

A study on significance of Fine needle aspiration cytology (FNAC) of Supraclavicular lymph node in different neoplastic and non-neoplastic lesions- a retrospective observational study in a tertiary care hospital of eastern India.

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Abstract

Objectives: Cervical lymphadenopathy is a common clinical findings in all age groups which ranges from inflammatory, reactive conditions to metastatic lesion in etiologies. Fine needle aspiration cytology is a standard first line of investigation in the evaluation of lymphadenopathy. The majority of studies by fine needle aspiration either by directly from palpable lesions or image guided from supraclavicular lymph node reveals a malignant etiology. However, the present study further emphasizes the role of fine needle aspiration cytology for the aetiological evaluation of enlarged supraclavicular lymph node as a first line of investigation.

Method: This was a retrospective observational study. All patients of palpable supraclavicular lymph node enlargement of more than 2 weeks duration and of size more than 1cm was included in this study. Fine needle aspiration was done in the department of Pathology of R.G.Kar medical college, Kolkata, with the help of 23G needle and the smears were stained with May-Grunwald-Giemsa and Papanicolaou stains. Z-N stain done where it

was clinically indicated. Total study period was 2 years from January 2016 to December 2017.

Results: A total of 187 patients were selected. The right supraclavicular lymph node was enlarged in 115 cases (61.5%), while in 68 cases (36.4%) it was left sided and in 4 cases (2.1%) it was both sided enlargement. Cytological diagnosis were categorized as metastasis in 83 cases (44.4%), Tuberculosis in 66 cases(35.3%), Reactive in 20 cases (10.7%), Acute suppurative lymphadenitis in 13 cases(6.9%) and Lymphoproliferative disorder in 5 cases (2.7%). Among 83 cases of metastatic disease, major types of malignancy found were adenocarcinoma in 32 cases (38.5%), Squamous cell carcinoma in 28 cases (33.7%), poorly differentiated carcinoma in 10 cases (12.1%), small cell carcinoma in 9 cases (10.9%) and others in 4 cases (4.8%)(from ovarian , thyroid malignancy etc.). Among the primary sites lung was the most common primary site in 47 cases (56.6%) followed by breast, stomach, larynx etc. However in 10.8% cases no primary site was found.

Conclusion: The fine needle aspiration cytology can be used as a first line investigation in the etiological evaluation of supraclavicular lymph node due to its low cost, simplicity and minimal invasiveness.

A full history with radiological findings and histopathological confirmation guides to arrive at a definitive diagnosis.

Keywords: Fine needle aspiration cytology, supraclavicular lymph node, metastatic lesion.

Introduction

Fine needle aspiration cytology (FNAC) of the lymph node is now a widely applied technique for rapid and accurate diagnosis of various lesions. Peripheral lymph nodes are easily approachable and safe to aspirate. Fine needle aspiration cytology is widely accepted to both the children and adult. It is a more or less painless procedure and does not need any anesthesia.

The FNAC diagnosis is accurate and reliable^[1]. Studies in the past have shown metastatic malignancy to be a major cause of enlargement of supraclavicular lymph nodes.^[2-5]

Our experience is shared herewith regarding diagnostic use of the fine needle aspiration cytology (FNAC) of supraclavicular lymph node in different neoplastic and non neoplastic conditions and to further emphasize the role of fine needle aspiration cytology for the etiological evaluation of enlarged supraclavicular lymph node as a first line of investigation.

Place of study

Department of Pathology, R.G.Kar medical college, Kolkata, India

Duration of study

2 Years (January 2016 to December 2017)

Study Design

Retrospective observational study.

Study material

Past records of FNAC Data Register at Department of Pathology, R.G.Kar Medical college, Kolkata.

Materials and Methods

This study was a retrospective review of fine needle aspiration cytology of palpable supraclavicular lymph nodes between January 1, 2016 and December 31, 2017. Data in regards to age, sex, site, size, duration, involvement of other lymph nodes and other investigations performed were retrieved from the records of the Department of Pathology, R G Kar Medical College & Hospital, Kolkata, west Bengal, India,. Fine needle aspiration was performed on 202 cases of palpable supraclavicular lymph nodes. Aspirates were done by using a 23 gauge needle attached to a 10 ml disposable syringe. Aspiration were performed and the aspirated material was smeared on glass slides. The slides were both air-dried and wet-fixed for May-Grunwald-Giemsa and Papanicolaou stains, respectively. Z-N stain done in selected patients where it was clinically and radiologically indicated. In 15 cases, either the needle aspirate was inadequate or the cytological opinion was inconclusive. Hence the remaining 187 cases were analyzed. The cytological diagnosis from each case was rendered on the basis of cyto-morphology and available clinical information. The diagnosed cases were divided into five groups- Reactive, acute suppurative lymphadenitis, granulomatous lymphadenitis (Tubercular lymphadenitis where acid fast bacilli found in Z-N stain), metastatic deposit and lymphoproliferative disorder.

Results

A total of 187 FNACs were studied. The age presentation ranged from 13 to 85 years with a male to female ratio of 1.3:1 [Table 1 & Table 2]. The right sided supraclavicular lymph node was enlarged in 115 of 187 (61.5%) cases, while 68 of 187 (36.4%) cases it was left sided and in 4 of 187 (2.1%) cases it was both sided enlargement. The size of the lymph nodes varied from 1 to 5 cm. Table 3 summarizes the different categories on the basis of FNAC diagnoses of supraclavicular lymph nodes. Of the 187

cases, 83 cases (44.4%) showed metastatic deposit, 66 cases (35.3%) showed necrotizing granulomatous inflammation, 20 cases (10.7%) showed reactive hyperplasia, 13 cases (6.5%) showed acute suppurative lymphadenitis and 5 cases (2.7%) cases lymphoproliferative disorder. Out of 66 cases of granulomatous lymphadenitis 12 cases (18.2%) showed acid fast bacilli positive in Ziehl-Neelsen stain [Table 5]. Metastatic deposit was found to be the largest category, 83 cases (44.4%) of supraclavicular lymphadenopathy diagnosed on FNAC in our study. Four major types of malignancy were found in the supraclavicular lymph nodes in the metastatic deposit. They were adenocarcinoma in 32 cases (38.5%), squamous cell carcinoma in 28 cases (33.7%), poorly differentiated carcinoma in 10 cases (12.1%), small cell carcinoma in 9 cases (10.9%) and others in 4 cases (4.8%) (papillary thyroid carcinoma, large cell carcinoma, poorly differentiated carcinoma) [Table 4]. However, cases of malignancy were markedly predominant in patients above 40 years age [Table 1]. The details of the primary sites as was available from clinical and radiological investigations are summarized in Table 6. Lung was the most common primary site in 47 of 83 (56.6%) cases, followed by stomach, breast, ovary and larynx. In 9 of 83 (10.8%) cases, no primary site was found. Other primary sites were cervix, thyroid gland and esophagus.

Table 1- Incidence of different types of lesion on the basis of Age

Age group	11 to 20	21 to 30	31 to 40	41 to 50	51 to 60	>60	Total
Reactive	5	5	3	3	3	1	20
Tuberculosis	14	27	11	8	6	0	66
Acute suppurative lymphadenitis	5	6	1	1	0	0	13
Lymph proliferative disorder	1	0	0	2	0	2	5
Metastasis	0	1	5	22	29	26	83
Total	25	39	20	36	38	29	187

Table 1 shows the metastatic deposit were found mostly for the patients of more than 40 years of age

Table 2- Incidence on the basis of Sex

FNAC diagnosis	male cases	female cases
Reactive lesions	12(6.4%)	8(4.3%)
Tuberculosis	24(12.8%)	42(22.5%)
Acute suppurative lymphadenitis	5(2.7%)	8(4.2%)
Lymphoproliferative disorder	3(1.6%)	2(1.1%)
Metastasis	61(32.6%)	22(11.8%)
Total	105(56.1%)	82(43.9%)

Table 2 shows incidence of tuberculosis is more in the female patients and for metastatic deposit it is more in the male patients.

Table 3- Incidence of different categories of lesion found on FNAC

FNAC Diagnosis	Total Cases
Reactive lesions	20(10.7%)
Tuberculosis	66(35.3%)
Acute suppurative lymphadenitis	13(6.9%)
Lymphoproliferative disorder	5(2.7%)
Metastasis	83(44.4%)
Total	187(100%)

Table 3 shows metastatic deposit is the major group in the FNAC of supraclavicular lymph node.

Table 4- Different categories of metastatic deposit on the basis of FNAC and later on histopathology

Category	Number (Percentage)
Adeno Carcinoma	32(38.5%)
Squamous Cell Carcinoma	28(33.7%)
Poorly Differentiated Carcinoma	10(12.1%)
Small Cell Carcinoma	9(10.9%)
Other	4(4.8%)

Table 4 shows adenocarcinoma is the major category in the FNAC of supraclavicular lymph node.

Table 5- Incidence of AFB positive and AFB negative smear in granulomatous lymphadenitis

Necrotizing Granulomatous Lesion	AFB Positive	AFB Negative
66	12(18.2%)	54(81.8%)

Table 5 shows 18.2% cases are positive for AFB

Table 6- Incidence of known primary and unknown primary on the basis of clinical, radiological and histopathological diagnosis.

Known Primary Site	Lungs	47(56.6%)
	Breast	8(9.6%)
	Stomach	7(8.4%)
	Cervix	5(6.2%)
	Oesophagus	2(2.4%)
	Larynx	2(2.4%)
	Gall Bladder	1(1.2%)
	Ovary	1(1.2%)
	Thyroid	1(1.2%)
Unknown Primary	9(10.8%)	

Table 6- shows maximum primary lesions are in the lung- 47 cases(56.6%)

Table 7- Incidence of Lymphoproliferative disorders

Lymphoproliferative disorder	Non-Hodgkin lymphoma	Hodgkin lymphoma
5	4	1

Table 7 shows predominant lesions are Non-Hodgkin lymphoma,5 cases(80%)

Discussion

Fine needle aspiration cytology is routinely used as a first line diagnostic test. The majority of studies proved metastatic deposits are the primary causes of the palpable lymph node.^[2-4] In our study also, majority of cases showed the etiology of metastatic pathology(83/187),i.e, (44.4%). This study corroborative to the study of Kumar M et al where they found the incidences of metastasis (45.5%)^[5].

Regarding the age incidence of malignant deposit in supraclavicular lymph node, patients above the age of 60 yrs is near about 90% and it was noticed that the trends for metastatic disease at enlarged supraclavicular lymph

node rose to the patients of more than 40 years of age. This is at par to the study of Sumit Mitra et al^[6].

In our study necrotizing granulomatous lymphadenitis was a cause of 35.3% of the supraclavicular lymphadenopathies. This is high compared to the studies of Gupta N et al^[3](13.5%) and Nasuti JF et al(2%)^[4].The high incidence may be due to the high prevalence of tuberculosis in India.

Adenocarcinomatous metastatic deposit to the supraclavicular lymph nodes were from the primary sites of the breast,lung, stomach and esophagus.^[7,8,9] In addition to these primary sites, metastases from the ovary was also noted.

Squamous cell carcinomas usually metastasize to the supraclavicular lymph nodes from the cervix,and lung^[10].In addition to this, it was also noticed to have metastases from the larynx. There were also cases of squamous cell carcinoma in the supraclavicular lymph node that had unknown primary sites. Small cell carcinoma of the lung can metastasize to the supraclavicular lymph nodes and this results in an unfavorable prognosis^[11]. The Lymphoid malignancy comprises a minority of the diseases in our studies in the FNAC of supraclavicular lymph node (2.7%). This finding also corroborate with the study of Nasuti JF et al where it is about (5%). It was also found that other lung carcinomas of large cell variant and papillary carcinoma of thyroid gland have also metastasized to the supraclavicular lymph nodes.

It was observed in our study that most adenocarcinomas metastasize to the left supraclavicular lymph node and squamous cell carcinomas showed no predilection to the side for metastasis. In contrast, Carson HJ et al, found that squamous cell carcinomas appeared to favor the right side.^[12]

Conclusion

This study was conducted in a tertiary care center in Kolkata on the basis of FNAC findings of Supraclavicular

lymph node for last 2 years. Regarding the age and sex incidences, the majority cases were in the range of 51-60 years and the predominantly diagnosis was metastatic deposit. Male group comprises relatively larger than female. In context to categories of lesions, the major categories were metastatic deposit (44.4%) followed by tuberculosis (35.3%) and reactive lesions (10.7%). Metastasis from lung was the common category of metastatic deposit emerged from the study. All those findings corroborated with different national and international studies.

Limitations

1. Since this study was done in a tertiary care center and study period of last 2 years, better conclusive opinion is possible from a study of a larger sample.
2. Histopathological confirmation was not possible for each cases of this study due to non availability of biopsy specimen and few cases was not turn out for biopsy in this center.
3. Regarding the diagnosis of lymphoma, we had to stick to the morphological criteria due to constraint in Immunohistochemistry.
4. Among the cases of necrotizing granulomatous inflammation, 12 cases was positive for Z-N stain and rest of the cases were negative for Z-N stain but morphologically consistent with tuberculosis. Z-N stain negative cases should have been done for CBNAAT for confirmation, which was not available in this department.

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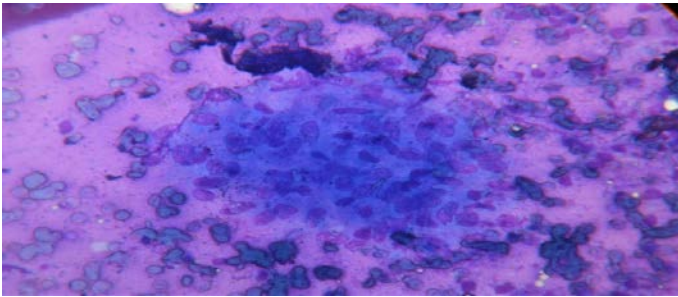


Figure1- Photomicrograph of FNAC of Granuloma (MGG Stain, 400X)

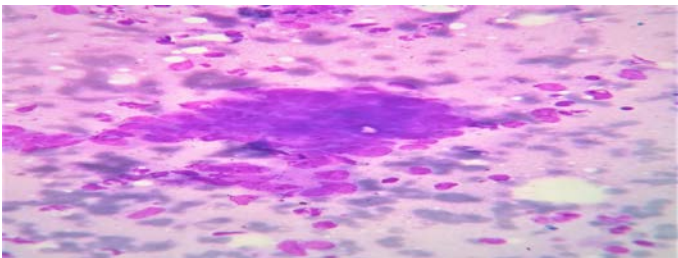


Figure- 2- Photomicrograph of FNAC of Metastatic deposit of adenocarcinoma(MGG Stain, 400X)

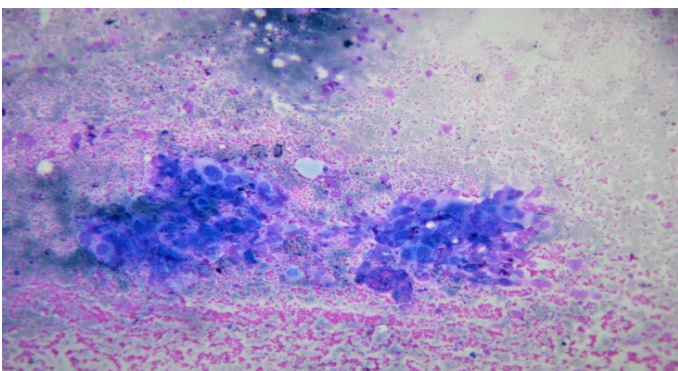


Figure-3- Photomicrograph of FNAC of Metastatic deposit of squamous cell carcinoma (MGG Stain, 400X)

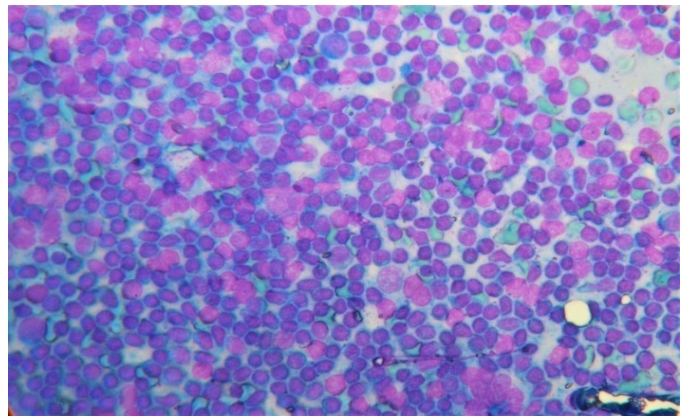


Figure-4- Photomicrograph of FNAC of reactive hyperplasia in lymph node (MGG Stain, 400X)

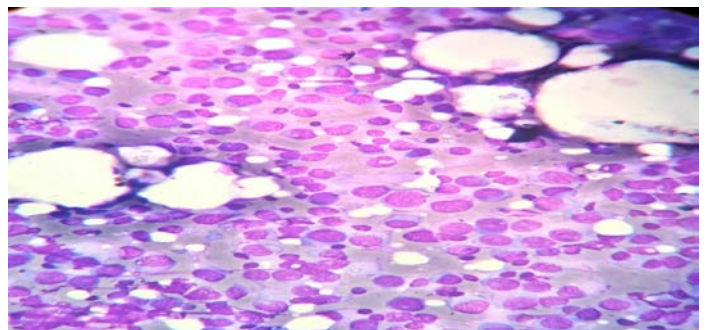


Figure- 5- Photomicrograph of FNAC of Lymphoproliferative disorder(MGG Stain, 400X)

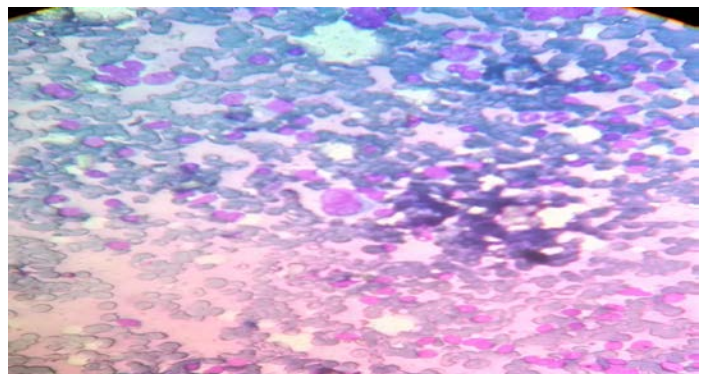


Figure- 6- Photomicrograph of FNAC of Hodgkin lymphoma showing RS cell (MGG Stain, 400X)