

## Original Research Article

# Study of common clinical types of cutaneous tuberculosis: two years study experience in a tertiary care centre

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### ABSTRACT

**Background:** Cutaneous tuberculosis (TB) is frequently found worldwide, especially in tropical countries. The number of extrapulmonary TB reaches up to 14%, and 1% to 2% are cutaneous TB. Diagnosis of cutaneous tuberculosis (CTB) is complicated and requires a full work-up. Clinical manifestation of cutaneous TB is varied and causes difficulties to diagnose. Scrofuloderma and plaque type of lupus vulgaris (LV) are common forms of cutaneous TB.

**Methods:** A retrospective study was conducted on patients attending Department of Dermatology, Venereology and Leprosy, at Basaveshwara Medical College and Hospital, Chitradurga over a period of 2 years. A total of 15 cases of cutaneous tuberculosis were diagnosed.

**Results:** A total of 15 cases out of which included predominantly males, with age group being affected commonly are 20-40 decades, histopathology showing tuberculoid granuloma in 11 cases, and common clinical variant being lupus vulgaris seen in 66.6% of the cases and. Second common being scrofuloderma seen in 26.6% of the cases and least common is TB verrucosa cutis (TBVC) seen in 6.6% of the cases.

**Conclusions:** The study showed that the common clinical type of cutaneous tuberculosis during the study period was lupus vulgaris, scrofuloderma and less common being TBVC.

**Keywords:** Cutaneous TB, Lupus vulgaris, Scrofuloderma, Tuberculosis verrucosa cutis

### INTRODUCTION

Extrapulmonary tuberculosis constitutes for about 10% of all cases of tuberculosis, and cutaneous tuberculosis forms only a small proportion of these cases. Despite prevention programs, tuberculosis is still endemically progressing in developing countries.<sup>1</sup>

Diagnosis of cutaneous tuberculosis (CTB) is complicated and requires a complete work-up, including a detailed history and physical examination, clinical presentation, skin biopsy with histological analysis, and

special staining methods for identification of acid-fast bacilli (AFB) and the use of other diagnostic tests, such as chest X-ray and sputum culture.<sup>2</sup>

Clinical manifestation of cutaneous TB is varied and causes difficulties to diagnose. Scrofuloderma is the most common form of cutaneous TB, often affects the supraclavicular, axilla, and both sides of the neck. The other common form of cutaneous TB is plaque type of lupus vulgaris (LV). The rare presentation of cutaneous TB includes inguinal scrofuloderma, ulcerative type of LV, and acute miliary cutaneous TB.<sup>2</sup>

The number of extrapulmonary TB reaches up to 14%, and 1%-2% are cutaneous TB.

Cutaneous TB is frequently found worldwide, especially in tropical countries.<sup>3</sup>

**METHODS**

Study type was a retrospective medical records-based study. Study place was the Department of Dermatology, Venereology and Leprosy at Basaveshwara Medical College and Hospital, chitradurga. Study period was January 2016 to January 2018 (2 years).

**Selection criteria of the patient**

All diagnosed cases of cutaneous tuberculosis. Patients of all age groups were included.

**Study method**

Study was conducted after obtaining institutional Ethics committee clearance all the medical records of the patient with cutaneous tuberculosis confirmed by histopathology and microbiology of tissue smears were included in the study.

**Procedure**

Data was collected in the pre-structured questionnaire containing detail of socio-demographic profile, history, clinical presentation routine blood investigation (hemoglobin, total count, differential count, ESR, peripheral blood smear and chest X-ray findings)

**Statistical analysis**

The data was compiled in Microsoft Excel worksheet and analyzed using statistical package for social science (SPSS) software version 16.0.

Results were subjected to following statistical analysis. All characteristics were summarized descriptively. For continuous variable, the summary statistics of number, mean, standard deviation about the arithmetic mean were used. For categorical data, the number and percentage were used in data summarized.

**RESULTS**

A total of 15 cases who meet the eligibility criteria were included in the study. Maximum (40%) patients were between 21-30 years, 26% patients were between 31-40 years, 6.6% patients were between 0-10 years, 11-20 years, 41-50 years and 51-60 years each as shown in (Table 1).

Males (60%) outnumbered females (40%) and male to female ratio was 1.5: 1 (Table 1).

**Table 1: Demographic details of the patient (n=15).**

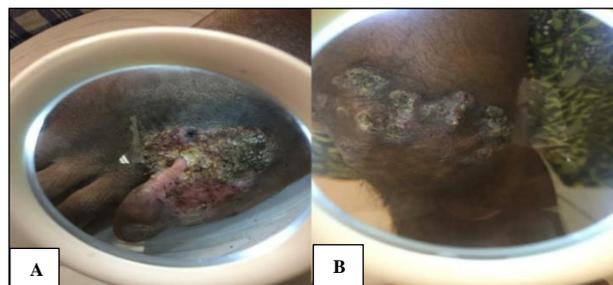
Parameter	Frequency	%
<b>Gender</b>		
Male	9	60
Female	6	40
<b>Age (years)</b>		
≤10	1	6.6
11-20	1	6.6
21-30	6	40
31-40	4	26.6
41-50	1	6.6
51-60	1	6.6
≥61	1	6.6

**Table 2: Distribution of patients according to clinical types of cutaneous tuberculosis (n=15).**

Types	Frequency	%
Lupus Vulgaris	10	66.6
Scrofuloderma	4	26.6
TBVC	1	6.6

**Table 3: Common histopathological findings (n=15).**

Histopathological features	Frequency	%
Caseation	3	20
Tuberculoid granuloma	11	73.3
AFB	8	53.3
Hyperkeratosis and acanthosis	9	60



**Figure 1: Solitary plaque with verrucous surface present on the left little toe, right knee and left foot.**



**Figure 2: (A) Follow up after 3 months of ATT and (B) follow up after 6 months of ATT.**

Commonest clinical variant of cutaneous tuberculosis in this study was lupus vulgaris (Figure 1A and B) seen in 66.6% patients followed by scrofuloderma 41.6% and 13.6% of tuberculosis verrucosa cutis (Table 3), The commonest site of involvement was limbs seen in 50% patients followed by neck seen in 25% patients, face in 15% and trunk in 10% patients.

**Table 4: Treatment of drug sensitive TB-adults.**

Weight category (kgs)	Number of tablets (dispersible FDCS)	
	Intensive phase	Continuation phase
	H/R/Z/E	H/R/E
25-39	2	2
40-54	3	3
55-69	4	4
>70	5	5

The commonest histopathological feature in this study was tuberculoid granuloma with epithelioid and Langhans giant cells seen in 73.0% patients, hyperkeratosis was seen in 60% patients and AFB bacilli were seen in 5% patients (Table 4). The Mantoux test positivity was seen in ten (66.6%) patients and varied from 10-24 mm in diameter.

**DISCUSSION**

Cutaneous TB is commonly seen in developing and tropical countries. It has various clinical presentations including LV, scrofuloderma, TB verrucosa cutis, orificial TB, tuberculous gumma, tuberculous chancre, and acute cutaneous miliary TB.<sup>4</sup>

In this study male (60%) outnumbered female (40%) and common age group involved were between 20 to 40 decades, when compared to study done by Pai et al, showed incidence among Males and Females were equal. The most patients belonged to 3<sup>rd</sup> to 5<sup>th</sup> decade.<sup>5</sup>

Puri et al, showed the commonest site of involvement was limbs seen in 50% patients followed by neck seen in 25% patients, face in 15%, and trunk in 10% patients.<sup>1</sup>

This study showed similar distribution of lesions. The diagnosis of cutaneous TB is done based on absolute and relative criteria. The absolute criteria consist of finding of *M. tuberculosis* from tissue culture, inoculation on guinea pig, or positive result on PCR.

The relative criteria are based on history taking and clinical manifestations which supported for the diagnosis of cutaneous TB, active TB found on other organs, finding of AFB on lesions, finding of tuberculous granuloma on histopathological examination, positive tuberculin test, and responsiveness toward anti-TB medications.<sup>4</sup>

Study done by Pai and colleagues showed the various patterns of presentation of lupus vulgaris, most common being plaque type of lupus vulgaris (11 of the 14) (78.5% of all lupus vulgaris cases) followed by ulcerative type (two cases) and one case of tumor like presentation.<sup>5</sup>

In this study lupus vulgaris was being the commonest type of cutaneous tuberculosis (66.6%) followed by scrofuloderma (26.6%) least common being tuberculosis verrucosa cutis (TBVC) (6.6%).

Lupus vulgaris is one of the clinical presentations of cutaneous TB which is commonly found in patients who are sensitized to *M. tuberculosis*. LV has five major clinical variations including plaque, hypertrophic or vegetation, tumor-like, papular or nodular, and ulcerative types. Based on a study in India, ulcerative was the least common (14.2%) type of LV. On ulcerative LV, the ulcer is the main type of lesion.<sup>5</sup>

Scrofuloderma occurs due to the spread of infection from structures beneath the skin, especially lymph nodes. The clinical features of scrofuloderma is initially a firm, well-defined border, mobile, and asymptomatic subcutaneous nodule.<sup>6</sup> The nodule will enlarge and soften, after several months. It will rupture and form ulcer and sinus.<sup>7</sup> Spontaneous resolution of the lesions might happen, leaving behind keloid-like scar and skin atrophy.<sup>4</sup>

Acute cutaneous miliary TB is a form of cutaneous TB that occurred due to hematogenous spread of TB in immunocompromised patients, example, in retro-positive patients. The clinical features of this type of cutaneous TB are pinhead sized to 6 mm sized in diameters of erythematous macules and papules. Vesicles or pustules may form on the center of the lesions, which would rupture and form dry crusts.<sup>8</sup>

There are several examinations to support the diagnosis of cutaneous TB. Bacteriological examination for AFB using Ziehl–Neelsen staining of the skin lesion is an important additional examination to diagnose cutaneous TB.<sup>3</sup>

Cutaneous TB might vary in histopathological appearance; in general, it shows granulomas consisting of epithelioid, mononuclear, plasma, and Langhans cells, with or without caseation necrosis.<sup>9</sup>

This study showed the commonest histopathological features were tuberculoid granuloma with epithelioid cells and langhans giant cells in 73.3% patients, AFB were seen in 53.3% of patients, hyperkeratosis was seen in 60% of the patients.

As compared to study done by Puri et al, commonest histopathological features showed were tuberculoid granuloma with epithelioid cell and langhans giant cells seen in 70% patients, hyperkeratosis was seen in 15% patients and AFB bacilli were seen in 5% patients.<sup>1</sup>

**Table 5: Treatment of drug sensitive TB-pediatric.**

Weight category (kgs)	Number of tablets(dispersible FDCS)			
	Intensive phase		Continuation phase	
	H/R/Z	E	H/R	E
	50/75/150	100	50/75	100
4-7	1	1	1	1
8-11	2	2	2	2
12-15	3	3	3	3
16-24	4	4	4	4
25-29	3	3+1A	3	3+1A
30-39	2	2+2A	2	2+2A

A=Adult FDC, H/R/Z/E -75/150/400/275.

PCR might help establishing the diagnosis of several types of cutaneous TB. PCR procedure is used to detect the deoxyribonucleic acid of *M. tuberculosis* on skin specimen. Negative PCR result will not rule out the diagnosis of cutaneous TB; hence, the diagnosis should not be done based on PCR examination alone.<sup>10</sup>

Treatment includes standard fixed four drug ATT regimen depending on weight and category recommended. After histopathologically confirming and detection of MTB by CB-NAAT which shows rifampicin sensitive or resistance.<sup>11</sup>

## CONCLUSION

The study showed that the common clinical type of cutaneous tuberculosis during the study period was lupus vulgaris, scrofuloderma and less common being TBVC.

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