Clinicohistological Profile of Cutaneous Tuberculosis in Central Nepal

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ABSTRACT

Background

There are few studies on cutaneous tuberculosis in Nepal.

Objective

To analyse the epidemiological, clinical and histological patterns of cutaneous TB over the past 5 years.

Method

Patients with cutaneous tuberculosis diagnosed from January 2010 to December 2014 at College of Medical Sciences, Chitwan, Nepal were included in the study. Chest radiography, routine investigations and screening for HIV was performed in all cases.

Result

A total of 47 clinical cases of cutaneous tuberculosis were diagnosed. The most commonly affected age group was 41-50 years. Male to female ratio was 1.5:1. Duration of cutaneous tuberculosis ranged from 1 month to 33 years. Lupus vulgaris was the most common clinical type (64%), followed by tuberculosis verrucosa cutis (19%). Two cases (4%) were diagnosed as papulonecrotic tuberculid. Overall, the most common site of involvement was extremities (55%) followed by head and neck, trunk, and perianal region. Histopathologic features of epitheloid cell granuloma with Langhans type giant cells were seen in 89% of cases, and in remaining 11% cases, chronic inflammatory dermatitis and nonspecific chronic dermatitis were observed.

Conclusion

M Tuberculosis is endemic in Nepal and the incidence of cutaneous tuberculosis at our centre was 0.1%. Lupus vulgaris was the most common type followed by tuberculosis verrucosa cutis in our study. Cutaneous tuberculosis can be accompanied by tuberculosis in internal organs and hence should be looked for. Clinicopathologic correlation is necessary to make a proper diagnosis.

KEY WORDS

Cutaneous tuberculosis, lupus vulgaris, Nepal

INTRODUCTION

Tuberculosis (TB) is as old as the human race and is the second leading cause of death from a single infectious agent.[1,2] There has been resurgence of disease due to iatrogenic immunosuppression, HIV infection and infection with multidrug-resistant mycobacteria.[2] There were 9.0 million new cases of all forms of tuberculosis and 1.5 million deaths worldwide in year 2013.[3] Cutaneous TB comprises only a small proportion (<1%-2%) of all cases of TB and is caused by Mycobacterium tuberculosis but Mycobacterium bovis and the bacilli Calmette–Guerin (BCG) are sometimes implicated.[4] The development of cutaneous TB depends on several factors such as immune status of patient, route of infection, past sensitization with TB and socio-economic status.[5]

The most widely used classification of cutaneous TB is based on the inoculation mechanism (endogenous or exogenous) but can also be classified according to bacterial load on the skin (multibacillary or paucibacillary). Multibacillary forms are tuberculous chancre, scrofuloderma, orificial tuberculosis, acute miliary tuberculosis and metastatic abscess (tuberculous gumma). Paucibacillary forms include TB verrucosa cutis and lupus vulgaris. Tuberculids represent immune hypersensitivity reactions to mycobacterial antigens and include papulonecrotic tuberculid, lichen scrofulosorum, erythema induratum of Bazin and nodular tuberculid.[1,2]

Nepal is an endemic country for TB but data regarding cutaneous TB in Nepal are lacking. Hence, this study was carried out to analyse the epidemiological, clinical and histological patterns of cutaneous TB.

METHODS

All cases of cutaneous TB attending the outpatient clinic of the Department of Dermatology, College of Medical Sciences (CMS) – Teaching Hospital, Bharatpur, Nepal from January 2010 to December 2014 were included in this study. Diagnosis of cutaneous TB was based on clinical features, Mantoux test, histopathological examination of skin biopsy by Haematoxylin-Eosin (H&E) and Ziehl-Neelsen (Z-N) staining of sections for AFB; and response to treatment. Chest X-ray, routine investigations and HIV screening test was performed in all cases. Permission from the ethical committee of our hospital was taken and consent was obtained from all patients included in the study.

RESULTS

A total of 47 cases of cutaneous TB were clinically diagnosed during the study period. In our study, the age of patients ranged from 4 to 78 years with a mean of 42 years. The most commonly affected age group was 41-50 years (n=14; 30%) [Table 1]. Males (n=28; 60%) were more commonly affected than females (n=19; 40%) and M: F ratio was 1.5:1. Duration of cutaneous tuberculosis ranged from 1 month to 33 years with a mean of 4.2 years. Maximum patients (n=26; 55%) had cutaneous TB for more than 1 year duration. Seven patients (15%) had cutaneous tuberculosis for 10 years and more.

Table 1. Age distribution of cases

Age Group (Years)	Case Number (n=47)	Percentage of Total Cases
1-10	3	6%
11-20	5	11%
21-30	6	13%
31-40	6	13%
41-50	14	30%
51-60	4	8%
61-70	7	15%
71-80	2	4%

Lupus vulgaris (LV) (n=30; 64%) was the most common clinical type observed [Fig.1], followed by tuberculosis verrucosa cutis (TVC) (n=9; 19%) and scrofuloderma (SCF) (n=6; 13%). Two cases (4%) were diagnosed as papulonecrotic tuberculid (PNT) [Fig. 2]. There was no case of periorificial tuberculosis observed in our study.

Figure 1. Lesion of lupus vulgaris over knee area

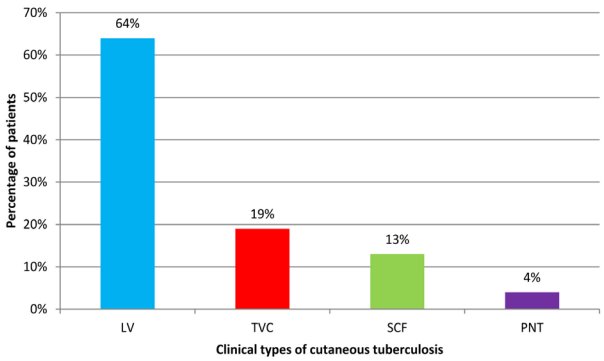

Figure 2. Bar Diagram: Distribution of types of cutaneous TB

In overall, skin lesions of all form of cutaneous tuberculosis were located on the extremities (n=26; 55%), head and neck (n=13; 28%), trunk (n=2; 4%) and perianal region (n=1; 2%). The remaining five cases (11%) had more than one area involved in which 3 cases of LV had lesions on abdomen in addition to the lesion at the limb; and 2 cases of PNT

had lesions all over the trunk and extremities. The most common site affected by LV was the extremities (n=17/30; 57%), followed by head and neck region (n=8/30; 27%). All cases of TVC had lesions on the extremities with the most common site being foot (n=7/9; 78%). Scrofuloderma was observed in the neck region (cervical-2, submandibular-1, supraclavicular-2; n=5/6; 83%) followed by axilla (n=1/9; 17%) with concomitant underlying lymphadenitis. In our study, two cases of papulonecrotic tuberculid were observed.

Diagnosis of cutaneous TB was made on findings of Mantoux test, histopathology and response to antituberculous treatment. In all cases of cutaneous TB included in our study, Mantoux test results were ≥15 mm. X-ray chest was normal, sputum for acid-fast bacilli (AFB) and screening test for HIV was negative in all cases. One patient with papulonecrotic tuberculid had past history of pulmonary TB and one patient each with LV and scrofuloderma had family history of TB.

Table 2. Histopathology findings of suspected cutaneous TB cases

Histopathology Diagnosis	Case Number (n=47)	Percentage of Cases
Lupus vulgaris (LV)	25	53%
Tuberculosis verrucosa cutis (TVC)	9	19%
Scrofuloderma (SCF)	6	13%
Papulonecrotic tuberculid	2	4%
Chronic granulomatous lesion	3	7%
Non specific chronic dermatitis	2	4%

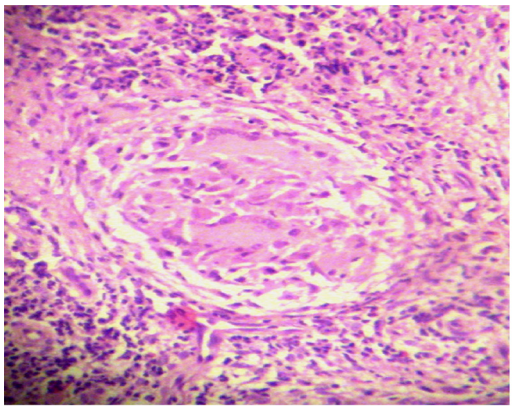

Figure 3. Well developed organized granuloma with Langhans type giant cell (H&E X10)

Histopathology studies of skin biopsy revealed epitheloid cell granuloma with Langhans type giant cells [Fig. 3] in 89% of cases, and in remaining 11% cases, chronic inflammatory dermatitis (7%) and nonspecific chronic dermatitis (4%) were observed [Table 2], however clinical feature of these patients mimic skin lesions of LV. Caseation necrosis was only observed in skin biopsy of scrofuloderma patients. None of the cases of LV, TVC or PNT showed AFB by Z-N staining but skin biopsies from all patients of scrofuloderma (13%) revealed AFB. Fifteen percent of our patients had cutaneous TB for more than 10 years; however there was no evidence of squamous cell carcinoma observed in histopathological examination of skin biopsies. All cases were given standard WHO regime antituberculous treatment (ATT) with complete improvement.[6]

DISCUSSION

The South-East Asia Region accounts for 39% of the total global burden of all forms of TB with mortality of 47.6%.[7] Reported incidence and prevalence rate of all forms of TB in Nepal in 2012 was 163 and 241 per 100 000 population, respectively.[7] Cutaneous TB comprises only a small proportion (<1-2%) of all cases of TB.[5] Exact incidence and prevalence of cutaneous tuberculosis in Nepal is not known, however study from western Nepal reported incidence of 0.12% which is in accordance to our study(0.1%).[8] Although Nepal is an endemic country for TB, the reported incidence of cutaneous TB is rather less compared to studies from various countries in South Asia.[9-11]

Our study reveals male predominance with male to female ratio of 1.5:1 which was similar to studies reported in literature.[8,9,12] However, Marcoval et al reported female predominance.[13] Age group between 41-50 years (mean 42 years) was most commonly affected in our study but the study from western Nepal reported that the younger age group was most commonly affected.[8] However, the mean age of the patients varied in various studies and most of the studies reported greater occurrence in 2nd and 3rd decade.[9,12,14,15]

In our study, extremity was the most common site of involvement observed (55%) in comparison to other sites such as head and neck and trunk, which is similar to other studies reported.[8,12] Chitwan is one of the agriculture based district of Nepal where majority of population are farmers. Minor trauma to the extremities may lead to exogenous inoculation which could be the main reason of occurrence of skin lesion over extremities in our study.

LV was the most common type (64%) of cutaneous TB observed in our study and studies from Europe,[13] and South-East Asia also reported LV as the most common subtype of cutaneous TB,[11,12,14-16] but study from western Nepal revealed TVC as the most common clinical type.[8] TVC was the second most common type of cutaneous TB (19%) in our study and all the cases had lesion over extremities which was similar to other studies conducted in South Asia.[8,10,11] Scrofuloderma (13%) was the third most common type of cutaneous TB, however, some studies done in India and Morocco reported scrofuloderma as the most common type;[9,10,17,18] and practice of unpasteurized milk consumption was assumed to be a factor contributing to high scrofuloderma prevalence.[10]

Histopathologic picture of cutaneous TB can be variable and may present in a number of patterns such as abscess, well-formed (tuberculoid) granulomas, diffuse histiocytic

infiltration, panniculitis, nonspecific chronic inflammation, naked (sarcoidal) granulomas, and rheumatoid-like nodules.[19] In our study, histopathologic examination of skin lesions was typical of cutaneous TB in 89% cases; however in five cases (11%), chronic granulomatous lesion (7%) and nonspecific chronic dermatitis (4%) was seen. In such cases, when histopathology is inconclusive, a positive tuberculin test and the response to anti-tuberculous therapy must suffice as a proof of tuberculous aetiology of skin lesion.[20]

Our study is a hospital based study; hence the results obtained may not be representative of the entire country.

CONCLUSION

Lupus vulgaris was the most prevalent type (64%) of cutaneous TB in our study and the most common location was the extremities (55%). Majority of patients were between 41-50 years of age with male predominance. Clinico-pathologic correlation is necessary to make a proper diagnosis. Cutaneous TB can be accompanied by tuberculous infection in other organs and hence should be looked for. More multi-centred studies should be carried out to obtain epidemiological data of cutaneous tuberculosis in Nepal.

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