



TO STUDY VARIOUS CYTOMORPHOLOGICAL PATTERNS OF TUBERCULAR LYMPHADENITIS IN FNAC AND ROLE OF ZEHL NEELSEN STAINING TO DETECT ACID FAST BACILLI

Pathology

Dr. Pawan Rathor Post Graduate Resident, Department of Pathology, Gandhi Medical College, Bhopal.

Dr. Pramila Jain Professor, Department of Pathology, Gandhi Medical College, Bhopal.

Dr. Lokendra Dave Professor, Department of TB and Chest, Gandhi Medical College, Bhopal.

Dr. Varsha Rampuri* Assistant Professor, Department of Pathology, Gandhi Medical College, Bhopal.
*Corresponding Author

ABSTRACT

Background-Tuberculous lymphadenitis is one of the most common causes of lymphadenopathy in developing countries and it is most common form of extra pulmonary tuberculosis and constitutes approximately 20-40% of extra pulmonary tuberculosis. Fine needle aspiration cytology (FNAC) has important role in the diagnosis of tuberculous lymphadenitis. Cytological diagnosis can be made with cytomorphological features of well formed epithelioid granulomas and the presence of caseous necrosis. **Aims and Objectives**- The objective of this study was to evaluate the various cytomorphological patterns of tuberculous lymphadenitis and to correlate with Zeihl-Neelsen (ZN) staining. **Materials and Methods**- The present study is Prospective Cross – Sectional study carried out over a period of 1 year in Department of Pathology, Gandhi Medical College, Bhopal. A total of 628 FNAC were performed on patients presenting with lymphadenopathy. **Results and Conclusion** - Out of 628 FNAC done in patients presenting with lymphadenopathy, 67 cases (10.6%) were malignant lesions and 561 (89.4%) cases were benign lesions. In these benign lesions, 243 cases (43.3%) were of Tubercular Lymphadenopathy. Most common cytomorphological pattern in Tubercular Lymphadenitis in FNAC was Granulomas with Epithelioid cells, Giant cells and Caseous necrosis 163 cases (67.01%).

KEYWORDS

Extra pulmonary Tuberculosis, Fine Needle Aspiration Cytology, Tuberculous Lymphadenitis, Zeihl Neelsen Staining

INTRODUCTION

India accounts for one – fifth of the global incidence of Tuberculosis (TB). Every year 1.98 million cases were reported from India as compared to global annual incidence of 9.4 million [1]. In India 1000 people a day or one per minute die of Tuberculosis [2].

Tuberculosis Lymphadenitis (TBLN) is the most common form of extra pulmonary tuberculosis and constitutes approximately 20-40% of extra pulmonary tuberculosis [3].

Fine Needle Aspiration Cytology is a valuable tool. It is safe, rapid, cost effective, early availability of results accurate and outpatient procedure which avoids the physical and psychological trauma to diagnose Tuberculosis obviating the need for lymph node core needle or excision biopsy. Common causes of neck lymphadenopathy are inflammations, reactive hyperplasia and metastatic diseases. The sensitivity of FNAC for the diagnosis of lymphadenopathy averages 90% with a specificity of 95%.

Though there are reliable criteria for diagnosing tubercular lymphadenitis like demonstration of Acid Fast Bacilli (AFB) by Zeihl Neelsen (ZN) stain or, Auramine – Rhodamine stain, Polymerase chain reaction and culture of bacilli from aspirates. In our set up, with limited resources and high tubercular disease burden presence of epithelioid cells granulomas with giant cells and caseous necrosis in lymph nodes on FNAC and demonstration of A.F.B are considered as an evidence of tubercular lymphadenitis.

Cytological diagnosis can be made with cytomorphological features of well formed epithelioid granulomas and the presence of caseous necrosis. However bacteriological confirmation is essential because of the presence of various granulomatous inflammations.

The present study was done with the objective to validate the importance of FNAC as a first line screening procedure in case of Tubercular lymphadenopathies by studying the various cytomorphological patterns associated with tuberculous lymphadenitis and its correlation with Zeihl Neelsen (ZN) staining.

Aims and Objectives

The objective of this study was to evaluate the various cytomorphological patterns of tuberculous lymphadenitis and to correlate with Zeihl - Neelsen (ZN) staining.

MATERIAL AND METHODS

The present study is a Prospective cross sectional study carried out in Department Of Pathology, Gandhi Medical College, Bhopal over 1 year of time. A total of 628 FNAC done in patients presenting with lymphadenopathy attending either outpatient department or in patient Department of Pathology, Gandhi Medical College, Bhopal. All patients of all age groups and both sexes having lymphadenopathy suspicious of tuberculosis (for more than 4 weeks) were taken for cytomorphological evaluation and Zeihl Neelsen (ZN) staining.

Age, sex, Family History, localization of swelling, clinical presentation was noted, Gross examination and Cytomorphological examination of aspirate along with Zeihl Neelsen (ZN) staining was done.

Zeihl – Neelsen Staining [4]– staining of aspirate smear for the detection of Mycobacterium Tuberculosis is done and results are interpreted as follows:-

1. Acid Fast organisms: Bright red bacilli on blue background.
2. Other organisms: Dark blue (By using malachite green): Green
3. Artifacts: Yeast cells take tip red stain and when heated they break up and may look like AF organisms.

The positive findings are reported as follows:

Number of acid fast bacilli in 10 fields

None Absent

1 to 2 +

2 to 10 ++

10 to 100 +++

Above 100 ++++

RESULTS

The present study was carried out in the Department of Pathology, Gandhi Medical College, Bhopal over a period of 1 year. During this period, a total of 628 FNAC were performed on patients presenting with lymphadenopathy.

Out of 628 FNA done in patients presenting with lymphadenopathy, 67 cases (10.6%) were Malignant lesions and 561 cases (89.4%) were benign lesions. Tubercular lymphadenopathy was the predominant lesion comprising of 243 cases (43.3%) followed by Reactive Lymphoid Hyperplasia 131 cases (23.3%), Acute Suppurative Lymphadenitis 80 cases (14.2%), Chronic Lymphadenitis 57 cases (10.1%) and remaining 50 cases (8.91%) were haemorrhagic smears. Table no.1

Table no.1 Distribution of Benign Lymphadenopathy

S.no.	Benign Lesions	No. of Cases	%
1	Tubercular Lymphadenitis	243	43.3
2	Reactive Lymphoid Hyperplasia	131	23.3
3	Acute Suppurative Lymphadenitis	80	14.2
4	Chronic Suppurative Lymphadenitis	57	10.1
5	Haemorrhagic Smears	50	8.91
	Total	561	100

Most common Cytomorphological Pattern in Tubercular Lymphadenitis in FNAC was Granulomas with Epithelioid cells, Giant Cells, and Caseous Necrosis 163 cases (6.7.1%) followed by Granulomas with Epithelioid cells, Giant cells without Caseous Necrosis in 60 cases (25%), Caseous Necrosis only and Caseous Necrosis with Inflammatory cells was found in 10 cases (4.11%) only.

Table no.2

Table no.2 Cytomorphological Pattern In Tubercular Lymphadenopathy

Cytomorphological Pattern In FNAC	No. of cases	%
Granulomas with Epithelioid cells, Giant Cells, and Caseous Necrosis	163	67.01%
Granulomas with Epithelioid cells, Giant cells without Caseous Necrosis	60	25
Caseous Necrosis only	10	4.11
Caseous Necrosis with Inflammatory cells (Neutrophils)	10	4.11

Maximum AFB Positivity (77%) was seen in smears showing caseous necrosis. Least Positivity was seen in smears prepared from lesions with Granulomas without Caseous Necrosis. Table no.3

Table no.3 Distribution of Cases According to Cytomor-phological Patterns and AFB Positivity

Cytomorphological Patterns	No. of cases AFB Positive	No. of cases AFB Negative	Total No. of cases
Epithelioid Granulomas with caseous necrosis	68 (85%)	12 (15%)	80 (80%)
Epithelioid Granulomas without caseous necrosis	00(0%)	11(100%)	11(11%)
Only caseous necrosis	03(100%)	00(0%)	03(3%)
Caseous Necrosis with Inflammatory cells (Neutrophils)	06	00	06(6%)
Total	77(77%)	23(23%)	100(100%)

CONCLUSION

An early and accurate diagnosis helps the clinicians in starting the specific therapy on time, thus reducing morbidity and mortality. Fine Needle Aspiration Cytology is a primary diagnostic tool in the evaluation of lymph node lesions.

This study comprised of 628 cases where FNAC was performed, out of which 243 cases were consistent with Tubercular lymphadenitis. These cases were studied for their cytomorphological pattern and its correlation in random 100 cases with Z.N staining for AFB.

From this study it can be concluded that FNAC is very useful and accurate approach in diagnosing Tubercular lymphadenitis as it has the diagnostic value of the first step in the workup of patients with nodal enlargement.

The demonstration of AFB in the FNAC smear is the standard method for diagnosing Tuberculosis. This can be easily done by Z.N staining. Wherever facilities of AFB culture are available, they may be used for detection of AFB.

We feel that in a developing country with high prevalence rate of Tuberculosis, FNAC coupled with Z.N staining should be the 1st line of investigation in cases with lymphadenopathy. [5]

REFERENCES

1. World Health Organization Global report. Geneva, Switzerland: WHO 2008;227.
2. Chauhan LS Challenges for the RNTCP in India. J. Indian Med Assoc. 2003 ; 125 : 12511 -7.
3. Gupta PR. Difficulties in managing lymph nodes Tuberculosis Lung India 2004 ; 21 : 50 -3.

4. Carson, Freida L ; Hladik, Christa (2009). Histotechnology: A Self – Instructional Text (3 ed.). Hong Kong: American Society for Clinical Pathology Press. PP. 361 - 3363.
5. Chand Priyanka, Dogra R, Chauhan N, Gupta R, Khare P. Cytomorphological Pattern of Tubercular Lymphadenopathy on FNAC : Analysis of 550 consecutive cases. J Clin Diagn Re. s2014 ; 8 (9) : 16 - 19.