A Study Of Pattern Of Lymphadenopathy On Fine Needle Aspiration Cytology In And Around Meerut, U.P (India)

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Citation

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Abstract

Background and objectives : The present study was undertaken to study non-neoplastic and neoplastic lesions of enlarged lymph nodes by FNAC in patients presenting with lymphadenopathy in the Pathology Department of L.L.R.M. Medical College, Meerut, attached to SVBP Hospital, Meerut, to determine the pattern of disease affecting lymph nodes in this region.

Methodology : The study was conducted on 957 patients with lymphadenopathy. Routine investigations which included complete blood counts, X-ray chest (PA view), ultrasound / CT scan (if indicated).Fine Needle Aspiration Cytology was done and the slides were stained with routine stains plus special stains as and when required.

Results & Conclusion : In the present study ,the commonest site of involvement was cervical region 897 (93.73%). Overall benign lesions were 853 (89.13%) and malignant lesions 104 (10.87%). In benign lesions, Tubercular lymphadenitis was the most frequently encountered lesion 501 (52.35%). FNAC proved to be a safe, inexpensive, repeatable and rapid procedure in which no hospitalization or anaesthesia is required.

INTRODUCTION

Lymphadenopathy is one of the commonest clinical presentation of patients attending the outdoor clinics in most hospitals. The etiology varies from an inflammatory process to a malignant condition.1 Enlarged lymph nodes are easily accessible for fine needle aspiration and hence fine needle aspiration cytology (FNAC) is a very simple and important diagnostic tool for lymph node lesions.2 FNAC of lymph node has become an integral part of the initial diagnosis and management of the patients with lymphadenopathy due to early availability of results, simplicity and minimal trauma with less complications.3 FNAC has also been advocated as a useful method in comparison to more expensive surgical excision biopsies in developing countries with limited financial and health care resources.4

The present study was undertaken to study non-neoplastic and neoplastic lesions of enlarged lymph nodes by FNAC in patients presenting with lymphadenopathy in the Pathology Department of our institute, to determine the pattern of disease affecting lymph nodes in this region.

MATERIAL AND METHODS

This work was carried out in Department of pathology in collaboration with department of surgery, L.L.R.M Medical College, Meerut attached to S.V.B.P Hospital, Meerut. The study was conducted on 957 patients with lymphadenopathy. Patients of all age groups and both sexes were included.

In all patients, a thorough clinical examination along with detailed clinical history i.e. age, sex, duration of involvement, past history, family history, history of tubercular contact and prior anti tubercular treatment etc. was taken. Physical examination included whether lymph node involvement was single or multiple, unilateral or bilateral, generalized or localized etc. Routine investigations which included complete blood counts, X-ray chest (PA view), ultrasound / CT scan (if indicated). FNAC was performed using a 23G needle. Several smears were prepared in each case, both air dried and alcohol fixed. Stains used were Leishman, Geimsa and Ziehl-Neelsen stains.

OBSERVATIONS

In this study total 1018 cases of lymphadenopathy were received, out of which 61 cases were excluded from the study due to inadequate aspirate. Therefore the present study was conducted on 957 patients. The maximum number of patients 379 (39.60%) were in the age group of 0-10 years followed by 193 (20.17%) patients in 11-20 years age group,

137 (14.32%) patients in 21-30 years age group, 91 (9.51%) patients in 31-40 years age group, 74 (7.73%) patients in 41-50 years age group and 45 (4.70%) patients in 51-60 years age group. (Table 1)

Table 1

Distribution Of Patients According To Age

Age group (years)	Total number of patients	Percentage %
0-10	379	39.60
11-20	193	20.17
21-30	137	14.32
31-40	91	9.51
41-50	74	7.73
51-60	45	4.70
>60	38	3.97
Total	**957**	**100.00**

In the present series the total number of male patients 543 (56.74%) was more as compared to that of female patients 414 (43.26%). The male and female ratio was 1.31 : 1.

The sites of distribution of enlarged lymph node were divided into generalised and localised. Generalised lymphadenopathy was defined as enlargement of more than two non-contiguous node regions. In our study localised lymphadenopathy was seen in 953 (99.58%) and generalised in 4 (0.42%) cases. The most common site involved was the neck region i.e. cervical lymph nodes in 897 (93.73%) patients. Axilla 41 (4.28%) was the next frequent site followed by the groin 15 (1.57%).(table 2)

Table 2

Distribution Of Lymphadenopathy According To The Site

Site	Number of patients	Percentage %
Generalised	4	0.42
Localised		
-cervical	897	93.73
- axillary	41	4.28
-inguinal	15	1.57
TOTAL	**957**	**100.00**

In the present series overall benign lesions were 853 (89.13%) and malignant lesions 104 (10.87%). Benign lesions of the lymph nodes were most frequently encountered in the first decade of life 377 (39.39%) followed by second decade of life 188 (19.64%). Malignant lesions of lymph nodes were most frequently encountered in 6th decade of life 33 (3.45%) followed by 7th decade of life 28 (2.93%).(table 3)

Table 3

Distribution Of Benign And Malignant Lesions According To Age Group

Age (in years)	Benign		Malignant	
	Number	Percentage %	Number	Percentage %
0-10	377	39.39	2	0.21
11-20	188	19.64	5	0.52
21-30	135	14.10	2	0.21
31-40	75	7.84	16	1.67
41-50	58	6.06	18	1.88
51-60	10	1.05	33	3.45
>60	10	1.05	28	2.93
TOTAL	**853**	**89.13**	**104**	**10.87**

The ratio of benign lesions in male and female was almost equal i.e. 1.15 : 1 but there was significant difference in malignant lesions where the ratio was 4.47:1 in males and females. (Table 4)

Table 4

Distribution Of Benign And Malignant Lesions In Male And Female

Nature of lesion	Male		Female		Ratio Male:Female
	Number	Percentage	Number	Percentage	
Benign	458	53.69	395	46.31	1.15 : 1
Malignant	85	81.73	19	18.27	4.47 : 1
TOTAL	**543**		**414**		**1.31 : 1**

Out of total 957 cases studied by fine needle aspiration cytology, 853 (89.13%) were diagnosed as benign lesions and 104 (10.87%) as malignant lesions including both primary and secondary neoplastic lesions. Among benign lesions the most significant lesion encountered was tubercular lymphadenitis in 501 (52.35%) patients. The

second most common benign lesion encountered was reactive hyperplasia 335 (35.00%) of lymph node. Out of 104 (10.87%) malignant lesions, secondary was 91 (9.51%) while primary constituted 13 (1.36%). (Table 5)

Table 5

Diagnostic Patterns Of Lymphadenopathy On Fine Needle Aspiration Cytology

Diagnosis	No. of cases	Percentage %
A. **Benign**	**853**	**89.13**
1. Tubercular lymphadenitis	501	52.35
2. Reactive hyperplasia of lymph node	335	35.00
3. Pyogenic adenitis	17	1.78
B. **Malignant**	**104**	**10.87**
1. primary	13	1.36
2. Secondary	91	9.51
TOTAL	**975**	**100.00**

Only 13 (12.50%) cases of lymphoma were reported including 11 (10.58%) cases of Non-Hodgkin's lymphoma and 2 (1.92%) cases of Hodgkin's disease. (Table 6) Metastatic malignancy was reported in 91 (87.5%) cases. The characteristic feature was presence of foreign cells in smears.

Table 6

Distribution Of Various Malignant Lesions In 104 Cases

Lesion	Total no cases	Percentage
Primary	**13**	**12.50**
1) Hodgkin's disease	2	1.92
2) Non-Hodgkin's lymphoma	11	10.58
Secondary	**91**	**87.50**
1) Metastatic squamous cell carcinoma	58	55.77
2) Metastatic undifferentiated carcinoma	14	13.46
3) Metastatic adenocarcinoma	8	7.70
4) Metastatic duct carcinoma breast	1	0.96
5) Metastatic small cell carcinoma	3	2.88
6) Leukemic infiltration of lymph node	1	0.96
7) Metastatic mucoepidermoid carcinoma	4	3.85
8) Metastatic synovial sarcoma	1	0.96
9) Metastatic malignant melanoma	1	0.96
Total	**104**	**100.00**

Figure 1

Aspiration Smear from a case of Tubercular Lymphadenitis photomicrograph showing epithelioid granuloma without caseous necrosis (Leishman×400)

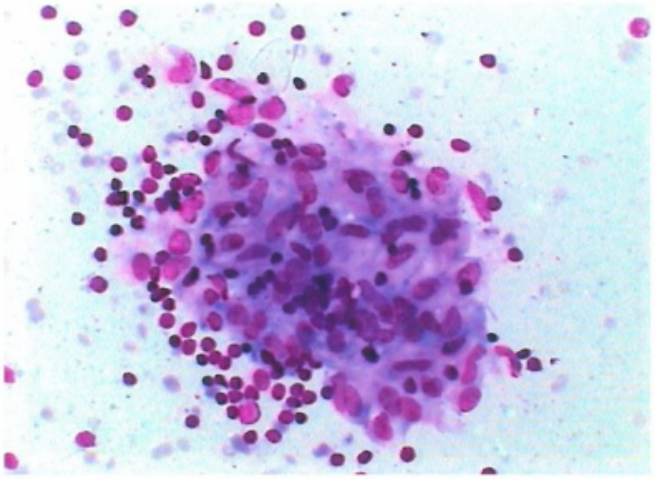


Figure 2

Aspiration Smear from a case of Tubercular Lymphadenitis photomicrograph showing epithelioid granuloma with caseous necrosis (Leishman×1000)

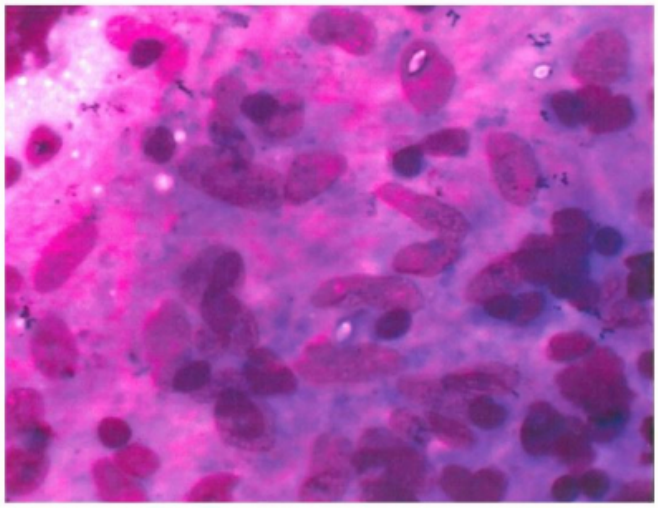


Figure 3

Aspiration Smear from a case of Tubercular Lymphadenitis photomicrograph showing Acid fast Bacilli Grade 4 (Ziehl-Neelsen Stain ×1000)

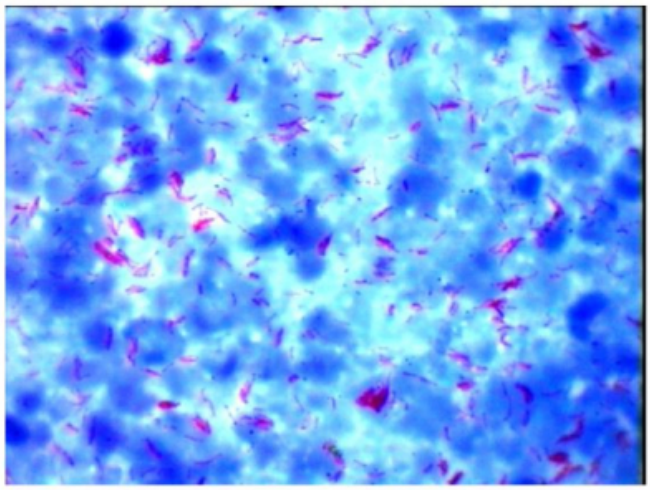


Figure 4

Aspiration Smear from a case of Reactive Hyperplasia of Lymphnode Photomicrograph showing mixed lymphoid population (Giemsga ×400)

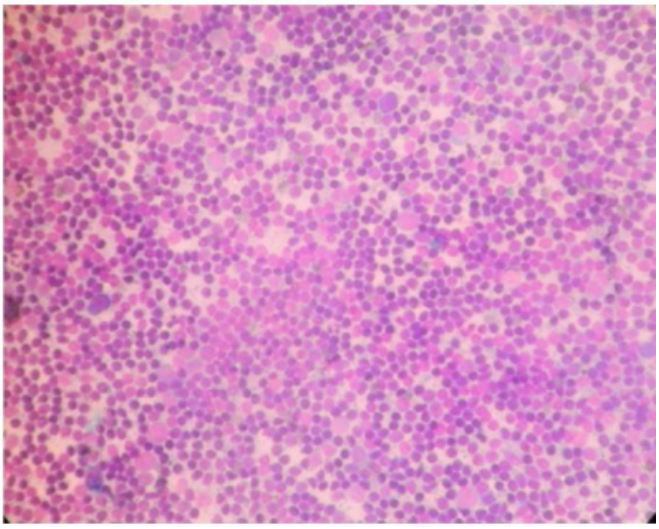


Figure 5

Aspiration Smear from a case of Non-Hodgkin lymphoma photomicrograph showing monomorphic population of atypical lymphoid cells. (Giemsa×400)

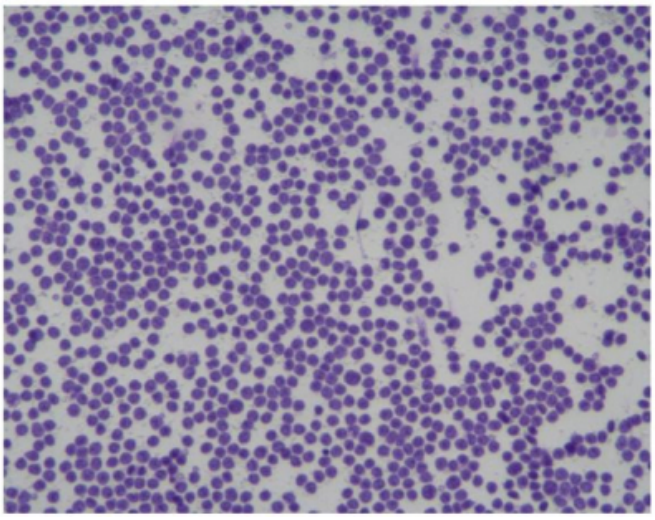
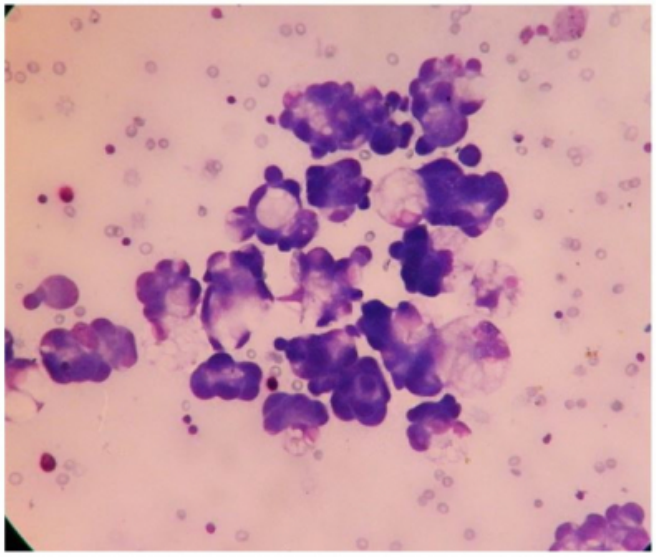


Figure 6

Aspiration Smear from a case of metastatic mucin secreting adenocarcinoma photomicrograph malignant cells with tendency to gland formation (Giemsa×400).



DISCUSSION

In the present study lymph node enlargement had been recorded from first year of life to 95 years of age. Similar fact had been reported by Hirachand et al (2009)1 and Tilak et al (2002)5. The majority of patients 379 (39.60%) of lymphadenopathy in present series fell in the age group of 1-10 years. Similar fact had been reported by Patra et al (1983)6.

The majority of the cases of tubercular lymphadenitis were recorded in the first decade of life, followed by second decade of life. Similar findings had been observed by Ghai (1993)7 and Baxla (1995)8 but according to Daniel (1994)9, Park (1994)10 and Crompton et al (1995)11 it occurs more in adults and elderly people.

The maximum number of patients was in the first decade of life in the benign group and 6th decade of life in the malignant group especially secondary neoplastic lesions of lymph nodes. This fact was in conformity with Anderson (1961)12 who suggested that malignant tumors tend to occur in the older age group.

In the present series overall male : female ratio was 1.31:1. Only in 3rd decade of life there was slight female preponderance. Goyal and Samuel (1953)13 had observed that female suffered more than males in the age group of 3rd decades of life.

In benign lesions, male : female ratio was 1.15 : 1 but in malignant lesions the ratio was 4.47 : 1. As this study comprised of mainly metastasis from larynx and oral cavity, males become the main victim. Bloch (1967)14 reported the same incidence where males were the main contributors of the metastatic group.

The most striking and most common site of lymph node enlargement was the neck region 897 (93.73%) and the maximum number of cervical groups of lymph nodes belonged to tubercular lymphadenitis. Similar findings had been reported by Sheikh et al (1981)15 and Patra et al (1983)6. Baily (1948)16 said that portal of entry was by tonsils that is why there was frequent involvement of cervical lymph nodes in tubercular patients. The maximum number of lymph nodes were of 1-2 cm in size. Tubercular lymphadenitis being the commonest lesion of the series was found in each size. Symmer (1948)17 observed the commonest size ranging from 0.5-1.5 cm in his study. In most of the metastatic and lymphoma group size of lymph node was more than 3 cm.

In the present study out of 957 aspirations diagnosed cytologically 853 (89.13%) cases were benign and 104 (10.87%) cases malignant. There was maximum incidence of tubercular lymphadenitis 501 (52.35%) followed by reactive hyperplasia of lymph node 335 (35.00%), pyogenic adenitis 17 (1.78%), metastatic carcinoma 91 (9.51%) and lymphoma 13 (1.36%). Maximum incidence of tubercular lymphadenitis in India had also been reported by Patra et al (1983)29 37.8%, Sarda et al (1990)18 71.8%, Bandopadhyoy et al (1996)19 44% and Khan et al (1996)20 72.6%.

In the present study the most characteristic diagnostic feature of tubercular lymphadenitis was epithelioid cell granuloma with caseous necrosis in 230 (45.91%) cases with AFB positivity in 123 (53.58%) cases, epithelioid cell granuloma without caseous necrosis in 145(28.94%) with AFB positivity in 22 (15.17%) cases and caseous necrosis alone in 126 (25.15%) cases with AFB positivity in 87 (69.05%) cases. Overall AFB positivity was 232 (46.31%) cases. These features have been reported by Das et al (1994)21in 84.2% and 73.5% of cases respectively. At times Langhans's type of giant cells could be made out.

Among neoplastic conditions of lymph node the most common malignancy reported in the present series was metastatic squamous cell carcinoma. Majority of the patients

were old males with primary site of malignancy in oral cavity and larynx. This fact is in conformity with Anderson (1996)12. In the present study cervical lymph nodes were involved in 93.73% cases. Squamous cell carcinoma is the most common type of primary carcinoma of head and neck (Orell, 2012)22.

CONCLUSION

Our study showcased the usefulness of FNAC in reaching prompt diagnosis in patients presenting with lymphadenopathy and also put light on etiology of lymphadenopathy in and around Meerut, Western UP. The lymph node enlargement provides a basis of paramount importance in the diagnosis of disease. Therefore, when the lymph node aspiration became routine investigative procedure, it becomes one of the most significant diagnostic procedures. FNAC is a safe, inexpensive, repeatable and rapid procedure in which no anaesthesia is required. FNAC obviates need for open biopsy, anaesthesia, surgical complication and hospital admission. FNAC is a useful as an outdoor diagnostic procedure because of early diagnosis in comparison to histopathological diagnosis. It prevents further complications and morbidity.

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