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Original Research Article

A clinicoepidemiological study of cutaneous tuberculosis in a tertiary care teaching hospital in Andhra Pradesh, India

Chintaginjala Aruna*, Senthil kumar A. L., Sridevi K., Swapna K., Ramamurthy D. V. S. B.

Department of DVL, Katuri Medical College & hospital, Guntur, Andhra Pradesh, India

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***Correspondence:**
Dr. Chintaginjala Aruna,
E-mail: draruna88@gmail.com

ABSTRACT

Background: Cutaneous tuberculosis constitutes 1.5% of extra pulmonary tuberculosis and the disease continues to be a challenging one because of its multifaceted presentation. The present study was done to document the most common type of cutaneous tuberculosis, atypical presentations if any and response to directly observed therapy short course (DOTS).
Methods: All patients with clinically suspected cutaneous tuberculosis attending outpatient department of dermatology in our hospital from October 2012 to April 2016 were included in the study. A detailed history of presenting illness and thorough general, systemic and cutaneous examination was carried out along with documentation of demographic details. Routine blood invetigations, biopsy and mantoux test were done. Diagnosed cases were treated with DOTS.
Results: A total of 25 cases of cutaneous tuberculosis were included in the study. Most common type of cutaneous tuberculosis was lupus vulgaris. Atypical presentations noted during the study were multifocal lupus vulgaris (LV), co-existence of tuberculosis verrucosa cutis (TVC) and LV, TVC of lower lip, erythema induratum of bazin presenting as annular plaque in one case and as erythema nodosum in another case. DOTS were effective in majority of the patients.
Conclusions: Cutaneous tuberculosis is multifaceted. High clinical suspicion is necessary in rare presentations. Coexistence of two or more morphological patterns can occur. Doubtful cases, 5-6weeks of therapeutic trail helps. Adequate dose is essential for good response. Second line drugs are to be considered in case of failure /clinical resistance.

Keywords: Cutaneous tuberculosis, Multifocal tuberculosis, Atypical presentations, Erythema induratum of bazin, DOTS

INTRODUCTION

Tuberculosis is as old as mankind, with evidence of the disease being found in a Peruvian mummy and in a skeleton from 300 BC. Globally 9.6 million new tuberculosis cases were detected in 2014 and 1.3 million deaths were attributable to the disease.[1] Tuberculosis is usually considered as disease of poverty as 94% of cases occur in countries with lower socioeconomic status. Though its incidence has fallen to 0.1% even in developing countries, the disease continues to be a formidable one because of human immunodeficiency virus (HIV) co-infection, drug resistance and atypical presentations.[2,3] The Present study was done to document the most common type of cutaneous tuberculosis, atypical presentations if any and response to directly observed short course (DOTS) therapy.

METHODS

All patients with clinically suspected cutaneous tuberculosis attending outpatient department of

dermatology in our hospital from October 2012 to April 2016 were included in the study. A detailed history of presenting illness and thorough general, systemic and cutaneous examination was carried out along with documentation of demographic details. Routine blood investigations, enzyme linked immunosorbent assay (ELISA) for HIV, X-ray chest, mantoux test and biopsy were done in all cases. Sputum examination for acid fast bacilli (AFB), fine needle aspiration cytology of lymph nodes and other radiological tests were done in relevant cases. Diagnosed cases were given DOTS for a period of 6 months and response was assessed at 6 weeks and at the end of the therapy, side effects if any were also noted during the treatment period.

RESULTS

A total of 25 cases of cutaneous tuberculosis were included in the study. Male to female ratio in our study was 1.5:1. Age group of the study population ranged from 5-40 years with the mean age being 25 years 6 months. Most commonly involved site was the lower limb which was seen in 13 cases [52%]. The most common clinical type of cutaneous tuberculosis was lupus vulgaris seen in 11 cases (44%) and the least common was erythema induratum of bazin seen in 2 cases(8%), details are given in the Table 1.

Table 1: Types of cutaneous tuberculosis in the present study.

Clinical type	Number of patients (%)
Lupus vulgaris	**11 (44)**
Tuberculosis verrucosa cutis	**4 (16)**
Scrofuloderma	**2 (8)**
Papulonecrotic tuberculid	**6 (24)**
Erythemainduratum of bazins	**2 (8)**

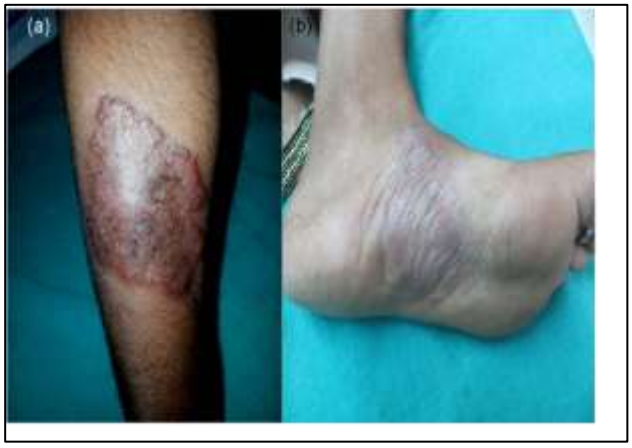

Figure 1: Multifocal lupus vulgaris. (a) over anterior aspect of right lower limb (b) over right sole extending on to medial aspect of foot.

HIV association was found in 3 cases (12%). Atypical presentations noted during the study were multifocal lupus vulgaris (LV), co-existence of tuberculosis verrucosa cutis (TVC) and LV, TVC of lower lip, erythema induratum of bazin (EIB) presenting as annular plaque in one case and as erythema nodosum in another case as shown from Figure 1-5. Mantoux was positive in 84.2% of the cases and typical histopathology was seen in 90% of the cases. Table 2 shows details of laboratory investigations of the study population. DOTS was effective in all cases except in 2 (8%) patients and truncal acne was observed in 2 (8%) patient as shown in Figures 6 and 7.

Figure 2: (a) Co-existance of scrofuloderma over left grion and (b) tuberculosis verrucosa cutis on left the sole.

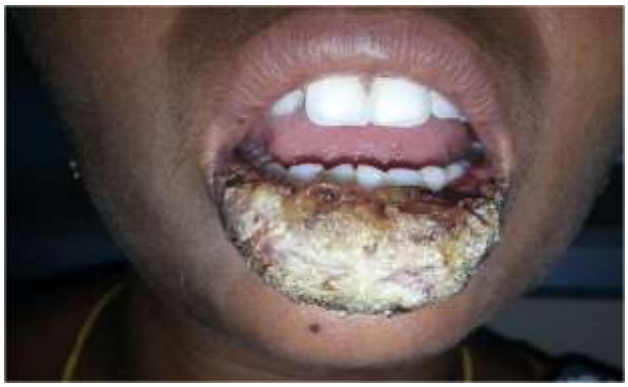

Figure 3: Tuberculosis verrucosa cutis on the lower lip.

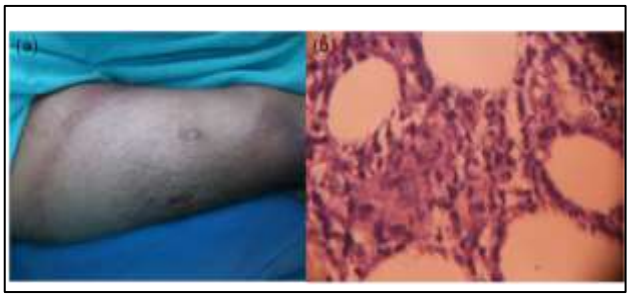

Figure 4: (a) Erythema induratum of bazin presenting as annular plaque over thigh (b) histopathology showing granulomas in subcutaneous fat [H & E, 100X].

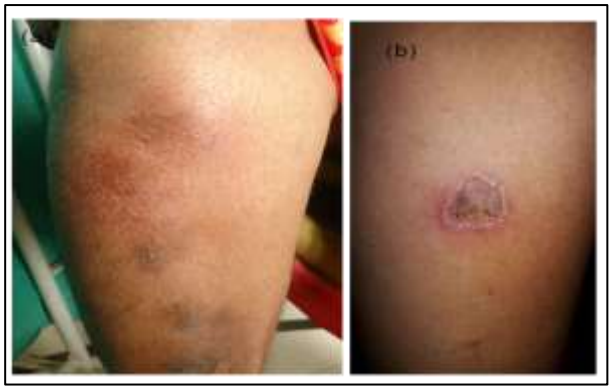

Figure 5: (a) Erythema nodosum like lesions on lower limb (b) strongly positive mantoux test.

Figure 6: Scrofuloderma (a) before treatment (b) after 3 months of DOTS therapy.

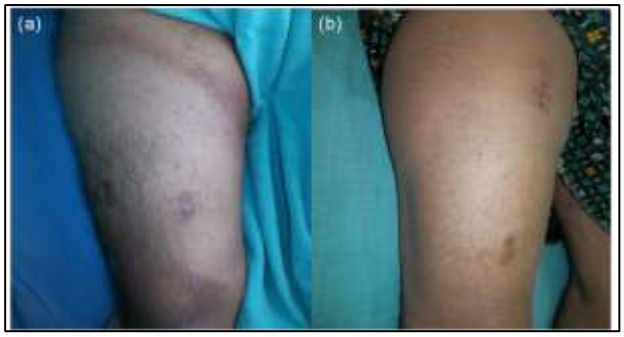

Figure 7: Erythema induratum of bazin (a) before therapy (c) after 4 months of DOTS therapy.

Table 2: Details of laboratory investigations of the study population in the present study.

Laboratory investigations	Percentage of patients showing positive results
Mantoux test	84.2%
Sputum for AFB	0
Chest X -ray	4%
FNAC of nodes	5%
Bone radiography	0
Typical Histopathological changes	90%
HIV	12%

DISCUSSION

Cutaneous tuberculosis showed a higher incidence in men in our study similar to majority of the Indian studies.[4-6] This may be attributed to higher risk of sustaining injury in men, as many of our patients were involved in heavy manual work. Most of the patients were in their second decade, similar to that observed in other Indian studies.[6,7] The most common clinical type of cutaneous tuberculosis in our study was lupus vulgaris [44%], this was similar to few studies.[5,6,8] However few other Indian studies found scrofuloderma as the most common type and Table 3 shows the details.[7,9,10]

We found lower limb as the most common involved site, it was also noticed by few authors.[6,8] High incidence of cutaneous tuberculosis on the legs in Indians can be explained by the re-inoculation of tuberculosis bacilli through minor trauma, especially during squatting.

Cutaneous tuberculosis was earlier quoted by Pillsbury, Shelly and Kligman as "in the skin tuberculosis presents itself in an astonishing variety of forms".[11] correspondingly we observed various atypical presentations during our study. Multifocal lupus vulgaris was seen in a 40 year old male, there are very few reports of multifocal disease in the literature.[12,13] Multifocal involvement is mostly seen in unvaccinated and malnourished patients and usually have negative mantoux test. There are few reports of co-existence of different tuberculosis in the same person with combination of TVC and scrofuloderma [SFD] being most commonly reported including ours.[14,15] Immunohistological study of granuloma in cutaneous tuberculosis have shown a spectrum of changes as evidenced by CD4±CD8 ratio, i.e LV with strong immunity, TVC with intermediate immunity and SFD with low-level immunity.[16] Depending up on the level of immunity in a person over a period of time, may be different types of cutaneous tuberculosis are expressed. Another probable reason is, TVC may develop from auto-innoculation of bacilli from adjacent cutaneous tuberculosis that is SFD. We found TVC of lower lip in a 40 year old female which is an uncommon site, few uncommon sites already reported in the literature are finger, over a keloid etc.[17,18] EIB clinically resembled erythema nodosum in one case. A similar observation was made by Maharaja et al in his study of the clinicohistopathological features of erythematous tender nodules predominantly involving the extremities, in which histological disacordance of erythema nodosum was seen in 8 cases [total 30 cases] and among them 3 cases were suggestive of EIB.[19] Another atypical presentation of EIB noted in our study was a large annular plaque over thigh in a 25 year old male. So, EIB may not always present as classically described (ulcerating nodules on calves), it is the histopathology that helps in definitive diagnosis and differentiation.

Positive mantoux was seen in 84.2% of the cases, this was comparable to Binod kumar et al study, different results were seen in other studies, details given in Table 4.[7,8,20]

Typical histopathological changes were seen in 90% of cases similar to other Indian studies.[20] Duration of antitubercular therapy [ATT] for cutaneous tuberculosis ranged from 6-12 months in different studies.[20-22] We employed DOTS therapy which was given for 6 months. In Raghu Rama Rao et al study on DOTS therapy in cutaneous tuberculosis, efficacy was comparable with the standard daily short course chemotherapy with added advantage of exposure to less number of drugs, standard drugs being given under supervision and less travel expenses.[21] He made the observation of no treatment failure or significant side effects with DOTS therapy in his study.[21] In contrast we observed treatment failure in 8% of cases and minor side effects like truncal acne in 8%, details given in Table 5.

Table 3: Comparison of clinical types of cutaneous tuberculosis in the present study with other studies.

Clinical type of Cutaneous tuberculosis	Present study, number of cases [%]	Puri et al study[8] number of cases [%]	Patra AC et al study,[6] number of cases [%]	Thakur BK et al study,[7] number of cases [%]
Lupus vulgaris	11 [44]	11 [55]	60 [57.69]	18 [42.86]
Tuberculosis verrucosa cutis	4 [16]	1 [5]	20 [19.23]	2 [4.76]
Scrofuloderma	2 [8]	5 [25]	22 [21.15]	21 [50]
Orificial tuberculosis	0	1 [5]	0	0
Papulonecrotic tuberculid	6 [24]	1 [5]	0	0
Erythemainduratum of bazins	2 [8]	1 [5]	0	0
Lichen scrofulosorum	0	0	2 [1.92]	1 [2.38]
Total cases	25	20	104	42

Table 4: Comparison of laboratory investigations in our study with others.

Laboratary investigations	Present study	Thakur BK et al study[7]	Binayak Chandra et al study[20]
Mantoux test	84.2%	4%	96%
Sputum for AFB	0	0%	6%
Chest X -ray	3%	4.76%	4%
FNAC of nodes	5%	45.24%	8%
Bone radiography	0	7.14%	0
Typical histopathological changes	90%	59.5%	96%
HIV	12%	0	4%
Total cases	25	42	50

Table 5: Comparison of duration of ATT and percentage of failure and side effects in our study with others.

Studies	Duration of ATT [First line agents]	Treatment failure	Side effects
Present study	6 months	8%	8%[truncal acne]
Binayak Chandra et al[20]	8 months	4%	Not mentioned
Raghu Rama Rao et al[21]	6 months	0	Not seen
Ramesh V et al[22]	6-12 months	1.9%	Not mentioned

The duration of therapeutic trial in case of suspected cutaneous tuberculosis is 5-6 weeks, with the exception of tuberculids and patients showing minimal clinical activity before treatment. The diagnosis used to be reviewed in patients who didn't respond by this time. But with the advent of multi drug resistant (MDT) tuberculosis, this approach is not justified. MDR cutaneous tuberculosis should always be kept in mind in the management of patients with lack of clinical response to the first line ATT drugs or in those patients showing clinical deterioration even while on ATT. The definitive diagnosis of MDR tuberculosis is difficult owing to poor

isolation rates and low sensitivity of molecular diagnostic tests. So it is always justified to give a trial of second line ATT for atleast two months before labelling a patient non responsive to therapy.[23] We had one wellbuilt (height 6 feet, weight 120 kg) 40 year old male patient with biopsy confirmed scrofuloderma who had not responded to routine dosages of ATT [AKT-4 kit] even after 5 weeks of therapy, thinking in terms of drug resistance before starting 2nd line agents we gave him the first line agents adjusting to his per kg body weight. Within 2 weeks of hiking the dose the patient responded promptly, as presented in Figure 8. Hence, adequate drug dosing especially adjusted to the per kg body weight of a person is also most important before considering either alternative diagnosis or drug resistance.

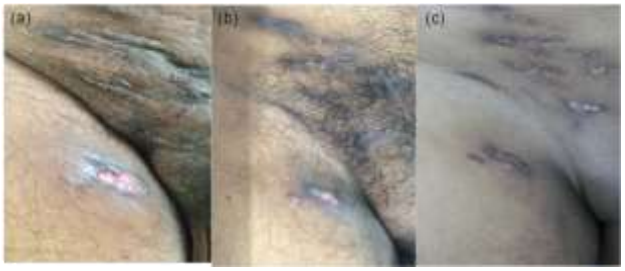

Figure 8: (a) Scrofuloderma after 5 weeks of AKT (b) 2 weeks after hiking the dose (c) at the end of 6 months of therapy.

To conclude, cutaneous tuberculosis is multifaceted. High clinical suspicion is necessary in rare presentations. Coexistence of two or more morphological patterns can occur. In doubtful cases, 5-6 weeks of therapeutic trail helps. Adequate dose is essential for good response. Second line drugs are to be considered in case of failure /clinical resistance.

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Ethical approval: Not required

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