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A clinico-epidemiological study of cutaneous tuberculosis at tertiary care centre of western India

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ABSTRACT

Introduction: Cutaneous tuberculosis is not a uncommon type of extrapulmonary tuberculosis in India. Our aim was to study the various clinico morphological pattern and epidemiology of cutaneous tuberculosis, and to correlate them with mantoux reactivity and human immunodeficiency virus (HIV) status.

Materials and Methods: During the one year newly diagnosed patients of cutaneous tuberculosis were included in this study, attending at Dermatology Outpatient Department. The demographic details, clinical and vaccination history, family history and clinical features were recorded. Monteux test, HIV (ELISA) test and other relevant test done in all cases. Diagnosis was confirmed by clinical, histopathological and microbiological evidences.

Results: In our study out of total 34 cases most common morphological variant of cutaneous tuberculosis was lupus vulgaris (LV) (38.23%) followed by Scrofuloderma (SFD) (29.41%) and tuberculois verrucoa cutis (20.59%). In morphologic pattern, plaques were most common lesions in both tuberculois verrucoa cutis and lupus vulgaris while ulcerative lesions were in scrofuloderma.

Conclusions: Skin tuberculosis as well as other extra-pulmonary TB is an important issue in the era of HIV-AIDS. As current and newer diagnostic tools are not enough sensitive, specific or cost effective in its diagnosis, knowing its clinical pattern and presentation is important.

1. Introduction

The disease tuberculosis represents one of the oldest diseases encountered by humankind. Despite aggressive prevention programs, tuberculosis is still progressing endemically in developing countries and likewise other developing part of world, tuberculosis is continue to be in its grave form in the India. Cutaneous tuberculosis represents nearly 1.5% cases of extra-pulmonary tuberculosis.[1] Wide variation in clinical spectrum of cutaneous tuberculosis depends upon host immune status and portal of microbial entry. So we studied the incidence, clinical and histopathological features of cutaneous tuberculosis in our region. Early diagnosis and treatment of such cases at least make dermatologists as a part of the Great War against tuberculosis.

2. Materials and Methods

During the one year (September 2013 to September 2014) 34 newly diagnosed patients of cutaneous tuberculosis were included in this study, attending at the Dermatology Outpatient Department of Govt. Medical College and Hospital, Kota (Rajasthan, India). The demographic details, clinical andvaccination (BCG) history, family history and clinical features were recorded. Complete blood count (CBC), erythrocyte sedimentation rate (ESR), Montoux test, HIV (ELISA) test, Roentgenogramof chest and other

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regions (if indicated) and ultrasound of the abdomen were done. Complete blood count performed on blood analyser available in our medical college hospital. Montoux test is done using 5 TU of tuberculin solution injected intradermally and induration noted after 48-72 hr. Skin biopsies were sampled by 3mm punch from the active advancing edge of the lesion under aseptic conditions. Smear for acid fast bacilli (AFB) from lesion and sputum was done in each of the patients. Before the final diagnosis made by histopathological specimen some of the patients of newly diagnosed cutanenous tuberculosis were considered as psoriasis or eczema.

An ethical committee approval and written informed consent of study subjects was obtained.

3. Result

In our study, out of 1242 cases enrolled for tuberculosis, 278 cases were diagnosed as extra-pulmonary tuberculosis. Cutaneous tuberculosis represented only 2.73% (34 cases) of total and 12.23% of extra-pulmonary tuberculosis cases. The study consisted of 18 (52.94%) males and 16 (47.06%) females. The majority of patients were in the age group of 20 to 40 years (52.94%).

Lupus vulgaris (LV) (38.23%) was the most common morphological pattern of cutaneuos tuberculosis in our study followed by Scrofuloderma (SFD) (29.41%) and tuberculois verrucoa cutis (20.59%). Most of the patients (19 patients, 55.88%) had duration of less than one year specially in case of Scrofuloderma where 85.71% (6 out of 7cases) were present within one year(probably reflect its discharging nature of disease) Table 1). Family history of pulmonary tuberculosis was positive in 3 cases of Lupus vulgaris. Like wise past history of anti-tubercular treatment (ATT) was seen in 5 cases(2 cases of SFD and tubercular gumma each and one case of LV).

The commonest site of involvement was lower limbs seen in 12 (35.29%) patients followed by trunk 10 patients (29.41%) and face and neck in 9 patients (26.47%) (Table 2). In morphologic pattern, plaques were most common lesions in both tuberculois verrucoa cutis and lupus vulgaris while ulcerative lesions were in scrofuloderma. Lymphadenopathy was seen only in10 cases (eight cases of SFD and two cases of tubercular gumma) (Table 3). In most cases lesions were usually asymptomatic with occasional mild itching and complain of discharge (scrofuloderma).

Sputum was positive for AFB in three cases of scrofuloderma.Pulmonary symptoms of tuberculosis were seen in 11 patients (6 cases of SFD, 3 cases of LV and 2 cases of tubercular gumma). Caseation necrosis and epitheloid granuloma with Langhans giant cells were the most common histological finding (Table 4). X-ray findings suggestive of pulmonary tuberculosis were seen in 14 patients (six of SFD, four of LV, two of gumma and one for PNT and EIB each). Mantoux test was significantly positive (Table 5) as more than 15 mm in duration in fifteen cases (44.11%) and 10-15 mm in thirteen cases (38.23%), but negative in six cases(17.64%). ELISA test for HIV was positive in one case with multiple scrofuloderma.

4. Discussion

Tuberculosis can involve any organ or tissue of the body including skin. According to various studies worldwide incidence of tuberculosis is from 0.1 to 1% of all cutaneous disorders Bannerjee et al.,[2] found 0.5% incidence, and LV, was seen commonest (38.29%), followed by TBVC(19.14%), scrofuloderma (14.89%), OFT in 14.89% and Tb gummas in 12.76%**.** In our study LV was the commonest morphological form followed by scrofuloderma and TBVC. Khan et al.,[3] also found Lupus vulgaris the commonest form(50%) followed by TBVC (30%) and Scrofuloderma (20%). These results were also consistent with other Indian studies from different demographical areas[4–7] contrary to this Beyt et al.,[8] Sehgal et al.,[9] Yates and Ormerod,[10] Gopinathan et al.,[11] and Yasmeen and Kanjee[12] observed scrofuloderma, the commonest being varying from 40 to 65% respectively. Wong et al.,[13] found TBVC the commonest 46% followed by LV 22%.

Scrofuloderma is a evidence of underlying tubercular focus which is extended to skin, it may be tubercular lyphadenitis or skeletal tuberculosis. SFD was seen in 10 (25%) of cases in our study. Scrofuloderma were found in only six cases out of which three had direct extension into the skin from cervical and two from axillary lymphadenitis.

In our study TBVC was seen in 7 (17.14%) of total cutaneous tuberculosis cases. In present study percentage of these cases were in higher number than the studies conducted by Yasmeen and Kanjee,[12] Gopinathan et al.,[11] and Ramesh et al.,[14] who found it to be 8%, 13.17% and 14% respectively. Hands and fingers are most common site of involvement in westeren[15] countries while in Eastern countries[9] lower extremities involvement is observed.

OFT is the tuberculosis of the mucous membrane and the skin of the orifices resulting from auto inoculation of tubercle bacilli in patients with advanced visceral tuberculosis.[16] Men are more often effected by it than women and middle-aged or older individuals are mostly get affected.[15,16] OFT is observed in only one case which was a 8 year male child. In our study 71.4% were males 40.28 years was the mean age that is consistent with of other studies done by various researchers.[6,9]

Table 1: Age and sex distribution of various forms of cutaneous tuberculosis

Clinical variants	Age groups <20 years	20-40 years	40 years	Total
Lupus vulgaris	2(2/0)	7(4/0)	4(0/4)	13
Scrofuloderma	1(1/0)	5(3/2)	4(0/4)	10
Tuberculosis verrucosa cutis	4(2/2)	3(3/0)	0	7
Tubercular gumma	0	1(1/0)	1(1/0)	2
Erythema induratum of Bazin	0	1(0/1)	0	1
Papulonecrotic tuberculid	0	1(1/0)	0	1
Total	7(20.59%)	18(52.94%)	9(26.47%)	34

Table 2: Site wise distribution in different types of cutaneous tuberculosis

Site → Clinical variants↓	Face & Neck	Upper limbs	Trunk	Lower limbs	Genital	Total(%
Lupus vulgaris	5	1	5	2	0	13(38.23%)
Scrofuloderma	4	1	3	2	0	10(29.41%)
Tuberculois verrucoa cutis	0	0	0	7	0	7(20.59%)
Tuberculae gumma	0	0	2	0	0	2(5.88%)
Erythema induratum of Bazin	0	0	0	1	0	1(2.94%)
Papulonecrotic tuberculid	0	0	0	0	1	1(2.94%)
	9	2	10	12	1	34

Table 3: Various morphologic pattern and lymphadenopathy

Clinical variants	Plaque	Ulcer	Ulcero-plaque	Tumor/Nodule	Lymphadenopathy
Lupus vulgaris	10	0	3	0	0
Scrofuloderma	0	7	3	0	8
Tuberculois verrucoa cutis	7	0	0	0	0
Tuberculae gumma	0	0	0	2	2
Erythema induratumof Bazin	0	0	0	1	0
Papulonecrotic tuberculid	0	1	0	0	0

Table 4: The histopathological feature of cutaneous tuberculosis

Histopathological feature	Number of cases	Percentage
Caseation necrosis	17	50%
Tuberculoid granuloma with epitheloid and Langhans giant cells	24	70.58%
Epidermal hyperplasia	19	55.88%
Presence of AFB bacilli	6	17.64%

Table 5: Results of Mantoux test

Induration	LV	SFD	TVC	Tub.Gumma	EIB	PNT	%
<10 mm	2	1	1	1	0	1	17.64
10-15 mm	9	1	2	1	0	0	38.23
>15 mm	2	1	11	0	1	0	44.11

Table 6: Major studies on cutaneous tuberculosis

	Our study	**Puri N [17]**	**Patra AC et al., [18]**	**Arora et al., [19]**	**Thakur et al., [20]**	**Terranova M et al., [21]**	**Chaudhary et al., [22]**	**Sharma S et al., [23]**
Study location /year	Kota (2013-14)	Punjab (2011)	Kolkata (2006)	Assam (2006)	Assam (2012)	North Ethiopia (2008)	Pune (2012)	Delhi (2015)
Study period	1 year	NM	1 year	5 year	1 year	1 year	1 year	3 year
Sample size	34	30	104	37	42	202	46	165
M:F ratio	1:12	1.5:1	2.25:1					1.32:1
F/H		NM	NM					
BCG (%)		NM	59.6		35.7			100
Clinical types								
LV	13	11(55%)	(57.69%)	19	18	22(10.9%)	18(39.14)	85
SFD	10	5(25%)	(21.15%)	6	21	143(70.8%)	14 (30.43)	39
TBVC	7	1(5%)	(19.23%)	6	2	6(3%)	10 (20.74)	11
OFT	1	1(5%)						
PNT	1	1(5%)		7			3(6.52)	3
EIB	2	1(5%)				2(1%)		2
LS					1	11(5.4%)	1(2.17)	24
Gumma	1					18(8.9%)		
Extra CTB		Hilar LN (1case)		14	22	34	16	36(21.8%)
Histopathology	Tuberculoid granuloma	Tb granuloma, epitheloid and langhans giant cells	Granuloma	Epitheloid granuloma	Tuberculoid granuloma	Epitheloid granuloma	Tuberculoid granuloma	Epitheloid granuloma
MT	28	10 (%)	98.07	27 (%)	35(%)	36(%)		85%
AFB smear		NM	2 (SFD)	2(SFD)		143(SFD)		
HIV	1		NR	7	NR	33		5
TX response	Good	Good	Good	Good	Good	Good	Good	Good

5. Conclusion

Cutaneous tuberculosis is not a uncommon health problem found in our region. Due to different kind of clinicomorphological pattern and presentations there is difficulty in diagnosis of cutaneous tuberculosis. Delay in diagnosis can occur because scant attention is paid by elders during the early stages of the disease and when they seek advice it is often from practitioners little exposed to this uncommon condition. The lack of awareness is further heightened by the failure to mention skin involvement even in articles meant exclusively to educate practitioners about the different clinical types of tuberculosis and in special issues brought out to disseminate information on the various facets of this disease.

6. Source of Funding

None.

7. Conflicts of Interest

None declared.

8. Acknowledgment

Nil.

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