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Clinico-Cytological Pattern of Cervical Lymphadenopathy

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ABSTRACT

Introduction: *Cervical Lymphadenopathy is one of the commonest causes of head and neck swellings with aetiology varying form benign to malignant conditions. In fact it is also essential to establish that the swelling is a lymph node or not. Fine needle aspiration cytology (FNAC) plays a vital role in solving these issues. FNAC has emerged as an easy, quick cost-effective, minimally invasive and safe technique, with high sensitivity and specificity in the evaluation of cervical lymphadenopathy.* ***Objective:*** *To determine the clinico-cytological pattern of various lymph node diseases present in cervical region.* ***Methods:*** *The two years cross sectional study was conducted in the Department of Pathology, North Bengal Medical College, Sirajganj, Bangladesh. Two hundred and ninety (290) neck swelling patients obtained during the period of study. Cytological reports were done according to standard guidelines and the diagnosis was classified and correlated with patient's age and sex to explore the pattern.* ***Results:*** *Of a total of 290 cases of FNAC performed on neck nodes, the most frequent cause of lymphadenopathy was found to be tuberculosis with 94 cases (32.41%), followed by reactive lymphoid hyperplasia (31.38%), acute suppurative lymphadenitis (16.55%), necrotizing lymphadenitis (11.03%), Metastatic carcinoma (6.55%), lymphoma (1.03%) and inconclusive (1.03%). In first decade, predominant cause of lymphadenopathy was reactive in nature; in second decade, tuberculosis starts predominating than the other causes. After 6th decade, metastatic lymph nodes overshadowed the tuberculosis and reactive lymphadenopathy.* ***Conclusion:*** *In this study, predominant cause of cervical lymphadenopathy was tuberculosis followed by reactive lymphadenitis. The relationship of malignant, tubercular and reactive lymphadenopathy with age deserves further study. Fine needle aspiration cytology is a useful first-line investigating tool for diagnosis of cervical lymphadenopathy.*

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INTRODUCTION

Cervical lymphadenopathy is one of the commonest clinical problem presenting not only to head neck surgeons, but also to general surgeons and physicians. Aetiology may vary from simple inflammation to malignancies and tuberculosis- sometimes it may be non-specific.[1] Diagnosing the cause of these enlarged lymph nodes has always been challenge for the doctors. Fine needle aspiration cytology (FNAC)

helps solving the cause of enlarged lymph nodes. It is a tool to obtain material from a swelling for cytological examination, performed as an outpatient procedure. It has potential benefits over the other diagnostic modalities that have increased the utility of FNAC in recent years. It is simple, cost-effective procedure that is minimally invasive with almost no complications. Results obtained by FNAC are quick as compared to histopathological diagnosis. FNAC of superficial lesions need no anesthesia eliminating the risk of complications associated with anesthesia. No scar is formed at the site of FNAC. Other diagnostic modalities like incision biopsy or excision biopsy leave a scar. In case of suspected malignancy, FNAC is the best choice as it does not cause spread of tumor through the skin tract. The sensitivity of FNAC for the diagnosis of lymphadenopathy averages 90% with a specificity of 95%.[2] FNAC has been recommended as of first line screening method in suspected metastatic malignancy.[3] The high degree of accuracy, low costs and minimally disruptive nature of the procedure makes FNAC a highly desirable alternative to open biopsy for investigation of cervical lymphadenopathy.

In this study we have analyzed FNAC of neck lymph nodes and studied the clinical and cytological patterns of enlarged neck nodes and diagnostic utility of the procedure.

METHODS

The two years cross-sectional study was conducted in the Department of Pathology, North Bengal Medical College, Sirajganj, Bangladesh from 1st July, 2016 to 31st June, 2018. Two hundred and ninety (290) neck swelling patients enrolled during the period of study, registered from different regions of Sirajganj district. Neck swellings other than lymph nodes were excluded from the study. FNAC smears were stained with Papanicolaou staining (Pap). All the clinical details including age, sex, site, size, consistency and other relevant clinical investigations were recorded. Slides were reviewed and the cases with equivocal results or inadequate material were also excluded from the study. The slides were examined for cytomorphological details and diagnosis was reviewed. The patient was informed about the procedure and informed written consent was obtained from the patient before subjecting to FNAC. Data was analyzed using SPSS 17.

RESULTS

Total number of patients was 290, who underwent FNAC for enlarged cervical lymph nodes. Demographic profile is shown in Table I and Table II. Males constituted 38.62% (112 cases) of cases whereas females constituted 61.38% (178 cases) of cases with a male to female ratio of 1:1.59.The age ranged from 1 year to 100 years with a mean age of 31.27years.

Table I. Sex distribution of patients

Particulars	Number of patients	Percentage (%)
Male	112	38.62
Female	178	61.38
Total	**290**	**100.00**

Table II. Age distribution of patients

Age group (in years)	Number of patients	Percentage (%)
0-10	37	12.76
11-20	77	26.55
21-30	74	25.51
31-40	38	13.10
41-50	29	10.00
51-60	16	5.52
61-70	14	4.82
71 and more	5	1.72
Total	**290**	**100.00**

The most common overall diagnosis was tuberculous lymphadenitis (Figure 1), constituting 32.41% (94 cases) of the cases, whereas the second most common diagnosis was nonspecific reactive lymphadenitis (Figure 2) constituting 31.38% (91 cases), acute suppurative lymphadenitis constituted 16.55% (48 cases) and necrotizing lymphadenitis constituted 11.03% of cases (32 cases) (Table III). Of the malignant diagnosis, metastatic tumours constituted 6.55% (19 cases) and lymphomas constituted 1.03% (3 cases). Among the metastatic tumours, squamous cell carcinomas constituted 3.45% (10 cases) and adenocarcinomas constituted 3.10% (9 cases). Among lymphomas, all cases are Non Hodgkin Lymphomas. Although overall inconclusive, atypical cells were seen in 1.03% of the cases.

Table III. Cytological pattern of cervical lymphadenopathy

Diagnosis	Number of cases	Percentage (%)
Tuberculosis	94	32.41
Reactive lymphadenitis	91	31.38
Acute/ suppurative lymphadenitis	48	16.55
Necrotizing lymphadenitis	32	11.03
Metastatic carcinoma	19	6.55
Lymphoma	3	1.03
Atypical lymphoid hyperplasia	3	1.03
Total	**290**	**100.00**

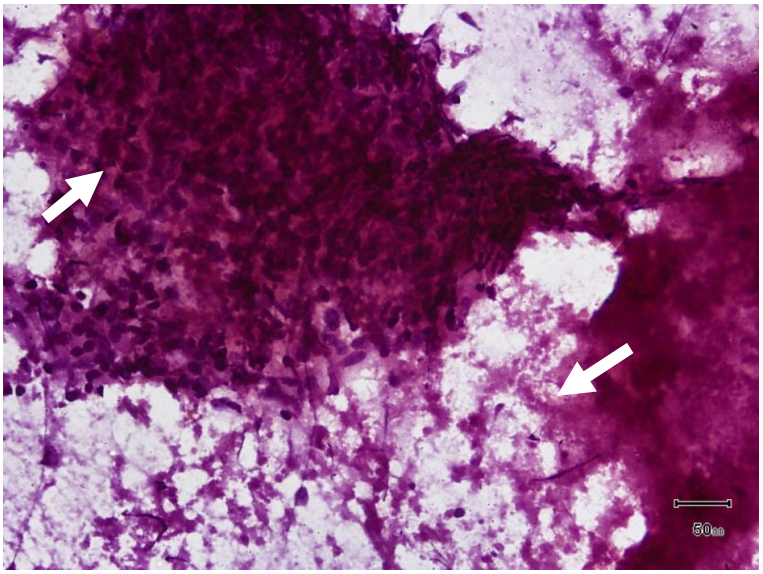

Figure1. Chronic Granulomatous Inflammation (Tuberculosis), featuring epithelioid histiocytes (arrows) with caseous necrosis (400x, Pap stain)

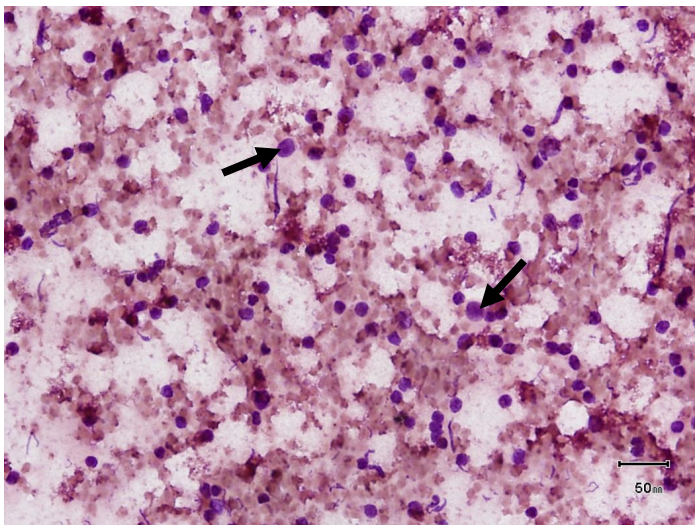

Figure 2: Non specific reactive Lymph node, photomicrograph showing polymorphous population of lymphocytes with predominance of mature lymphocytes (arrows) (400x, Pap stain)

The results were stratified into 10 years age interval from 0 to 70 years and then 71 years and more. In the first ten years, predominant cause of lymphadenopathy was reactive in nature accounting for 48.50% of the cases in this group. The next common cause was tuberculous lymphadenopathy (20.70%). The second decade was the age group when tuberculosis starts predominating than the other causes, approximately 63.50% the total cases in this group. Reactive lymph nodes being the second common cause (23.30%). In patients after 10 years up to the age of 50 years, tuberculosis is over passing all other causes. After 50 years, metastatic lymph nodes overshadowed the tuberculosis and reactive lymphadenopathy. Reactive lymphadenopathy, was a smaller group in this age and was no longer seen in age groups after 60 years. The common metastatic tumors were squamous cell carcinoma. Cytological findings were recorded (Figures 1, 2 and 3).

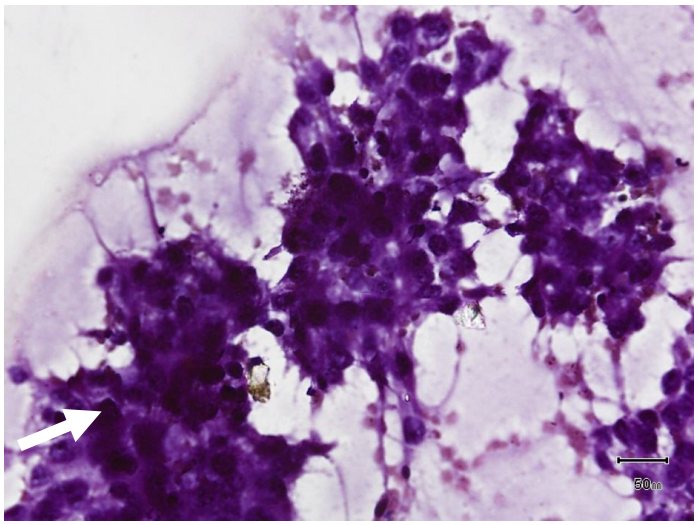

Figure 3. Metastatic Adenocarcinoma, featuring malignant epithelial cells (arrow) forming glandular pattern in a lymphoid background (400x, Pap stain)

DISCUSSION

Fine needle aspiration cytology (FNAC) has been important tool to make the diagnosis in cervical lymphadenopathy. This study shows tuberculosis is the commonest cause (32.41%) of cervical lymphadenopathy. Many studies within India and

other developing countries similarly show tuberculosis as the commonest cause. Studies from Pakistan reported tuberculous lymphadenitis as the most common pathology. Two studies reported 36% and 52.7% tuberculosis in their study respectively. [2,4] Kafi showed reactive lymphadenitis (50%) as the most common cause followed by tuberculosis (28.33%).[5] A study from Saudi Arabia had reactive lymphadenitis as the most common cause followed by tuberculosis.[6] Gupta et al. in 2003 showed 59% of granulomatouslymphadenopathy.[7] Tuberculosis seen as the most common cause of granulomatous inflammation in South East Asia and in developing countries. Initial western studies did not report tuberculosis in their studies. But after the world wide increasing incidence of HIV infection, tuberculosis is being reported from western population as a significant cause of cervical lymphadenopathy.[8,9] In our study, tuberculosis was more common in females (67%) as compared to the males (33%). This may be because of poor nutrition and overall health in developing countries.

In a study by Agarwal, the commonest cause of lymphadenopathy in pediatric age group was reactive hyperplasia (70.9%), while tuberculous lymphadenitis was the predominant cause in adolescents and middle aged patients (40.8%).[10] In these studies, similar findings were observed when stratified into age groups. Metastatic carcinoma was the major cause of lymphadenopathy in patients above 60 years of age (66.3%). In this study 22 cases have been diagnosed as malignancy on FNAC in this study. Within this 19 metastatic malignancy, 9 cases are metastatic adenocarcinoma and 10 cases are metastatic squamous cell carcinoma.

CONCLUSION

Based on the finding in this study we found that FNAC is an extremely useful tool in the evaluation of palpable cervical lymph node. In majority of the cases it may excludes the need of a more invasive procedure and helps to initiate the appropriate treatment. FNAC is a reliable diagnostic tool in evaluation of lymphadenopathy for both screening and follow-up. Our experience suggests that FNAC combined with clinical correlation is useful as a first line investigation which can be performed in the outpatient department.

Conflict of Interest: None

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