



Original article

FNAC as a diagnostic tool for Tuberculous lymphadenitis at peripheral health institutions

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ABSTRACT

Background: Tuberculosis is a common and important public health problem in India. Fine Needle Aspiration Cytology (FNAC) is very easy, simple, quick, cheap and specific method for diagnosis of Tuberculous Lymphadenitis. The objective of this study was to study the diagnostic yield of FNAC for diagnosis of Tuberculous Lymphadenitis by ZN staining and Cytopathological characteristics. **Material and Methods:** Present study was a retrospective study. FNAC/ aspiration was done in cases of superficial lymphnodes / abscess were analysed for diagnostic yield of Tuberculous etiology by ZN staining and cytopathological characteristics. **Results:** A total of 136 cases of superficial lymphadenitis presenting as solid swelling or abscess were subjected to FNAC examination. Smears were prepared from the aspirated material. Two separate slides prepared, stained with Giemsa and ZN stain. Total of 73 cases (53.67%) slides showed evidences suggestive of Tuberculous etiology out of which 33 (45.2%) were found AFB positive on ZN stain. One AFB positive (not included as AFB positive in the analysis of results) slide was suggestive of Mycobact. leprae as confirmed by Fite stain. **Conclusion:** FNAC is a simple, safe, quick and cheap method to establish the diagnosis. Procedure is very safe, easy and can be performed by any doctor of PHI. Demonstration of AFB in the smear gives a bacteriologically confirmed diagnosis very quickly. Cytological examination can further improve the diagnostic yield without bacteriological confirmation.

KEYWORDS: Tuberculosis, Lymphadenitis, Peripheral Health Institutions

INTRODUCTION

Tuberculosis (TB) is thought to be one of the oldest human diseases and the history is almost as old as mankind [1]. The European kings of the middle ages imparted the royal touch to cure the "King's evil" to which mycobacterial lymphadenitis referred [2]. Lymphadenopathy is one of the common clinical problems with varied etiological considerations. The discovery and speedy diagnosis of enlarged lymph node is of great clinical importance. Fine needle aspiration cytology (FNAC) has become an important adjunct to the study of peripheral lymphadenopathy as a rapid, reliable and inexpensive method of making a diagnosis and is particularly relevant in developing countries like Bangladesh where facilities for surgical biopsy are insufficient. Tuberculous lymphadenitis is one of the most common causes of lymph node enlargement in developing countries [3].

Lymphadenopathy is one of the commonest clinical presentations among the paediatric age group. Evaluation of a child with lymphadenopathy is a common clinical scenario for the paediatricians and poses a diagnostic challenge. Lymphadenopathy might be caused by proliferation of cells intrinsic to the node, such as lymphocytes, plasma cells, monocytes or histiocytes or by infiltration of cells extrinsic to the node such as neutrophils and malignant cells. Lymphadenopathy is a disease process which involves lymph nodes that are abnormal in consistency and size. Lymphadenitis refers specifically to lymphadenopathies which are caused due to inflammatory processes [4].

The aim of the present study was to find out diagnostic yield of FNAC/ aspirated specimen to establish the diagnosis of Tuberculosis by cyto-pathological and bacteriological (demonstration of AFB by ZN staining) method.

MATERIALS AND METHODS

The present study is a retrospective study of FNAC from superficial lymph nodes of patients availing OPD services of various departments of Integral Institute of Medical Sciences and Research, Lucknow. All FNAC done, for diagnosis of superficial Lymph node swelling or abscess by department of Pathology between 1st Jan 2018 to 31st December 2018 were studied and analysed. The FNAC procedure was done by Cytomorphologist using a 22G needle attached to a 10ml disposable plastic syring that was mounted on a handle for single hand grip.

Multiple smears were prepared from the aspirate. Few slides were spray-fixed with 95% alcohol and stained with Haematoxylin and Eosin stain (H & E), other slides were air dried, fixed in methanol and stained with May GrunwaldGiemsa stain. ZielNeelson stain was used in all cases with necrotic aspirates and smears showing caseous and pyogenic necrosis.

Inclusion criteria being patients having palpable superficial lymph node/s or abscess, had never been diagnosed having TB and gave informed consent for the procedure.

RESULTS

A total of 136 patients who presented with swelling in the region of superficial lymph nodes were referred from various clinical departments of Integral Institute of Medical Sciences and Research to the department of Pathology for FNAC from the superficial Lymph node swelling/ abscess from various sites of body were analysed.

Out of total 136 cases 63 (46.23%) were male and 73 (53.7%) were female (Table-1). The maximum number of patients 74 (54.3%) were in the age group of less than 20 years followed by 50 cases (36.7%) in the age group 41 years and more contributed least 12 cases (9%) only (Table-2). It was found that in 116 (85.29%) cases cervical lymph nodes were effected followed by inguinal lymph nodes 11 (8.08%) and axillary in 9 (6.6%) cases. (Table-3).

Table 1: Tuberculosis Positivity By Sex

Sex	Tuberculous (AFB Positive)		Granulomatous (AFB Negative)		Others (Non Tuberculous)		Total	
	Numbers	%	Numbers	%	Numbers	%	Numbers	%
Male	11	17.5	14	22.2	38	60.3	63	46.3
Female	22	30.1	26	35.6	25	34.2	73	53.7
Total	33	24.3	40	29.4	63	46.3	136	100

Table 2: Tuberculosis Positivity By Age

Age (Year)	Tuberculous (AFB Positive)		Granulomatous (AFB Negative)		Others (Non Tuberculous)		Total	
	Numbers	%	Numbers	%	Numbers	%	Numbers	%
< 20	15	11	19	14	40	29.4	74	54.3
21-40	16	12	16	12	18	13.2	50	36.7
41+	02	1.5	05	04	05	03.7	12	9.0
All	33	24.3	40	29.4	63	46.3	136	100

Table 3: Tuberculosis Positivity By Site

Site	Numbers		Tuberculous (AFB positive)		Granulomatous (AFB Negative)		Others (Nontuberculous)	
	Numbers	%	Numbers	%	Numbers	%	Numbers	%
Cervical	116	85.3	29	25	36	31	51	44
Inguinal	11	8.1	00	00	02	18	09	81
Axillary	09	6.6	04	44.4	02	22	03	33.3
Total	136	100	33	24.3	40	29.4	63	46.3

It was observed that AFB positive Tuberculosis was diagnosed in 33 (24.26%) of which 22 (66.66%) were females and 11 (33.33%) were males. Granulomatous pathology was found in 40 (29.41%) of which 26 (65%)

were females and 14 (35%) were male. Findings in support of other pathology was observed in 63 (46.3%) of which 25 (39.7%) being females and 38 (60.3%) males. The details are shown in (Table-4).

Table 4: Distribution of Cases by FNAC based Diagnosis

Diagnosis	Male	Female	Total	
			Number	%
Tuberculosis	11	22	33	33.1
Granulomatous	14	26	40	24.2
Other	38	25	63	46.3
Total	63 (46.3%)	73 (53.6%)	136	100

The cyto-morphological picture found during the examination of the slides and its co-relation with detection of AFB by ZN staining (Bacteriologically confirmed disease) has been studied. It has been divided in two groups depending upon presence of a granuloma. Slides showing granuloma have been further divided in three groups ie presence of granuloma only 22 (30.2%), with Necrosis 31 (42.5%) and granuloma with reactive lymph node 11 (15.1%). Slides which did not show granuloma have been

divided in two groups ie having necrosis (4 cases) alone or showing Polymorphs with necrosis (5 cases). It was observed that maximum number (19) AFB positive cases were found in cytomorphological picture showing granuloma with necrosis. It was interesting to note that all the slides which did not show granuloma but had necrosis with or without polymorphs showed presence of AFB in all cases (Table-5).

Table 5: Cytomorphological Picture and detection of AFB in the Sample

Picture		Numbers (%)	AFB Status	
			Positive	Negative
Granuloma	Granuloma only	22 (30.2)	04	18
	With Necrosis	31 (42.5)	19	12
	With Reactive lymph node	11 (15.1)	01	10
No Granuloma	Necrosis	04	04	00
	Polymorph with Necrosis	05	05	00

DISCUSSION

Tuberculosis is major health problem of the developing world and is a major public health problem in India. India contributes about 27% share of total global TB burden of which about 20% is the share of extra-pulmonary tuberculosis. In HIV settings the share of extra-pulmonary tuberculosis may increase up to 50% of total TB health problem. Bacteriologically confirmed diagnosis of Extra-pulmonary tuberculosis is difficult because availability of clinical specimen is possible through invasive procedures and pauci bacillary load in the clinical material. Due to this reason many a times in the routine clinical practice as well as in remote peripheral health facilities diagnosis of Extra-pulmonary tuberculosis (EPTB) is made on either Clinico-radiological or clinical basis alone. This leads to over/ under diagnosis of the problem and mal utilization of resources (drugs) & social stigma too. Hence through present study an attempt has been made to prove and justify use of FNAC procedure for diagnosis of lymph node tuberculosis, which holds major share of EPTB (about 20-40%). Superficial lymph nodes are easily accessible for FNAC.

In the present retrospective study, it was found that majority of patients 74 (54.3%) were in the younger age group of less than 20 years followed by age group 21-40 years 50 (36.7%), the youngest being of 3 months and eldest of 70 years. There were more number of females than male showing evidence of granulomatous lesion or AFB positive tuberculosis of lymph nodes. Almost similar observation has been made by Purohit et al[5], Dandapat et al[6] and Pamra et al[7] in their studies. Cervical lymph nodes were most commonly effected 116 (85.3%) with a predominance of females. These findings are almost in agreement with findings of Bezabin et al[8]. Almost all 25/32 (78.1%) the aspirates of pus samples showed presence of AFB on ZN stain microscopy. The blood mixed aspirate contributed least (6.2%) for presence of AFB in (5/79) samples. All those samples Cytomorphologically showing picture of Granuloma with necrosis, necrosis alone and polymorph with necrosis contributed maximum number of AFB positive 28/33 (84.84%). Bezabin et al[8] also found almost similar results in their study.

The spectrum of diseases diagnosed by FNAC procedure included Tuberculosis, Reactive lymph node, Neoplastic, inflammatory, Leprosy, Filaria and in one case no opinion was possible. Diagnosis of Tuberculous adenitis was established in 73/136 (53.7%) out of which 33/73 (45.2%) were showing presence of AFB in the sample. Thus, it can be inferred that for diagnosis of lymph node Tuberculosis, if FNAC is performed from the superficial lymph node, bacteriologically confirmed diagnosis can be made by simple ZN staining of the smear in 45.2% cases of all granulomatous pathology and 37% cases of all presumptive cases of Tuberculous lymphadenitis.

CONCLUSION

FNAC of superficial lymph node, is a simple, safe, cheap and quick method of making bacteriologically confirmed diagnosis of Tuberculosis. It can be done by doctor of peripheral health institution. No doubt that cytomorphological examination requires an experienced person/ doctor to identify granulomatous lesion along with other features to diagnose Tuberculosis but ZN stained slide for presence of AFB can be examined by the lab technician of the PHI who is trained in identifying AFBs. This way at least 37% cases of Tuberculous lymphadenitis can be diagnosed with bacteriologically confirmed status.

Competing interest: The authors declare that they have no competing interests.

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