tuberculosis. *Clin Dermatol.* 2007;25:173-80.
 8. Tan SH, Tan BH, Goh CL, Tan KC, Tan MF, Ng WC. Detection of M tuberculosis DNA using polymerase chain reaction in cutaneous TB and tuberculids. *Int J Dermatol.* 1999;38(2):122-7.
 9. Padmavathy L, Rao L, Velliati A. Utility of PCR as a diagnostic tool in cutaneous tuberculosis. *Ind J Dermatol Ven Lep.* 2003;69:214-6.
 10. Technical and Operational Guidelines for Tuberculosis Control in India 2016. Available at: www.tbcindia.gov.in. Accessed on 10th February 2016.

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