

Original Article**Cytomorphological Spectrum of Cervical Lymphadenopathy Diagnosed by Conventional Fine Needle Aspiration Cytology**

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For Correspondence*Abstract**

Background: Cervical lymphadenopathy is one of the most common clinical presentations of patients attending the outdoor department of a hospital. Fine Needle Aspiration Cytology (FNAC) is simple, quick, cost effective and relatively noninvasive technique can be readily used to differentiate between various benign and malignant condition.

Objective: (1) To study cytomorphological features of various lymph node lesions (2) To assess age specific distribution of various cytomorphological patterns of cervical lymphadenopathy.

Material and Methods: The present retrospective study to analyze the cytomorphological features of lymph nodes by FNAC is conducted over a period of one year from January 2021 to December 2021. The study included both sexes, presented with clinical features of cervical lymphadenopathy.

Results: Total 397 cases were studied. Out of these, 358 (90.12%) were inflammatory and 39 (9.82%) were neoplastic. Reactive non-specific lymphadenitis was the most common disease found in 303 (76.32%) patients followed by tuberculous lymphadenitis in 55 (13.86%) patients. Among neoplastic lesions, metastatic tumors were reported in 27 (6.80%) patients and lymphoproliferative disorder was reported in 12 (3.02%) patients, highest incidence of cervical lymphadenopathy was found in patients of 11-40 years' age group, among which most of the cases were non-specific lymphadenitis followed by tuberculous lymphadenitis. In case of the neoplastic lesions, most of the cases were in the age group of 41-70 years.

Conclusion: Our study concluded that FNAC is easy, simple, safe, reliable and non-invasive procedure for diagnosis of cervical lymphadenopathy and easy way for surgeon to decide whether to go for surgery or not.

Keywords: Fine Needle Aspiration Cytology (FNAC), Cervical Lymphadenopathy, Lymphoproliferative Disorder, Cytomorphological Pattern.

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Introduction

Lymph nodes are an integral component of the immune system and are affected by a multitude of pathological lesions. Lymphadenopathy is the most common cause of swelling in the neck and is one of the commonest presentations in inflammatory and neoplastic disorders¹.

FNAC has been successfully adopted as a routine technique to diagnose the cause of lymphadenopathy in our center. FNAC is a simple, quick, and inexpensive and is equally reliable procedure which can be used as a routine OPD procedure for diagnosis of lymphadenopathy².

In cases of cervical lymphadenopathy, FNAC when employed along with guidance of other ancillary diagnostic aids is very helpful in rapid diagnosis of certain pathological conditions such as reactive lymphadenitis, tuberculous lymphadenitis, metastatic neoplastic lesions and lymphoproliferative conditions including most of the lymphomas with near relative precision³⁻⁵. On-site evaluations can also lead to the appropriate triage for flow cytometry, microbiologic culture, and other ancillary studies⁶.

Materials and Methods

This was cross-sectional retrospective study carried out in the Department of Pathology, Jahurul Islam Medical

College and Hospital, Kishoregonj, on 397 clinically diagnosed cases of cervical lymphadenopathy over a period of one year from January 2021 to December 2021. In each case detailed history, clinical presentation of cervical lymph nodes and clinical examination were carried out. Aspiration was done as outdoor procedure using 22-23 gauge needles, attached to a 5-10 ml syringe was inserted into the swelling and full suction pressure was applied. The tip of the needle was briskly moved up and down and sideways a few times till a spot of material showed in the stem of the needle. The negative pressure in the syringe was then released and the needle was withdrawn. The aspirated material was then blown on a clean glass slides using the same syringe. Two to four smears were prepared from aspirated material. Smears were dipped immediately in the ethyl alcohol solution for minimum of 30 minutes and H & E staining carried out. The diagnoses were classified according to various cytomorphological patterns⁷.

Results

In this study 397 patients were subjected to FNAC for cervical lymphadenopathy. There were 276 males and 121 females in the study. The male: female ratio in this study was 2.28:1, with a male preponderance. The age at presentation ranged from 01 years to 70 years. Maximum number of patients were in the 11- 40 years' age group 253 cases (63.73%) and the least in the 61-70 years' age group 22 cases (5.54%).

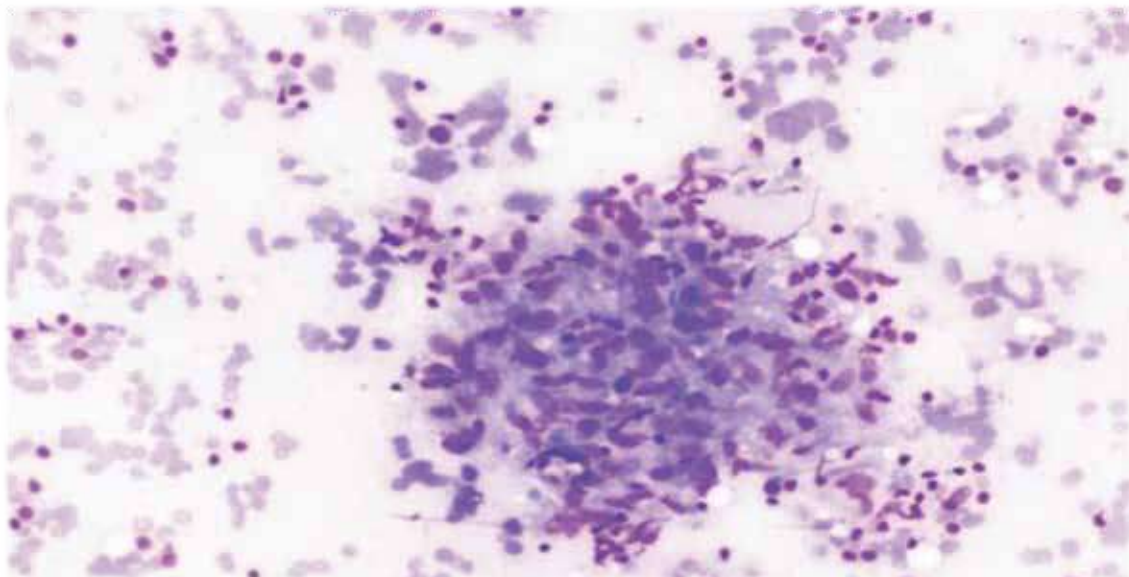


Figure 1: Tuberculous lymphadenitis showing epithelioid cells against lymphocytic background (10X H&E).

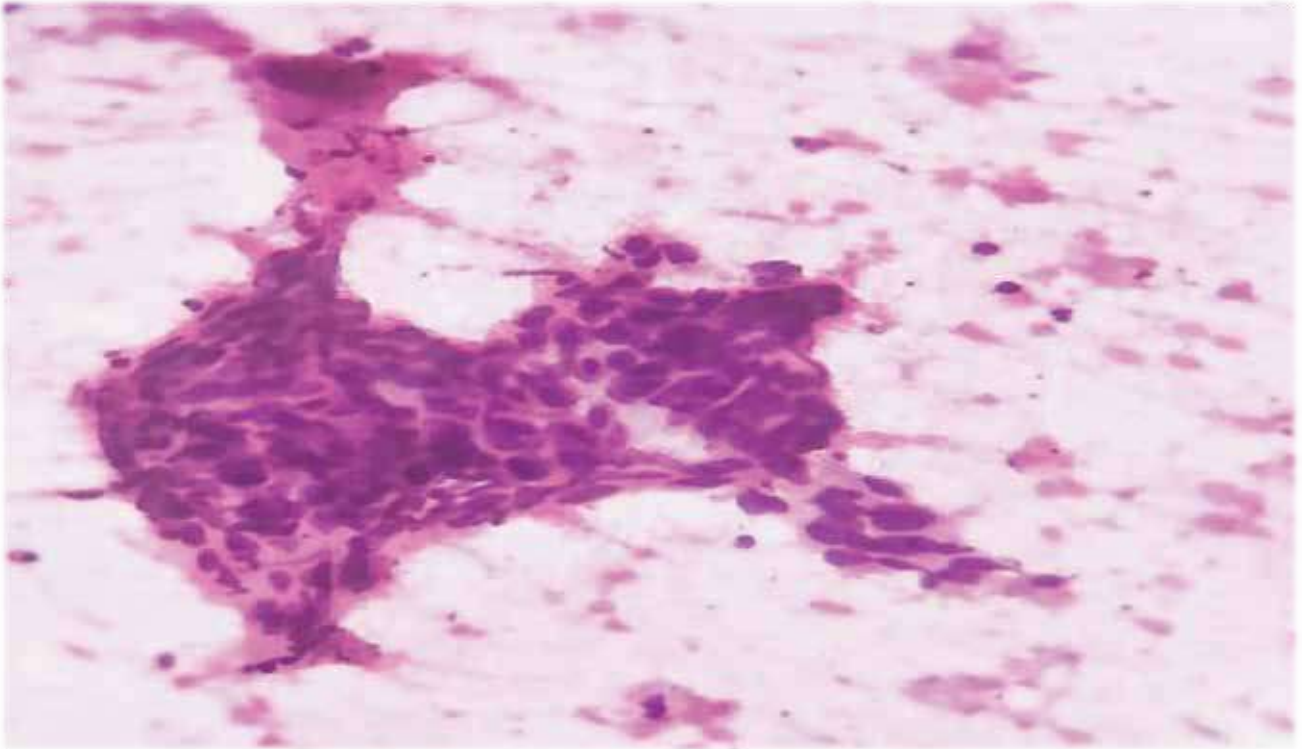


Figure 2: Metastatic Squamous cell carcinoma showing a sheet of round to polygonal cells with scanty to moderate eosinophilic cytoplasmic, high N/C ratio and pleomorphic hyperchromatic nuclei (400X H&E).

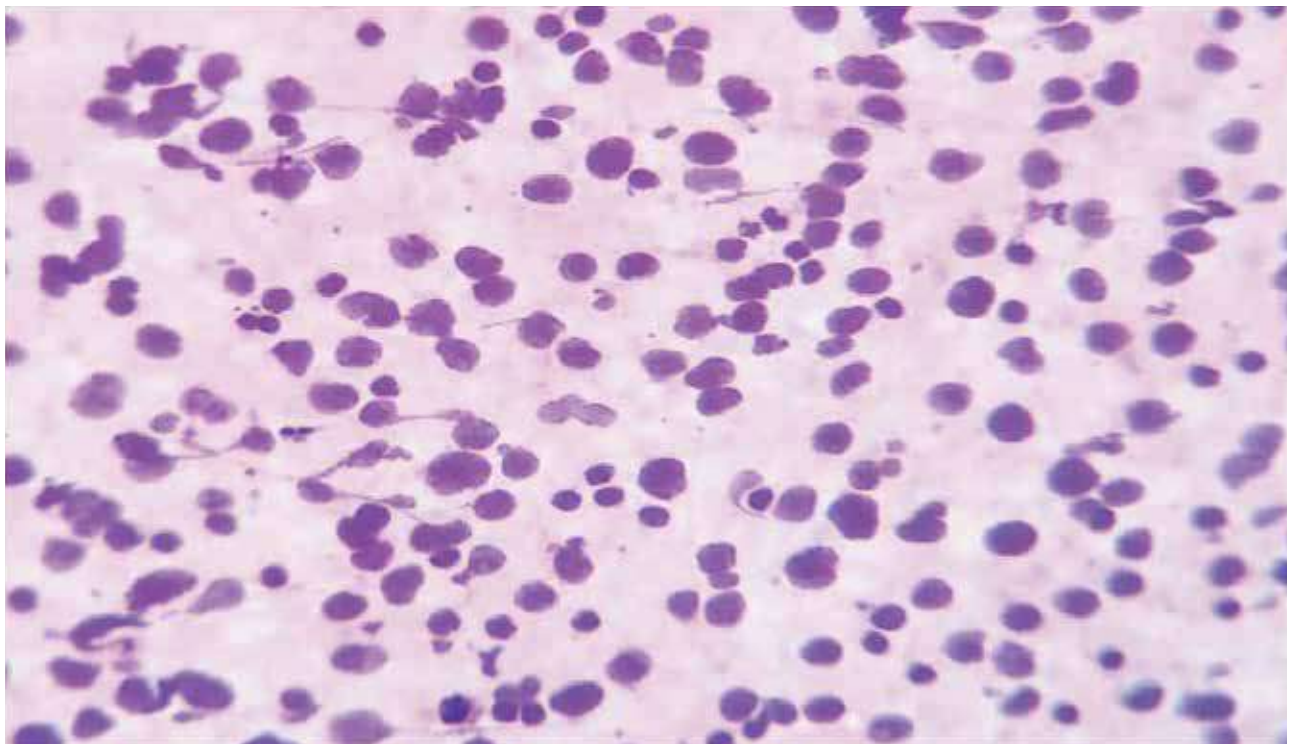


Figure 3: Lymphoproliferative disorder showing monotonous population of round lymphoid cells with scanty cytoplasm and nuclei with coarse chromatin, nuclear cleaving and indentations (400X H&E).

Table I: Age distribution of the cases

Age (years)	No. of cases	Reactive lymphadenitis	Tuberculous lymphadenitis	Metastatic carcinoma	Lymphoproliferative disorders
0-10	65	63	02		
11-20	87	72	14		01
21-30	102	83	19		
31-40	64	49	10	03	02
41-50	26	12	04	06	04
51-60	31	13	05	11	02
61-70	22	11	01	07	03
Total	397	303	55	27	12

Table II: Gender distribution of the cases

Gender	Number of cases	Percentage (%)
Male	276	69.52
Female	121	30.48

Table III: Comparison of present study with other studies

Authors	Total cases	Reactive lymphadenitis	Tuberculous Lymphadenitis	Metastatic carcinoma	Lymphoproliferative disorders
Present study	397	76.32%	13.86%	06.80%	03.02%
Uma ¹⁸	1219	47.30%	28.54%	03.52%	01.55%
Smita et al ¹⁹	151	42.48%	44.25%	30%	07.97%
Vapi et al	34	29.40%	23.50%	08.80%	04.03%
Tariq et al	100	18.00%	36.00%	14.00%	09.86%
Patil R K ²⁰	1478	37.20%	40.60%	16.40%	0.40%

Discussion

Cytology of lymphnode has become a window for diagnosis of many diseases. Optimal material and experience, when combined, make cytological diagnosis of equal significance as histopathology⁸. This study was done to evaluate the role of FNAC in clinically significant cervical lymphadenopathy. In present study male to female ratio of 2.28:1 was observed, with males representing 276 cases (69.52%) and females 121 cases (30.48%) (Table II). Similar findings were reported in other studies.

In the present study, out of 397 cases, maximum cases were recorded between the age group of 11 years to 40 years which is comparable with study carried out by Smita P. Bhide et al¹⁹. The study shows high incidence of malignancies particularly metastases in the higher age groups i.e. 61 – 80 years followed by 40-60 years. The results were similar to other studies carried by the age ranges from 9 months which was a case tuberculous lymphadenitis to 69 years of age, a case of metastatic carcinoma⁹⁻¹¹.

Out of the 397 cases, inflammatory pathology was noted in 358 cases (90.12%) while neoplastic condition was noted in 39 cases (9.82%). Non-specific reactive lymphadenitis was noted in 303 patients (76.32%). It was followed by tuberculous lymphadenitis, accounted for a total of 55 cases (13.86%). Neoplastic condition was observed in 39 cases, of which metastatic malignancy was found in 27 cases (6,80%), 12 cases (3.02%) of lymphoproliferative disorders (Table I), which is similar with Ghartimagar et al.¹² analyzed 508 cases of lymphadenopathy: Reactive cause was seen in 68%, metastasis in 18%, and hematolymphoid malignancies in 2%.

The incidence of cervical lymphadenopathy was more common in male (276) than female (121) with male: female ratio 2.28:1 (Table II). Table III summarizes the various cytomorphological patterns we encountered in this study on FNAC of cervical lymphadenopathy in comparison with other similar studies conducted previously. The relatively high incidence of tuberculosis may be due to the endemicity of the disease in Bangladesh.

Bezabih et al found FNAC reliable in helping to avert more invasive surgical procedures undertaken in the diagnosis of tuberculous adenitis. They suggested adding Ziehl Neelsen stain for identification of

acid-fast bacilli as an adjunct to increase the diagnostic accuracy of tuberculous lymphadenitis⁸. In the study of Tariq et al in 2008 tuberculous lymphadenitis was found to be the most common pathology of cervical lymph node lesions¹³ (Figure 1).

The most common cause of cervical lymphadenopathy in the present study was due to reactive hyperplasia. This was found to be common in younger age groups, less than 30 years. Since infections from oral cavity, ears, nose, and para nasal sinuses drain into these nodes, reactive lymphoid hyperplasia is a common finding¹⁴.

The present study also documents higher incidence of malignancies, particularly metastases in the higher age groups, 51-70 years. FNAC has a documented higher sensitivity in the diagnostic workup of metastatic malignancies which may be due to the fact that metastatic carcinoma cells are usually abundant and their cytologic features are dissimilar to that of the cells of normal or hyperplastic lymph nodes^{15,16}.

In present study, metastatic squamous cell carcinoma was found in majority of the cases (18 out of 27 cases, 66.7%). Hirachand et al also noted that the commonest type of metastatic carcinoma to lymph node was of squamous cell variety¹⁷.

Cytomorphologically, cases of metastatic squamous cell carcinoma showed sheets of polygonal cells with moderate amount of eosinophilic cytoplasm, high nucleocytoplasmic ratio and pleomorphic hyperchromatic nuclei with irregular nuclear borders against necrotic and lymphocytic background (Figure 2).

In present study, 12 cases of primary lymphoproliferative disorders (Figure 3) were diagnosed on cervical node FNAC.

Conclusion

Cervical lymphadenopathy is the commonest clinical presentation with varied etiology. FNAC is an easy, simple, convenient and rapid diagnostic test with minimal significant complications for diagnosing inflammatory as well as neoplastic lesions. It could be employed as first line of clinical investigation in the ideal setting of evolving health care facilities of developing country like Bangladesh to establish a conclusive diagnosis of lymphadenopathy. The knowledge of cytological patterns of various lesions of lymph nodes in an area helps in better approach to the

diagnosis and can minimize the economic burden and avoid the need for excision biopsy.

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