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Tuberculosis Verrucosa Cutis of Hand: A Case Report

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Abstract

Tuberculosis verrucosa cutis (TBVC) is exogenous paucibacillary cutaneous tuberculosis (CTB) and is the third commonest type of CTB. Clinically, TBVC usually begins as isolated or multiple warty papules, and soon acquires a verrucous plaque and are usually located in the extremities. Here we report a case of 41-year-old South Indian woman presenting with occasional pruritus, erythematous scaly nodules and warty plaques on the back of right hand following nail prick. A positive Mantoux test, skin biopsy showing granuloma and related epidemiologic, clinical and histopathologic data with an excellent response of patient to the treatment confirmed TBVC.

Key words: Tuberculosis verrucosa cutis, verrucous plaque, warty papules.

Background

Tuberculosis (TB) has always remained one of the top ten leading causes of death and has diverse pulmonary and extra-pulmonary presentation.^{1,2} Approximately 1.7 billion people are infected with *Mycobacterium tuberculosis* and are at risk of disease development globally.¹ Despite the high prevalence of TB, the extra-pulmonary form of TB, cutaneous tuberculosis (CTB) occurs rarely and includes only 1-2%.^{3,4} Nevertheless, TB-prevalent developing countries reported a significant number of new cases of CTB, for instance, 18,000 in India, 580 in Peru in the year 1999.⁵ CTB continues to be diagnostically elusive and is categorized based on inoculation mechanism, bacterial load on skin, immune hypersensitivity reactions to *M tuberculosis* antigens etc.^{3,5}

Tuberculosis verrucosa cutis (TBVC) is exogenous paucibacillary cutaneous tuberculosis, also referred to as warty tuberculosis, anatomist's warts, or prosector's warts. Clinical features of TBVC typically presents with well-defined warty plaques seen mostly on hands, knees, ankles and buttocks; nevertheless, variations in morphology have also been observed.⁶

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We, hereby present a case of 41-year-old South Indian woman who had TBVC presenting as occasionally pruritic, erythematous scaly nodules and warty plaques on the back of right hand.

Case Presentation

A 41-year-old South Indian woman presented with the history of metal nail prick ten years back. She had occasionally pruritic erythematous scaly nodules and warty plaques on her right hand (see Fig. 1). On admission, her vital signs were normal. She had a history of type 2 diabetes mellitus (DM) for 15 years with a medication history of Metformin 500 mg. There was no family history of TB, but had contact with an individual with pulmonary TB by sharing airspace. In this case, the provisional diagnosis was chromoblastomycosis and the differential diagnoses were TBVC and mycetoma. Mantoux test was positive (18 mm).

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The histopathology specimen showed pseudoepitheliomatous hyperplasia with superficial exudates and non caseating large epithelioid granulomas with multinucleated langhans giant cells in the dermis. No neutrophilic or eosinophilic abscess or sclerotic bodies were seen in the multiple deeper sections studied (see **Fig. 2**). Chest x-ray was normal.

Complete blood count, urine analysis and biochemical analysis are presented in **Table. 1**. The patient was diabetic, with random, fasting and post prandial blood sugar at 158mg/dl, 158mg/dl and 249mg/dl respectively. The general blood smear showed normochromic normocytic red blood cells with rouleaux formation. This confirmed the absence of normochromic normocytic anemia of chronic disease that is associated with TB. ⁷

Anti-tuberculosis therapy (ATT) with isoniazid, rifampicin, pyrazinamide and ethambutol was started. As per World Health Organization (WHO) TB treatment guidelines, Category 1 ATT regimen for CTB was given which included 2 months intensive phase and 4 months continuation phase. She was started on isoniazid (5mg/kg daily), rifampicin (10mg/kg daily), pyrazinamide (30mg/kg daily) and ethambutol (15mg/kg daily) for 2 months. After the first 2 months of ATT course pyrazinamide and ethambutol were discontinued and isoniazid (5mg/kg daily) and rifampicin (10mg/kg daily) were given for next 4 months. She received ATT course for a period of 6 months. No adverse drug reactions were reported during follow-up. 4 months follow-up visits revealed that the erythematous scaly nodules and plaques were well healed with regression of the lesions (see **Fig. 4**).

Table 1: Laboratory investigations and findings

S.N.	Investigations	Results or findings
1	Complete blood count	WBC: 9300cells/cu mm RBC: 4.52million cells/cu mm Hemoglobin: 12g% ESR: 33mm/hr, PCV: 35.6% MCV: 78.8fl, MCH: 26.5pg, MCHC: 33.7%
2	Urine analysis	Albumin: trace, Sugar: nil, Pus cells: 8-10/hpf, RBC: 0-2/hpf, Epi cells: Plenty/hpf, casts and crystals: nil, Bacteria present.
3	Biochemistry	Random blood sugar: 158mg/dl Fasting blood sugar: 158 mg/dl Post prandial blood sugar: 249mg/dl
4	Serology	Human immunodeficiency virus 1&2: Negative Hepatitis B surface antigen: Negative Venereal disease research laboratory: Non-reactive



Figure 1: Erythematous scaly nodules and warty plaques on the right hand

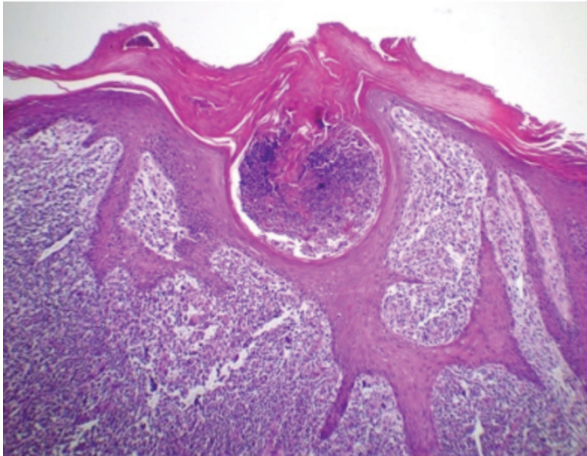


Figure 2a: Section on 20× magnification showing multinucleated langhans giant cells.

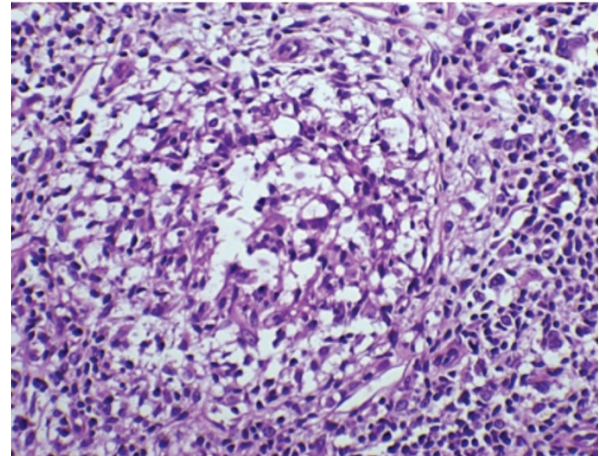


Figure 2b: Section on 40× magnification showing epithelioid granulomas.

Figure 2: Histopathology smears of the biopsy specimen on Ziehl-Neelsen stain.

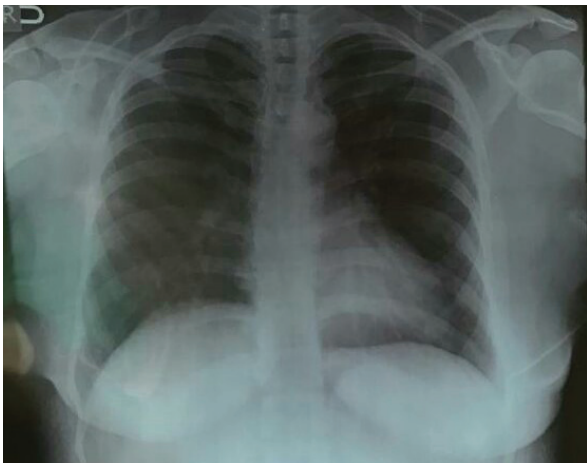


Figure 3: Chest x-ray of the patient



Figure 4: Well healed scaly erythematous plaques with regression of the lesions after 4 months of ATT

Discussion

The WHO global TB report 2019 says that TB remains among the top 10 causes of death worldwide.¹ TB reflects socioeconomic welfare indicators, exemplified by the situation in developing countries including India with devastating morbidity and mortality. This case report presents a rare form of extrapulmonary tuberculosis, TBVC a type of CTB. CTB can be classified as exogenous, endogenous, tuberculids and CTB secondary to Bacillus Calmette-Guerin (BCG) vaccination. Exogenous CTB includes tuberculous chancre and tuberculosis verrucosa cutis whereas endogenous CTB includes scrofuloderma, orificial tuberculosis, lupus vulgaris, tuberculous gumma and acute miliary tuberculosis. Tuberculids can be papulonecrotic tuberculid and lichen scrofulosorum.³ This case is morphologically not lupus vulgaris (LV)

due to the absence of sharply defined brownish to red solitary plaque with soft and jelly consistency with ulceration as in LV.⁸

The differential diagnosis of TBVC includes common warts, chromoblastomycosis, hypertrophic lichen planus and cutaneous leishmaniasis.⁹ Here the symptoms were confused with chromoblastomycosis due to the presence of verrucous lesions as in TBVC.¹⁰ But, a positive mantoux test, presence of epithelioid granulomas in the biopsied skin, history of metal nail prick, contacts with TB patient and history of DM confirmed TBVC. Padmavathy L et al. shows a definite history of trauma preceding TBVC whereas Kurtipek GS et al. shows that the areas like ankles, hands, knees etc are more affected as they are more exposed to trauma.^{10,11} Study by Restrepo BI shows that individuals with DM have thrice the risk of developing TB and study

by Guedes G finds that immunosuppression has contributed to increased incidence of TB in the world.^{12,13}

Clinical features in TBVC vary from well-defined warty plaques seen on hands, knees, ankle and buttocks and changes in morphology.⁶ Here, well-defined warty plaques were present on hand.

As per WHO TB report 2018, geographically, regions of South-East Asia (44%) reported most cases of TB. India (37%) tops the list of eight countries that accounted for two thirds of the global total.¹ As of 2011, the overall incidence of CTB in Indian sub-continent was 0.7% with TBVC (12.9%) the third commonest variant.⁹ Halim MS et al. managed TBVC with the same regimen similar to our case with a variation in dose and duration, i.e. pyrazinamide 25 mg/kg/day and nine months respectively.⁴ Study by Padmavathy L et al. managed TBVC of foot with miliary TB using isoniazid, rifampicin, pyrazinamide, ethambutol and corticosteroids.¹¹

Study by Mathur M et al. showed the epidemiological, clinical and histological pattern of CTB in Nepal with LV, the most common clinical type (64%), followed by TBVC (19%).¹⁴ Sultana A et al. studied the pattern of CTB among children and adolescent in Bangladesh and showed that 47.8% had scrofuloderma, 34.8% had LV and 17.4% had TBVC.¹⁵ Halim MS et al. reported a case

of TBVC in a patient with keloid over ear lobule from Pakistan.⁴ Keragala BSDP et al. studied a case series of *M. tuberculosis* and *Mycobacterium leprae* in Sri Lanka.¹⁶

The limitation of this case report relies upon the area of occurrence as it is frequently found on the hands and in areas prone to trauma especially in TB prevalent developing countries.¹⁷

To conclude, in the literature review of TBVC in South India, we have found only one case report of TBVC in association with miliary pulmonary TB.¹⁸ Hernández-Martín, et al. reported a case of verrucous plaque on the back of a hand, similar to our case.¹⁹ Hence, the knowledge of TBVC like histopathologic confirmation of diagnosis, category 1 ATT and occurrence of TBVC without pulmonary involvement is crucial among the patients especially in developing countries.

Abbreviations

- CTB: Cutaneous Tuberculosis.
- TBVC: Tuberculosis Verrucosa Cutis.
- ATT: Anti-Tubercular Treatment.
- WHO: World Health Organisation.
- LV: Lupus Vulgaris.
- BCG: Bacillus Calmette-Guerin

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