

FINE NEEDLE ASPIRATION CYTOLOGY: A RELIABLE DIAGNOSTIC APPROACH IN SUPRACLAVICULAR LYMPH NODE SWELLING: A STUDY AT PUMHS-W, NAWABSHAH, SIND, PAKISTAN

ABSTRACT

OBJECTIVE: This study was conducted with the aim to approach the diagnostic accuracy of fine needle aspiration cytology in supraclavicular lymph node swelling at outpatient department.

METHODS: The study is cross-sectional, descriptive conducted at General Surgery department Unit-III, of PUMHSW, Nawabshah, Sind, from 1st January 2019 to 31st December 2020. After the written permission from ethical Review Committee of PUMHS-W, all the patients attending Surgical/Medical outpatient department with supraclavicular lymph node swelling and sent for cytological examination from 1st January 2019-31st December 2020 were entered in SPSS-20, after filling of specially designed proforma. All the variables/demographic details were entered and analyzed by SPSS version 20.

RESULTS: Total of 153 cases diagnosed at the Department of Pathology, PUMHS-W, and Nawabshah during the two-year period. The most commonly lesion was TB Lymphadenitis 58(38%), and 43(28%) were cases of Reactive Hyperplasia, while the malignant metastatic lesions were 38(25%) and Lymphoma and NHL were positive in 5(3%) cases.

The metastatic lesion were most commonly involve the left side 23(60.5%) and less commonly the bilateral 3(8%) involvement. The common metastatic malignancy found was squamous cell carcinoma 14(37%) followed by adenocarcinoma, undifferentiated carcinoma, small cell carcinoma, papillary thyroid carcinoma, ductal carcinoma breast, hepatocellular carcinoma and seminoma, 10(%), 5(%), 2(%), 2(%), 1(%), 1(%), 1(%) respectively.

The most commonly involved age group by mixed lesions were 41-50 years of age, and less common group involved was above 70 years of age. The metastatic malignant lesion were commonly found in 61-70 years of age group and lymphoma and Non Hodgkin Lymphoma were seen up to 60 years of all age groups.

CONCLUSION: Fine Needle Aspiration Cytology is a reliable diagnostic tool as it is cheap, less invasive, and timed modality for diagnosing the supraclavicular lymph node inflammation/metastatic and nodular malignancies.

Key Words: Fine needle Aspiration Cytology, Supraclavicular Lymph Node, Non-Neoplastic, Metastatic, Malignant.

INTRODUCTION:

The lymphadenopathy is a common clinical presentation and one of major reason for morbidity of patients in various diseases attending the outdoor department^{1, 2}. The left sided supraclavicular lymphadenopathy is considered as metastatic lesions from the tumors arising from the structures under the diaphragm as described by Virchow in 19th century, and the right sided supraclavicular lymphadenopathy are usually considered as the result from the thoracic tumors³.

For clinician it is a difficult task to clinically detect the cause of supraclavicular lymphadenopathy, as the etiology varies from an inflammatory process to a malignant condition.⁴ The majority of studies mentioned in the literature reveal a malignant cause for palpable supraclavicular lymph nodes particulate metastatic.⁵ The fine needle aspiration cytology (FNAC) is a simple and safe procedure which may be used as first line diagnostic test in the cases of supraclavicular lymphadenopathy⁵. FNAC is a clinical technique used to obtain cells, tissues and/or fluid through a thin needle attached with disposable syringe for the purpose of diagnosis of masses⁶. It can easily differentiate between inflammatory and neoplastic lesions.⁷ The outcome of FNAC can be improved by proper clinical assessment of lesion, careful procedure & adequate smear preparation.⁸ The diagnostic yield of FNAC can be improved if it is accompanied by radiological guidance like ultrasonography & computed tomography scan and lowers the complication risk.^{9,10,11} The ultrasound offers better sensitivity of 16.7% in lymph nodes of more than 1.0 cm size, but when compare with histological assessment the sensitivity and specificity reaches to 91% and 94%.¹² It is important to know that ultrasound also help in detecting about 50% of non-palpable occult metastasis⁴. Many studies have highlighted the importance of fine needle aspiration cytology (FNAC) in diagnosing enlarged lymph node with high sensitivity and specificity^{5,13-16}. The present study is designed to evaluate the importance of FNAC in the diagnosis of supraclavicular lymphadenopathy.

MATERIAL AND METHODS:

The present study was conducted in the General Surgery department Unit-III, of Peoples University of Medical and Health Sciences, Nawabshah, during January 2019 to December 2020. Fine needle aspiration cytological examination was performed on 153 patients of enlarged supraclavicular lymph nodes. An informed consent was taken from all the patients before

performing the procedure. All the related demographic and clinical details were collected on a proforma designed for the study. The inclusion criteria were all adult patients above the age of 12 years having unilateral or bilateral enlarged supraclavicular lymph nodes. The cases under 12 years of age, the diagnosed cases of lymphadenopathy, and the cases of generalized lymphadenopathy were excluded from the study by using SPSS 20 version all the demographic details of patients and Cyto-histological diagnosis were analyzed and tabulated.

FNAC procedure was carried out using a 10ml syringe equipped with 21 or 23 gauge needles. The aspirated material was smeared onto four slides in each case. Two slides were immediately immersed in 95% ethanol and routinely stained by Haematoxylin and Eosin (H and E) stain and Papanicolaou stain.

Statistical analysis would be performed using the SPSS 21 software. The results would be expressed as the mean [+ or -] SD. Effect modifier like age and outcomes will be controlled by stratification using Chi Square test. <0.05 will be taken as significant.

RESULTS:

Out of 153 total inclusive cases, non-neoplastic cases were 108(71%), neoplastic lesions were 43(28%) and 2(1%) were inconclusive due to inadequate smear. Table no: 1

Among all 153 cases 58 (38%) were cases of tuberculous lymphadenitis, 43(28%) were Reactive Hyperplasia, 07(5%) were diagnosed suppurative inflammation, number of Lymphoid neoplasm were 5(3%), 02(1%) were inconclusive due to insufficient smear. Among all of them the numbers of metastatic lesions were 38(25%).Table no: 2.

Our results showed that all the metastatic lesion were according to the site are as, right side nodal involvement is 12(31.5%),left side involvement is 23(60.5) while the bilaterality is seen in 3(8%) cases. Table no: 3

Among all 38 malignant cases the total number of squamous cell carcinoma were 14(37%), Adenocarcinoma 10(26%), undifferentiated carcinoma 7(18%), small cell carcinoma 2(5%) papillary carcinoma thyroid 2(5%), ductal cell carcinoma 1(3%), hepatocellular carcinoma 1(3%), seminoma 1(3%). Table no: 3

In 3rd part we divided the lesion occurrence according to the age groups, the most common group involved by all the lesions was 41-50 years of age group, the less common involved group was above 70 years of age group. The most common group involved by malignancy was 61-70 years of age, and less common group involved by malignant lesions was

21-30 years of age group. While no metastatic malignant lesion were noticed in 12 -20 years of age. Lymphoma & Hodgkin Disease were seen in all age groups up to 60 years of age group.

Table no: 4

DISCUSSION:

In our study and the studies from developing countries shown that the non-neoplastic lesions were more common than the malignant lesions.^{1,17} in our study the non-neoplastic lesions were 108(71%), malignant lesions were 43 (28%) but the results are close to similar with Adikari RC Nepal¹³ 67 (44.9%) were metastatic disease and non-neoplastic were 49.7%. The results from India by Pathy PC¹ and steel BL¹⁸ from Ireland are not consistent with our results, Malignant (51.27%), benign (48.27%) Pathy PC¹, (59%) were malignant and (34%) were benign, steel

The reason behind this is the infections are more common in eastern countries while malignancy is more common in western/developed countries, and the study was carried out at cancer center.

Our study showed that the non-neoplastic lymphadenitis, comprises of, tuberculous lymphadenitis 58(38%) was the commonest lesion, followed by reactive hyperplasia 43(28%), then nonspecific suppurative lesions 5(7%), Gupta RK⁸ from India showed the similar results where granulomatous lymphadenopathy (59%) is higher.

From Nepal tuberculous lymph adenitis 62(41.6%), reactive hyperplasia 13(8.7%) Adhikari RC¹³ while the EL Hage IA¹⁹ has had the results higher reactive lymph nodes (59%) followed by granulomatous lymphadenitis (47%) which are not consistent with our results, and Pathy PC¹ from India showed the 58.34%. Reactive hyperplasia and granulomatous lesion were 24.22%, these are not consistent with our results, as the tuberculosis more prevalent in south East Asian underdeveloped countries.

The malignant lesions observed in our study were 43(28%), while the results from Nepal Hirachand S²⁰ and Pakistan Tariq A²¹ were below 20%. An Indian study showed the results of malignant metastatic lesions were 51.27% and 59 %¹ from Ireland steel BL¹⁸ both results are not consistent with our results. The total non-neoplastic lesions in our study were 71%, our results are consistent with results of Hirachand S²⁰ where benign lesions were above 80%. The primary lymphoid malignancies in our study were 5(3%), 6% from Nepal Hirachand S²⁰, and 9.5% from Nepal Adhikari RC¹³, while the results from Pathy PC¹ 6.2% all are consistent with our results.

In this study results showed that involvement of supraclavicular lymph node by malignancy on Lt side 23%, Rt side 12% ,and 3% were bilateral enlargement, study from Nepal by Adhikari

RC¹³ showed the similar results as on left side 55% the maximum involvement ,then right side involvement is 40.3% followed by bilateral involvement to 4.7%.

The squamous cell carcinoma is the most common malignancy followed by adenocarcinoma than undifferentiated carcinoma, results are similar with the results of Qadri sk²². One of the few studies claimed that adenocarcinoma (40.91%) was the most frequent malignant lesion seen, than squamous cell carcinoma followed by carcinoma breast on third number. Malhotra AS¹⁷

The commonest cause of lymphadenopathy in pediatric age group was reactive hyperplasia while tuberculosis lymphadenitis was more common in adolescents and middle aged patients Agarwal D²³, Fatima S²⁴. The results in our study were slightly differ, as all the non-neoplastic lesions including Tuberculous lymphadenitis are more prevalent middle aged patients. The peak incidence of metastatic malignant lesion was seen in 5th to 7th decades, This part of result is similar with the study showed that the mostly lesion was occurring during 4th to 6th decade age. Ahmed SS²⁵ The overall diagnostic accuracy of Fine Needle Aspiration Cytology was 98%, sensitivity and specificity 98% which was in consistent with the studies of with the other studies. Malhotra AS¹⁷, Agarwal D²³, Ahmed SS²⁵, Hafez NH²⁶.

CONCLUSION:

Fine Needle Aspiration Cytology of enlarged supraclavicular lymph nodes is considered as base line of investigation as it is also easily accessible, cost-effective and less invasive technique for the diagnosis of various inflammatory/malignant and local malignant lesions but also helpful in decision for appropriate line of management.

Ethical Approval:

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

Consent

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

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Table 1. Cytological Diagnosis on FNAC (n=153)

S.NO	Non-neoplastic Lesions	Malignant lesions	inconclusive
1	108(71%)	43(28%)	02(1%)

Table 2. Cytological Diagnosis on FNA (n=153)

Cytological Diagnosis	Number of Cases 153 (%)
TB Lymphadenitis	58(38%)
Reactive Hyperplasia	43(28%)
Suppurative	07(5%)
Metastatic Lesions	38(25%)
Lymphoma/Hodgkins Disease	05(3%)
Inconclusive	02(1%)
Total	153 (100)

Table 3. Cytological Diagnosis of Metastatic Lesions on FNA (n=38)

Metastatic Tumor	Right	Left	Bilateral	Total
Squamous Cell Carcinoma	05	07	02	14(37%)
Adenocarcinoma	02	07	01	10(26%)
Undifferentiated Carcinoma	02	05	00	07(18%)
Small Cell Carcinoma	01	01	00	02(5%)
Papillary Carcinoma Thyroid	01	01	00	02(5%)
Ductal Carcinoma Breast	01	00	00	01(3%)
Hepatocellular Carcinoma	00	01	00	01(3%)
Seminoma	00	01	00	01(3%)
Total	12(31.5%)	23(60.5%)	03(8%)	38 (100)

Table 4. Pattern of disease in relation to age in decades (n=151)

Age Group (years)	Reactive Hyperplasia	Tubercular Lymphadenitis	Suppurative lesions	Metastatic lesions	Lymphoma	Hodgkins Disease	Total (%)
12-20	03	03	01	00	00	01	08
21-30	02	10	01	01	01	00	15
31-40	07	18	02	02	01	00	30
41-50	16	16	02	07	01	00	42
51-60	10	06	01	10	01	00	28
61-70	03	03	00	16	00	00	22
>70	02	02	00	02	00	00	06
Total	43	58	07	38	04	01	151

UNDER PEER REVIEW