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Original Article

Utility of Acid-Fast Staining in Tubercular Lymphadenopathy Compared to Cytopathology

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Abstract

Background: Lymphadenitis is a common form of extra-pulmonary tuberculosis. As in peripheral health centers, the facilities for histopathology and culture are lacking, material obtained by fine needle aspiration (FNA) in suspected cases of tubercular lymphadenitis (TBL) can be stained for Acid Fast Bacilli (AFB) by Ziehl Neelson method as every Designated Microscopy centre under Revised National Tuberculosis Control Programme has facility to perform it. This study was conducted with the aim of establishing the utility of performing AFB on aspirated material at a DMC over performing cytology at a higher centre.

Methods: Fifty eight suspected cases of TBL attending urban health training centre, Dept. of Community Medicine were included in the study. FNA was performed and at least two slides were prepared, one for acid fast staining at centre itself and the other was sent for cytology, in the Dept. of Pathology. SPSS 11.0 was used to data analysis.

Results: 75.9% slides were AFB Positive; there was significant correlation of duration of disease and cytomorphology with AFB positivity.

Conclusion: It was concluded that performing AFB staining at a peripheral centre on material aspirated from lymph nodes could alone be sufficient for diagnosis of tuberculosis in majority of cases.

Keywords: *Lymphadenopathy,T tuberculosis, Acid fast bacilli staining*

Introduction

Tuberculosis is still a major public health problem in developing countries with a high mortality rate. Lymphadenitis is the most common form of extra-pulmonary tuberculosis (1). In majority of peripheral centers in our country, the facilities for cytopathology, histopathological diagnosis and for culture of the organisms are lacking. Hence, it is imperative that a suitable alternative diagnostic modality be adopted to confirm the diagnosis. Fine needle aspiration [FNA] is a simple, relatively painless and less cumbersome procedure which can be carried out in O.P.D. Preparation of the smears and staining for Acid Fast Bacilli (AFB) by Ziehl Neelson can be carried out in Designated Microscopy centre under Revised National Tuberculosis Control Programme RNTCP) even at the periphery hospitals.

Few studies have tried to correlate the cytological findings with microbiological results for the presence of acid-fast bacilli in smears. This study was conducted with the aim of establishing the utility of performing AFB on aspirated material at a DMC over performing cytology at a higher centre.

Materials and Methods

The study was conducted in Urban Health Training Centre (UHTC) which is a DMC and an out reach centre of Department of Community Medicine JN Medical College, Aligarh Muslim University, India. Sixty five consecutive clinically suspected cases of tuberculous lymphadenitis over a period of two years were enrolled in this prospective study. Patients with enlarged lymph node(s) and with a history suggestive of tuberculosis were included after taking an informed

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consent. Relevant clinical details were recorded. Fine needle aspiration was performed aseptically with sterile 23 G needle and 10 ml syringe. During each pass, the needle was moved throughout the lesion several times while aspirating. Varying sites of lymphadenopathy (i.e. cervical, axillary, and inguinal) were aspirated. The aspirated material was expressed on to the glass slides and smeared. In each case, at least, two smears were made. ZN stained smear were examined by laboratory technician trained under RNTCP at the centre, the other slide was sent to Department of Pathology for cytopathological examination. The diagnosis of tuberculous lymphadenitis was made when the following criteria were met: the presence of epithelioid cell granulomas with or without necrosis and/or smear positivity for acid fast bacilli. Data were statistically analyzed using SPSS 11.0 Production Facility.

Results

A total of 65 cases who fulfilled the study criteria consecutive patients with the diagnosis of tuberculosis by cytomorphology were included in the study. Seven FNA specimens were excluded from the study because stained smears had stain precipitates obscuring the background. Therefore 58 cases were included in study. There were 18 males and 40 females. The youngest was 2 yr old and the oldest was 66. The mean age was 19.8. Fifty seven percent of the cases were in less than 15 yr age bracket. Duration of disease was divided in two groups one with symptoms less than one month and other with symptoms more than one month. 62.1% cases presented with symptoms less than one month. Maximum positivity of ZN staining was in patients who had symptoms less than one month and was found to be statistically significant (P= 0.003) (Table 1)

The majority of cases 36(62.1.%) showed granuloma with necrosis followed by 18(31%) granuloma without necrosis and 4(6.9%) were reactive. The overall AFB positivity rate was 75.9%. The highest yield of AFB positivity was found in cases in which granuloma with necrosis was a cytomorphological diagnosis (30 or 68.2%), followed by 10(22.7%) in granuloma without necrosis and in Reactive Lymphadenitis (4 or 9.1%) and was statistically significant (P= 0.04) (Table 2).

Table 1: Correlation of ZN positivity with duration of Disease

Duration	Ziehl Neelson Staining		Total (%)
	Positive (%)	Negative (%)	
≤ 1 month	32 (88.9)	4 (11.1)	36 (100.0)
>1 month	12 (54.5)	10 (45.5)	22 (100.0)
Total	44 (75.9)	14 (24.1)	58 (100.0)

Table 2: Correlation of ZN positivity with Cytomorphology

Type of Cytomorphology	Ziehl Neelson Staining		Total (%)
	Positive (%)	Negative (%)	
Reactive	4 (9.1)	0	4 (6.9)
Granuloma with Necrosis	30 (68.2)	6 (42.9)	36 (62.1)
Granuloma without necrosis	10 (22.7)	8 (57.1)	18 (31.0)
Total	44 (100.0)	14 (100.0	58 (100.0)

Discussion

Dependence on the clinical evidence alone would lead to erroneous diagnosis in considerable number of lymphadenitis cases (2). Hence one should confirm the diagnosis by simple technique like FNAC or cytopathology or histopathology, along with bacteriological study.

A female predominance was noted by, with a female to male ratio of 2.2:1. This result is in agreement with the finding of Pamra et al. (3). Others have described male predominance (4, 5). The high female predominance in our study is because of the fact that more females come at

the centre, as morning timings of the centre are more suitable for them.

The maximum smear positivity was found in granuloma with necrosis which was similar to other studies (6, 7). The overall smear positivity in range from 18% to 75% as reported by various authors (6, 7). Overall smear positivity in the present study was 75.9%. This is comparable to the above rates even though it was slightly higher. This may be due to the fact that most of the patients had necrotic lesions (83.3%) and yield of AFB is highest in necrotic lesions (8). The high positivity can also be attributed to the fact that 62.1% (Table1) patients came with complaints less than one month. Chances of taking anti tubercular treatment is remote when duration of disease is less thereby resulting in high AFB positivity in ZN Staining (9).

Though histopathology is diagnostic and culture studies are gold standard non availability of these facilities at periphery leads to referral of patients to higher centers which results in cost to patients, delay in diagnosis and even patient attrition. FNA which is a simple out door procedure if performed at DMCs by the laboratory technician will augment early diagnosis and reduction in referral to higher centers. This can easily be done by further upgrading the skill of laboratory technicians.

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