Original Research Paper

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Prevalence of Cutaneous Tuberculosis and Its Microbiological Aspects in Tertiary Care Hospital.

Medical Science

KEYWORDS : - ZiehlNeelsen (ZN) stain, Lowenstein Jensen, Acid Fast Bacilli(AFB),Cutaneous Tuberculosis.

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ABSTRACT

Introduction: Cutaneous tuberculosis is caused by Mycobacterium tuberculosis. Extra pulmonary Tuberculosis(EPTB) constitutes about 15–20% of TB cases and can constitute up to 50% of TB cases in HIV-infected individuals 1.Materials and methods:Thirty one consecutive skin biopsy samples were taken from Skin OPD and processed in Microbiology Department,UCMS & Guru Teg Bahadur Hospitals,Delhi.ZiehlNeelsen smear,Auramine stain and culture were performed on biopsy samples,

Results: Out of 31 biopsy samples, Acid fast bacilli was seen in 2 samples by ZN staining method and growth was found in 6 samples only.

Conclusion :Diagnosis of Cutaneous tuberculosis (TB)can be baffling, compelling a high index of suspicion owing to paucibacillary load in the biopsy specimens. Although culture methods is gold standard in diagnosis of TB but larger duration of growth period leads inefficiency of the method in high risk patients.

Introduction

ExtraPulmonary Tuberculosis (EPTB) constitutes about 15–20% of TB cases .Half ofthe cases of TB in HIV-infected individuals also contributed by EPTB1. India carries high burden of TB cases, thus proportionately higher number of EPTB cases are also observed in this country2. Cutaneous TB constitutes about 1.5% of all EPTB cases3.The incidence of cutaneous TB amongst total dermatology patients varies between 0.1% and 2% in different studies which is increasing proportionately with the overall increase in TB4,5.The Cutaneous tuberculosis is caused by Mycobacterium tuberculosis and it can be primary or secondary in nature. Primary infection implies the absence of previous infection whereas secondary tuberculosis develops in individuals who have either been immunized with BCG or have suffered a primary tuberculous infection and are sensitized to the mycobacterial antigens6. The various modes of reaction of the skin to the presence of tubercle bacilli are determined by the sensitization status of the host to the mycobacterial antigens, status of cellular immunity, route of infection, the bacillary inoculums and the pathogenicity of the infecting mycobacterial strain7.The clinical features varies from individual to individual depending on immunological status, mycobacterial virulence, the infectious circumstances and the presence or absence of mycobacteria in the lesion. The cutaneous tuberculosis can occur by direct penetration of Mycobacterium tuberculosis in the dermis (primary infection) or by dissemination of the same, beginning with a pulmonary focus (secondary infections)8. Cutaneous tuberculosis and atypical mycobacteria skin infection (AMI) present a wide range of clinical manifestations, varying from warty, nodules and papulonecrotic lesions, to ulcerations and abscesses[9].

Methods

A Cross-Sectional study was conducted on thirty one consecutive patients of cutaneous tuberculosis in the departments of Microbiology and Dermatology, UCMS & Guru Teg Bahadur Hospital Delhi, from Nov2010-March2012. The Clinically diagnosed patients and histopathologically documented new cases of cutaneous tuberculosis of both sex and age group or untreated cutaneous tuberculosis patients, with antitubercular therapy in past three months were enrolled for this study.A Skin biopsy specimen of the area affected were obtained from all the patients in 0.85% saline and homogenised and decontaminated with 4% NAOH method. The Sediments were inoculated on Lowenstein Jensen(LJ) slants. A positive culture was confirmed microscopically for acid fast bacilli after staining with Ziehl Neelsen stain and Auramine stain. Rough, tough, buff irregular colonies were seen(Pic-3). The absence of growth after 8 weeks on LJ medium was taken as negative. Specimen were identified by certain biochemical tests egniacin,heat stable catalase,nitrate,urease.

Results

Thirty one skin biopsy samples were obtained from the time period between Nov 2010-March 2012. Sixty seven percent (21) patients had Lupus vulgaris, 25.8%(8) had scrofuloderma and 6.45%(2)had TBVC. Amongst 31 samples, AFB was seen in 2 biopsy smears (6.4%) by ZN staining method (Pic-1),fluorescent bacilli was seen in 4(12.9%) biopsy smears by auramine staining method (Pic-2)and only 6(19.3%) skin biopsy samples were grown on LJ culture(Pic-3) (Table-1).

Method	Positive
ZN stain	2(6.4%)
Culture	6(19.3%)

Table1: Results (%)of staining and culture in skin samples studied.

Discussion

Lupus vulgaris was the most common clinical variant in our study.Aggarwal P et al (2008) reported the similar number of clinical types10. The commonest variant in their study on cutaneous tuberculosis was lupus vulgaris. Out of 35 patients,21 cases (60%) were of lupus vulgaris,11(31.4%) were of scrofuloderma and 1(2.8%)case was of tuberculosis verrucosa cutis. Our results were similar to this study. Moreover,2 (5.7%) patients of scrofuloderma in their

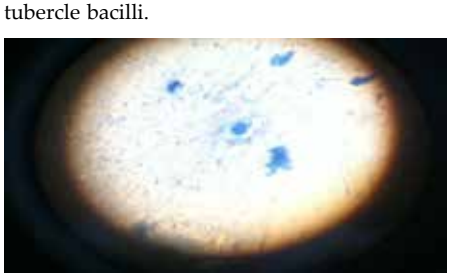
study had more than one type of TB simultaneously,one had gumma and other had lupus vulgaris respectively. But in present study,no such findings had been seen. Ramesh V et al found lupus vulgaris to be the commonest form(63.5%) in their series11. These results were consistent with Khan Y et al12 who also found lupus vulgaris the commonest 50% followed by TBVC 30% and Scrofuloderma 20%. Similar results were also seen by Satyanarayan BV et al7 , Singh G et al13 and Kumar B et al14who found Lupus vulgaris ,the most commonest clinical type.Dhar S et al 15 also found LV the commonest 75% followed by TVC 25%. Lupus vulgaris usually occurs in individuals previously sensitized to tubercular infection,seen in patients with moderate to high degree of immunity.The lesions arises due to inoculation by exogenous source and by hematogenous spread.Malnutrition and low socioeconomic conditions were predisposing factors for cutaneous tuberculosis. Discordant results were found in studies of a Sehgal VN et al 5, Beyt BE et al16, Varshneya A17.

Isolation of M.tuberculosis can be performed on conventional egg based medium such as Lowenstein Jensen medium and agar based medium such as Middlebrook 7H10 or 7H11 and liquid media such as Kirchner's or Middlebrook 7H9 or 7H12 broth. The culture techniques have been estimated to detect 10-100 viable AFB per ml of sample18. The detection of mycobacteria in clinical specimens is the current "gold standard" consisting of a combination of solid and liquid media. In present study culture positivity was found to be 19.3% from skin biopsy specimens.The culture positivity of 56.86% has been reported in some Indian studies whereas it was 43.24% in Brazilian study of biopsy specimens. Another Brazilian Study by Ogusuku M et al8 on the 37 skin biopsy specimens, showed 43.24% culture positivity. Aggarwal P et al10 reported a culture positivity of 74.3%(26/35) ,by simultaneously using both conventional LJ medium and BACTEC system. The LJ culture positivity in their study shows 25.7% in skin biopsy specimens , which was similar to our study from the same hospital.

In another Brazilian study by Abdulla CM et al19 showed the culture positivity of 14.7%41.In their study, only 5 isolates were positive out of 34 skin biopsy samples on LJ medium. Discordant findings were shown by Sehgal VN et al6, the LJ positivity in skin biopsy specimens came out to be 7%(3/42). All the 3 cases were of SFD(3/13;13%) ,while no bacilli was recovered from patients of lupus vulgaris and TBVC.TanSH et al20 reported that the tissue culture for cutaneous tuberculosis is difficult and low-sensitive.

Conclusion

Cutaneous Tuberculosis is one the major health problem in our country. Out of all clinical variants of cutaneous TB ,LV was most commonest variant. Although, culture is best method for diagnosis ,but being paucibacillary in nature,it requires more sensitive and rapid detection method for diagnosis like gene amplification targeting specific genes of tubercle bacilli.



Picture1: Ziehl Neelsen Staining

Picure2: Auramine Phenol Staining

Picure3: Culture showing Mycobacterium tuberculosis

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