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Original Research Article

A retrospective study on clinicopathological correlation of cutaneous tuberculosis

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ABSTRACT

Background: Cutaneous tuberculosis is a curable chronic infectious disease. The clinical presentation and histopathological interpretation of skin biopsy may show variations as various types of the disease exist. The clinical diagnosis should be confirmed by histopathological features before starting treatment for particular type of the disease.
Methods: A retrospective hospital based study was conducted among patients in Chengalpattu medical college for last 3 years (May 2015 – April 2018) who had cutaneous tuberculosis. Skin biopsy taken from active lesion was stained with routine haematoxylin and eosin (H & E) stain.
Results: Out of 20 cases, male to female ratio was 1.5:1. The age of the patients ranged from 11-68 years. Clinically, lupus vulgaris was the most common type of cutaneous tuberculosis with 35% cases followed by tuberculosis verrucosa cutis 20% cases, scrofuloderma 15% and atypical mycobacterial infections 10%, and least common types are lichen scrofulosorum 5% which correlates with the previous study of Aruna et al. Characteristic tuberculoid granulomas were seen in 71.4% cases of lupus vulgaris, all cases of scrofuloderma, lichen scrofulosorum and 80% of tuberculosis verrucosa cutis. The clinical and histopathological correlation was seen in 17 cases (85%).
Conclusions: There can be overlap between different types of cutaneous tuberculosis with various other dermatological diseases, both clinically and morphologically and so correlation of clinical and histopathological features appears to be more useful for accurate diagnosis and typing of cutaneous tuberculosis. High clinical suspicion is necessary in cutaneous tuberculosis and early diagnosis and treatment are essential to prevent its complications.

Keywords: Koch's bacillus, Acid-fast bacilli, Granuloma, CB-NAAT, Epitheloid cells

INTRODUCTION

Cutaneous tuberculosis (TB) is an important variant of extra pulmonary TB with varied clinical presentation determined by the route of infection as well as status of cellular immunity of the host. It has an incidence of around 5.9 cases per 1000 population. In India lupus vulgaris is the commonest type of secondary tuberculosis of skin in adults (approximate 74%).[1-3] TB is one of the oldest known diseases. Robert Koch first discovered and isolated the tubercle bacillus in 1882 and two years later he identified it in lupus vulgaris beginning the description of various cutaneous aspects of TB.[4] Cutaneous tuberculosis has become a rare event in developed countries. In the developing countries also, the incidence has fallen from 2 to 0.15%.[5] and recently, it has fallen to 0.1%.[6,7] The combination of better hygiene, immunizations, and anti tuberculous therapy (ATT) led to

a drop but the explosion of HIV/AIDS, the development of drug resistance due to inappropriate treatment and poor health care facilities can lead to renaissance of TB.[8] Most of the cases of cutaneous TB can be diagnosed clinically but some cases really pose diagnostic challenges. Also in recent years, due to the increasing use of immune suppressants (corticosteroid and anticancer), biologicals and emergence of immune compromised host, it remains to be seen how the position of cutaneous tuberculosis is altered.[9] Our study is a keen effort to find out the incidence, clinical profile, and histopathological features of cutaneous tuberculosis atypical presentations if any and response to directly observed short course (DOTS) therapy.[10,11]

METHODS

A retrospective hospital based study was conducted among patients in Chengalpattu medical college for last 3 years (May 2015 – April 2018) with clinically diagnosed Cutaneous Tuberculosis. The Tuberculin sensitivity test, sputum examination, FNAC (fine needle aspiration cytology), chest X-ray, ELISA, and skin biopsy were sampled by incision biopsy performed on the active advancing edge of the lesion under strict aseptic precautions. All the tissue samples were stained with haematoxylin and eosin (H & E) stain as well as Ziehl Neelsen stain. All the slides were examined under light microscope and analysis were carried out with respect to clinical features and histopathological findings to diagnose the type of cutaneous tuberculosis. Special investigations like culture, anti microbial sensitivity, CB-NAAT (Catridge– Based Nucleic Acid Amplification Test) were done when other results were inconclusive. Diagnosed cases were given ATT as per category for a period of 6 months for CAT I and 8 months for CAT II and response was assessed at 6 weeks and at the end of the therapy, adverse effects if any were also noted during the treatment period. Both descriptive and appropriated inferential statistical analysis test was done using SPSS version 16.

Inclusion and exclusion criteria

Patients of cutaneous tuberculosis confirmed either with Biopsy or any other relevant investigations and patients willing to give an informed consent were included. Patients who are already on treatment for other mycobacterial infections apart from mycobacterium tuberculosis and patients not willing to give a written consent were excluded.

RESULTS

Out of 20 cases, male to female ratio was 1.5:1. The age of the patients ranged from 11-68 years (Figure 1). Among the different age groups, the 10-25 years group (Table 1) was the most commonly affected group (n=7, 35%).

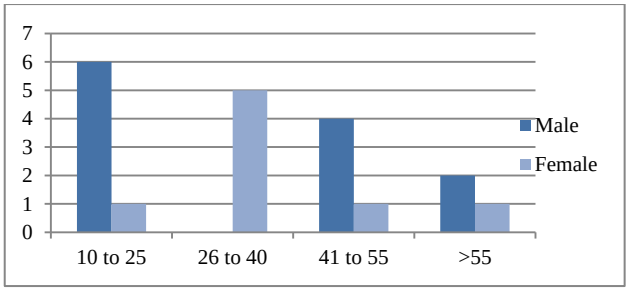

Figure 1: Showing age and sex distribution.

Table 1: Showing demographic data of the study.

Item	Result
Age (in years)	
Mean	37.25
Range	11-68
Sex	
Male	12 (60%)
Female	8 (40%)
Occupation	
Home maker	4 (20%)
Student	4 (20%)
Farmer	2 (10%)
Teacher, Tailor, Clerk	2 (10%)
Staff nurse	1 (5%)
Unemployed	4 (20%)
Miscellaneous	3 (15%)
Clinical types	
Lupus vulgaris	7 (35%)
Tuberculosis verucca cutis	4 (20%)
Atypical mycobacterial infection	2 (10%)
Scrofuloderma	3 (15%)
Papulonecrotic tuberculoid	3 (15%)
Lichen scrofulosum	1 (5)

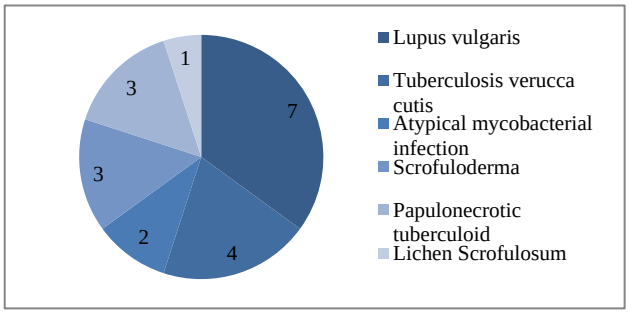

Figure 2: Showing pie chart of different types of cutaneous TB.

Clinically, lupus vulgaris (Figure 3 and 4) was the most common type of cutaneous tuberculosis (Table 1) with 35% cases followed by tuberculosis verrucosa cutis (Figure 5) with 20% cases, scrofuloderma (Figure 6) with 15% and atypical mycobacterial infections (Figure 8) 10% and least common types are lichen scrofulosorum

(Figure 7) with 5%. We haven't seen any cases of Erythema induratum of Bazin.

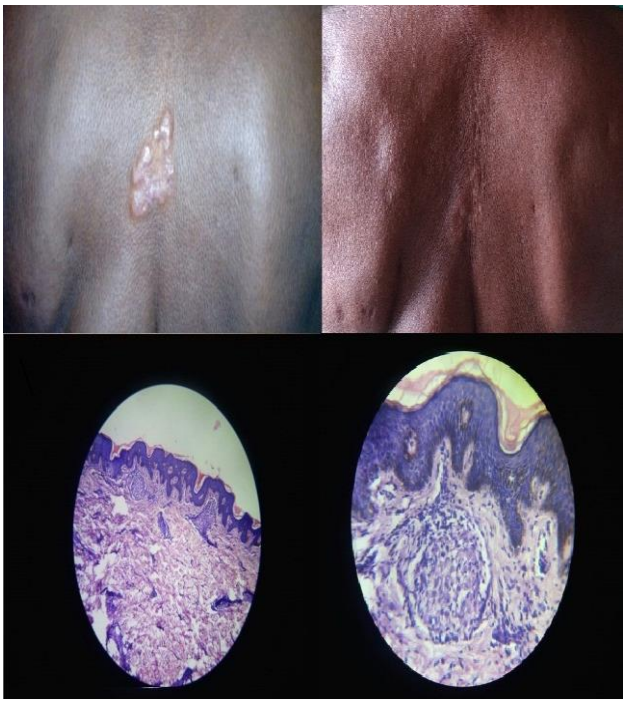

Figure 3: Showing lupus vulgaris before and after treatment photos along with histopatholgical findings in low power and high power showing tuberculoid granulomas in the upper dermis.

Figure 4: Showing psoriasiform lesion of lupus vulgaris with positive mantoux skin test.

Characteristic tuberculoid granulomas were seen in 71.4% cases of lupus vulgaris (Figure 4), all cases of scrofuloderma, lichen scrofulosorum and 80% of tuberculosis verrucosa cutis. The clinical and histopathological correlation was seen in 17 cases (85%). Most of the patients treated with Cat–I and ATT got cured except in one papulo necrotic tuberculoid patient who had rifampicin resistance which was later diagnosed by CB-NAAT testing.

DISCUSSION

Cutaneous tuberculosis represents 1.5% of all cases of extra pulmonary tuberculosis.[12]

Figure 5: Showing tuberculosis verrucosa cutis.

Figure 6: Scrofuloderma in HIV positive patient.

Figure 7: Showing lichen scrofulosorum - morphology, cervical lymphadenopathy, strongly positive mantoux test and focal collection of lymphohistiocytic cellular infilterates in dermis.

In our study the incidence of cutaneous tuberculosis in men is higher correlating to other Indian studies since

many of Indian men are involved in heavy manual outdoor works.[6,9,13] The most common type of cutaneous tuberculosis in our study was lupus vulgaris (35%) which was similar to some studies.[10] However few other Indian studies found tuberculosis verucca cutis.[11] as most common type and few others found scrofuloderma as the most common type.[14] The most common site of involvement of lupus vulgaris in our study was the lower limb and the buttock similar to other studies.[15] Mantoux test positivity was reported from 68% to 100% in various studies and our study compared well with their findings.[16,17] Duration of ATT for cutaneous TB ranged from 6-12 months in different studies.[18-20] We gave DOTS therapy according to recent RNTCP guidelines CAT–1 for 6 months. Most common disease associations found were diabetes mellitus (25%) followed by hypertension (15%), lipoma (5%), chronic kidney disease (5%).

Figure 8: Atypical mycobacterial infection.

Figure 9: Atypical mycobacterial infections - chronic ulcers before and after treatment.

One patient with atypical mycobacterial infections (Figure 9) presented with chronic non healing ulcers over both upper limbs where in ulcers was mimicking cutaneous malignancies which were even negative in CB-NAAT testing. Patient also had chronic kidney disease with serum urea -70, serum creatinine-5.9 on regular haemodialysis. He was started on therapeutic trial of ATT with dose adjustment as per nephrologist opinion (reduction in 50% dose of ethambutol and pyrazinamide). Ulcers started to heal after initiating treatment in 3 weeks and later diagnosis was confirmed with culture. Since culture reporting takes a long time, there is a definitive role for therapeutic trial of ATT when there is a strong clinical suspicion. The duration of therapeutic trial should be 5-6 weeks, with exception of tuberculids and patients showing minimal clinical activity before treatment.[11] Definitive diagnosis of MDR TB are difficult because of low sensitivity of molecular diagnostic methods and so a trial of ATT with second line drugs for at least 2 months before labeling a patient as non-responder.[21]

In the early stages of evolution, tuberculosis and connective tissue disorder like SLE may mimic each other pretty much. In a tropical country like India which is set to be an abode of microbes, tuberculosis has to be ruled out prima facie by working out the case in depth to an extent of doing CB–NAAT (GeneXpert) before starting on immune suppressants. If the kind of vasculitic lesion is going to be erythema nodosum, ANA can be still false positive with increased ESR and CRP and could be misinterpreted as a case of SLE whereas the patient is really a case pulmonary Koch with false positive ANA. In such case patient may land up in miliary TB and so every attempt has to be taken to distinguish between evolving SLE and tuberculosis.

CONCLUSION

Cutaneous tuberculosis is an important public health issue in this part of the South India especially in lower socioeconomic group. If cutaneous tuberculosis is diagnosed, the patient must be completely evaluated for systemic involvement. Cutaneous tuberculosis should be suspected in every cases of chronic asymptomatic skin lesions which were resistant to conventional antibiotics. Clinical diagnosis of early lesions of tuberculosis is often difficult so correlation of clinical and histopathological features along with culture, CB-NAAT appears to be more useful for confirming the diagnosis of cutaneous TB. In doubtful cases, 5-6 weeks of therapeutic trial can be given. Second line drugs are to be considered in cases of failure/clinical resistance.

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Ethical approval: The study was approved by the institutional ethics committee

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