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Pathology

A CLINICOPATHOLOGICAL STUDY OF PATIENTS WITH CERVICAL LYMPHADENOPATHY BY FNAC AND ITS HISTOPATHOLOGICAL CORRELATION

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ABSTRACT **Background-** Cervical lymphadenopathy is one of the most frequent clinical presentation of patients attending out patient department and also the most common manifestations of underlying pathology of the head and neck region, with numerous differential diagnoses such as neoplasms and infections Fine needle aspiration cytology (FNAC) is considered as a safe, easy, quick and also the first line diagnostic technique for evaluation of cervical lymphadenopathy.**Materials and method-** The study comprised of 150 patients clinically presenting with cervical lymph node swelling coming for FNAC to the department of pathology. Out of 150 patients, 25 patients underwent surgery and histopathological correlation was done for these patients. Results: Among the 150 cases majority of the patients were males 70 % with M:F ratio 2.33:1.Age of the patients ranged from 1 to 90 years with a mean age of 40.44 years.Most of the lymph node lesions were seen in the age group of 21-30 years(20.67%). Level IIb lymph node was most commonly affected(36%).In FNAC 63.70 % cases were benign and 36.29 % cases were malignant.Among the benign lesions Reactive lymphoid hyperplasia was most common(25.9%) and in the malignant lesions metastatic carcinoma was most common(19.25%). In HPE 82.5% were benign and 17.5% were malignant.There was a strong correlation among the FNAC and HPE findings where reactive lymphoid hyperplasia was found to be most common benign lesion.**Conclusion:** Fine Needle Aspiration Cytology is a rapid, safe, efficient, cost-effective and the first line investigation for diagnosis of cervical lymph node lesions. Histopathological examination however remains the gold standard for definitive diagnosis of in certain malignant lymph node lesion.

KEYWORDS : FNAC,Cervical lymphadenopathy,HPE

INTRODUCTION

Cervical lymphadenopathy is usually defined as cervical lymph nodal tissue measuring more than 1 cm in diameter, and can be caused by benign local or generalized infection, but occasionally, it might herald the presence of a more serious disorder such as malignancy. Cervical lymphadenopathy can be soft, firm, or stony hard according to the disease process by which they involved.[1] Cervical lymphadenopathy is one of the most frequent clinical presentation of patients attending out patient department.[2]Around 300 lymph nodes (LNs) out of 800 LNs in the whole body is located in the neck region.[3] The analysis of cervical lymphadenopathy is never simple, and the difficulty is exacerbated by the presence of several diseases that resemble each other. These include both inflammatory and neoplastic disorders.[4] Cervical lymphadenopathy is one of the most common manifestations of underlying pathology of the head and neck region, with numerous differential diagnoses such as neoplasms and infections (Specific and nonspecific),, immune deficiency disorders and also in rare disorders like inflammatory pseudo tumour (Plasma cell granuloma) disease.[5] Fine needle aspiration cytology (FNAC) is considered as a safe, easy and quick diagnostic technique for evaluation of cervical lymphadenopathy.It is now the first line of investigation in the evaluation of lymphadenopathy.[6]The FNAC in lymph node was first used by Greig and Gray in 1904 to diagnose trypanosomiasis and Guthrie in 1921 systemically performed FNA on lymph nodes for diagnostic purpose.[7] Fine needle aspiration cytology, biopsy, and histopathological examination continue to play an important role in determining the cause of cervical lymphadenopathy. It is a cost-effective and first-line investigation for significantly enlarged lymph nodes. In developing countries such as India, it plays a significant role as it is an inexpensive, easy to perform procedure, and almost has no complications. It may contain useful information about both neoplastic and nonneoplastic conditions. Because it provides numerous benefits to both patients and physicians, FNAC has gained widespread acceptance.[8] However fine needle aspiration cytology is not always used as a routine diagnostic procedure in practice. FNAC finding needs to be correlated with histopathological examination if FNAC is inconclusive[9].

AIMS AND OBJECTIVES

1) To study the role of FNAC as a diagnostic tool in cervical lymphadenopathies

2) To do the histopathological examination as a confirmatory diagnostic tool of surgically resected lymph nodes in selected specimens

3) To correlate the cytopathological findings with histopathological findings

MATERIALS AND METHODS

The study is a hospital based cross- sectional study conducted from September 2021 to August 2022, in the Department of Pathology, Fakhruddin Ali Ahmed Medical College and Hospital,Barpeta,Assam. The study comprised of 150 patients clinically presenting with cervical lymph node swelling coming for FNAC to the department of pathology. Out of 150 patients, 25 patients underwent surgery and histopathological correlation was done for these patients. All the patients were clinically examined in detail according to the proforma and a careful palpation of the cervical lymph node was done to judge precisely the location for aspiration. After brief explanation about the procedure to the patient, consent from the patient is taken for Fine needle aspiration cytology (FNAC) from cervical lymph node swellings.Out of all the FNACs done the specimen required for histopatholgical examination were sent to the department of pathology ,FAAMCH

RESULTS:

The study comprised of 150 patients clinically presenting with cervical lymph node swelling coming for fine needle aspiration cytology to the department of pathology. A total of 40 cases were available with HPE reports. Cytohistological correlation was available in 25 patients.There were 15 no of patients who underwent HPE but FNAC reports were not available for those patients .The age of the patients ranged from 1 years to 90 years with a mean age of 40.44 years with a standard deviation of 20.63. In the present study it was found that the most common age group affected were between 21-30 years(20.67%) followed by 41-50 years(16.67%) and the least common age group were 91-100 years(0.67%) . Out of the 135 cases who underwent FNAC there were 86(63.70%) cases which were reported as benign and 49(36.29%) cases which were reported as malignant. In the study it was found that reactive lymphadenitis was most common in the age group of 21-30 years(11.85%),Inflammatory in the age group 21-30 and 51-60 years(2.96%), Granulomatous in the age group 11-20 years(5.18%) and tubercular in almost all the patients ranging 11-60 years(1.4%). Out the available 40 cases for HPE there were 31 cases(77.50%) cases reported as benign and 9 cases(22.50%) cases reported as malignant. The most common age groups affected on HPE were in the age group 21-30 years(35.00%) and the least common were 81-90 years,2(5%). In the present study out of the 25 cases correlated

cytohistologically 19 were diagnosed as benign on FNAC and 6 were diagnosed as malignant while on HPE also while 19 were diagnosed as benign on and 6 were diagnosed as malignant .However all the individual cases did not have the exact correlation which is discussed later.

Figure 1-Age distribution of cervical lymphadenopathy on FNAC

Age in Years	No of cases	Percentage
1-10	9	6.67%
11-20	18	13.33%
21-30	28	20.74%
31-40	16	11.85%
41-50	21	15.56%
51-60	19	14.07%
61-70	16	11.85%
71-80	4	2.96%
81-90	3	2.22%
91-100	1	0.74%
Grand Total	135	100.00%

Figure 2- Number and percentage of benign and malignant lesions on HPE

Lesions on HPE	Number	Percentage
Benign	31	77.50%
Malignant	9	22.50%
Grand Total	40	100.00%

Figure 3- Cyto-histological correlation of various lesions

Row Labels	FNAC	HPE
Inflammatory lesion	1	1
Metastatic squamous cell carcinoma/Metastatic carcinoma	5	2
Necrotizing lymphadenitis	1	1
Non Hodgkins Lymphoma(Follicular Variant)	1	1
Reactive Lymphoid Hyperplasia	14	12
Tubercular lymphadenitis	3	5
Metastatic keratinizing SCC	0	1
Spindle cell variant of DLBCL	0	2
Total	25	25

Figure 4- Cytological image of Reactive lymphoid hyperplasia showing centrocytes centroblasts plasma cells immunoblasts and lymphocytes(MGG,10X)

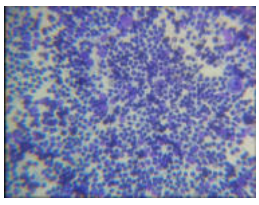


Figure 5- Tubercular lymphadenitis showing Langhan,s type of giant cell(MGG,40X)

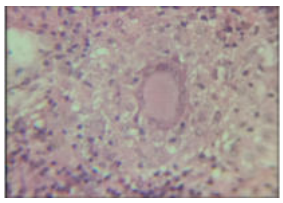


Figure 6 - Diffuse large B-cell lymphoma showing large cells, vesicular nuclei with prominent nucleoli(H$E,40X)

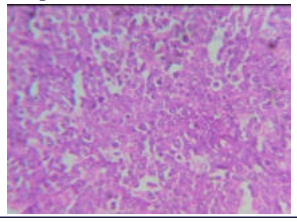


Fig 7-Cytological image of patient with metastatic carcinoma(MGG,40X)

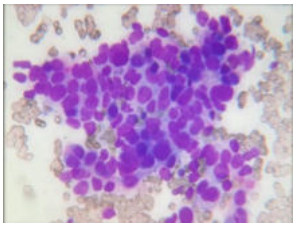


Fig 8-Cytological image of Hodgkins lymphoma showing characteristic Reed Sternberg cells(MGG,40X)

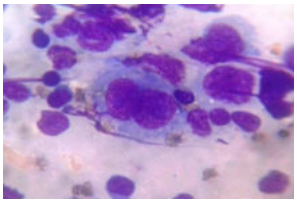
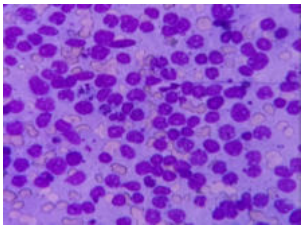


Fig 9-Non Hodgkins lymphoma in a level 2 lymph node(MGG,40X)



DISCUSSION

Cervical lymphadenopathy is one of the most frequent clinical presentation of patients attending out patient department[2]..Fine needle aspiration cytology (FNAC) is considered as a safe, easy and quick diagnostic technique for evaluation of cervical lymphadenopathy.It is now the first line of investigation in the evaluation of cervical lymphadenopathy[6].The present study was undertaken to evaluate the cervical lymph node lesions by FNAC and the cytological findings were studied and correlated with histopathology wherever available. In the present study the age ranged from 1-90 years with mean age of 40.44years and with a standard deviation of 20.63 which was similar to the study conducted by Sejwal P et al.[10].

On FNAC the percentage of benign lesions was found to be 63.70 which was close to the study conducted by Bipin Gandhi et al[11] and Krishnaswamy J et al where the percentage of benign lesions were found to be 76.39 and 54 percent respectively.[12]

Out of all the benign lesions on FNAC reactive lymphadenitis constituted most of them(25.92%)in the present study.Bipin Gandhi et al[11] and Bhatta S et al[13] found reactive lymphadenitis to constitute 42.51 and 54.36 % of the benign lesions repectively.

Whereas among the malignant lesions metastatic carcinoma contitued 19.2 % of the lesions in the present study. Which was close to the study conducted by Sujatha R et al(14.75%)[14]

On HPE benign lesions constituted 77.5 % of the cases which was similar to the study conducted by Singh Shyamchand S et al(70%) whereas malignant lesions constituted 22.5 % of the cases in the present study close to study conducted by Singh Shyamchand S et al(30%)[15],Arul P et al(16.5%)[8] and Bhatta S et al(15.62%)[13]

In the present study diagnostic accuracy between FNAC and HPE for both benign and malignant lesions were 100% which were similar to the study conduted by Muhammad Shabbir Ahmad MK et al(99.7%)[16] for benign lesions and Duarah B et al which showed diagnostic accuracy of 98.64% and 92.30% for benign and malignant lesions respectively[17]

The overall sensitivity,specificity,PPV,NPV for malignant lesion in the present study were 100,91.30,66.7 and 100 respectively which was

similar to the study conducted by Sejwal P et al with the above values as 100,91.67,92 and 100 respectively[10]

CONCLUSION

Fine Needle Aspiration Cytology is a rapid, safe, efficient, cost-effective and the first line investigation for diagnosis of cervical lymph node lesions. It aids in differentiating non-neoplastic from neoplastic lesions for further evaluation. It has high sensitivity, specificity, and diagnostic accuracy. However, there are certain limitations of FNAC which include:

Definite category of malignant lesion or its primary site for metastasic malignancy cannot be ascertained in all cases.

Cystic solid mass aid often require the aid of USG/CT guided FNAC. Both non neoplastic and neoplastic lesions can undergo cystic changes giving rise to false negative results on aspiration. To minimize this,fluid should be aspirated completely and FNA should be done from the residual mass. Multiple passes should be considered to obtain adequate aspirates for a proper cytologic diagnosis.

Histopathological examination however remains the gold standard for definitive diagnosis of in certain malignant lymph node lesions. The diagnostic accuracy can be improved when combined with advanced imaging techniques and ancillary techniques like immunocytochemistry from cell block preparations . Fine Needle Aspiration cytology therefore remains an easy and rapid diagnostic modality in evaluation of lymph node lesions and gives a direction for further investigative procedures and treatment.

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