VOLUME-9, ISSUE-5, MAY -2020 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra

Original Research Paper

Pathology

STUDY OF CERVICAL LYMPHADENOPATHY BY FINE NEEDLE ASPIRATION CYTOLOGY

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ABSTRACT A total of 90 cases were included in study. Maximum number of cases was in below 30 years age group. This study showed male preponderance. Submandibular lymph nodes were commonly involved . Benign Lymphadenopathies was diagnosed in 81.68 % cases. Maximum number of cases were granulomatous lymphadenopathies 47.78 %. Metastatic deposits were diagnosed in 14.29 % cases common being squamous cell carcinoma. We reported two cases of lymph node involvement by leukemic infiltration. Lymphoma was diagnosed in 1.68 % cases.

KEYWORDS : FNAC, lymphadenopathy, lymph node, benighn , cervical

INTRODUCTION

Enlarged lymph nodes were first organ to be biopsied by fine needle aspiration; today they are frequently sampled tissues. Fine needle aspiration (FNAC) is a simple and rapid diagnostic technique. Due to early availability of results, minimal trauma and complication, fine needle aspiration cytology is now considered a valuable diagnostic aid. The cytomorphological features obtained in fine needle aspiration cytology correlate very well with histologic appearances of same lesion and in some situations has qualities of microbiopsy. . Fine needle aspiration cytology is excellent first line method for investigating the nature of lesion, as it is economical and convenient alternative for open biopsy. Fine needle aspiration cytology was initially conceived as a means to confirm a clinical suspicion of local recurrence or metastasis of known cancer without subjecting patient to further surgical intervention. The clinical value of FNAC is not limited to neoplastic conditions. It is also valuable in diagnosis of inflammatory, infectious and degenerative conditions in which sample can be used for microbiological and biochemical analysis in addition to cytological preparations. The present cross-sectional study was undertaken to study role of FNAC in evaluation and different cytomorphological patterns of cervical lymphadenopathy in Hazaribag medical college and hospital Hazaribag, Jharkhand from august 2019 to April 2020.

MATERIALS AND METHODS

This sudy was carried out after approval by the institutional ethical comitee. The patients were clinically evaluated and clinical details were obtained from medical records. FNAC was done and standard method for procedure adopted. All the slides were reviewed and their diagnosis was made.

Inclusion Criteria

All the patients referred to Department of Pathology, Hazaribag medical college and hospital Hazaribag for FNAC of cervical lymph node were included in study.

Exclusion Criteria

Patients with other neck swellings were excluded from study.

A total of 90 patients were included in present study, reported to various clinical department history of swelling. These patients were clinically evaluated and informed consent was obtained for procedure. The complications of procedure were explained to patient. Lymph node to be aspirated was first examined thoroughly to determine site of aspiration.. Under aseptic precaution node was held between left index finger and thumb followed by insertion of 22-23 gauge needle fitted with 10 ml syringe for aspiration. The needle with syringe was introduced in node, plunger of syringe puled to create negative pressure. With the negative pressure maintained needle was moved to and fro within node to aspirate material. The negative pressure was released and needle with syringe was withdrawn from node. Pressure with cotton swab was applied to node after withdrawal of needle. Needle was detached from syringe, air drawn into syringe, needle reattached and material pushed on slides. Four smear were made; two of them air dried for Romanowsky stain and two were fixed with ethyl alcohol for staining with H and E.(Annexure C).Special stain such as Ziehl Neelsen's stain were used wherever applicable.

Interpretation of aspirate was done as follows:

1. Assessment of representativeness of the material in the smear
2. Interpretation was done to know whether benign or malignant.
3. Categorization of the aspirate into reactive or lymphomas.
4. Cytomorphological features of cells was studied under high power.

Table A An overview of FNAC differences between Benign and Malignant Lesions.

Benign	Malignant
Sparse cellularity	Good cellularity
Good cohesion	Poor cohesion
Nuclear pleomorphism absent	Nuclear present pleomorphism
Regular pattern chromatin	Abnormal pattern chromatin

OBSEVATION AND RESULTS

A total of 90 patients were enrolled in Department of Pathology, Hazaribag medical college and hospital Hazaribag during study period. Out of these cases 2 cases were excluded as aspirate was inadequate. Age of the patient varied between 1 year to 80 years. Maximum numbers of patients were below 30 years age group. Following table gives distribution of age in study group:

Table 1 Distribution of cases in various age groups

AGE	NO. OF CASES	PERCENTAGE %
1-10	17	18.88
11-20	21	23.33
21-30	20	22.22
31-40	10	11.11
41-50	08	8.88
51-60	08	8.88
61-70	5	5.55
71-80	1	1.11

Table 02 Distribution of cases in both sexes

Out of 90 patients 54 were male and 36 were female. There was male preponderance.

sex	No of cases	percentage
male	54	60
female	36	40

Presenting Complaints

The presenting complaints in all 90 cases are tabulated in table 3. Fever was presenting complaint in 26.12 % of patients, 86.18 % patients had swelling ,24.60 % of patients presented with weight loss, 20.12 % patient presented with fever and swelling. 4.20 % of patient presented with fever and weight loss

Table 03 Distribution of symptoms in all cases

Symptom	Cases	Percentage %
fever	24	26.12
Fever with swelling	19	20.12
Fever with weight loss	4	4.20
swelling	77	86.18
Weight loss	23	24.60

Site of Involvement

In 83.65 % cases submandibular gland was involved in study group of 88 patients.Submental was involved in 7.48% of cases, anterior jugular in 5.78 % of cases and external jugular in 3.65% of cases.

Table 04 Distribution of Nodes in Different Region

Lymph Nodes	No.	Percentage %
Submandibular	73	83.65
submental	7	7.48
Anterior Jugular	6	5.78
External jugular	4	3.65

Consistency of nodes

In 55.15 % of cases the consistency of nodes was firm. Hard nodes were present in 13.32 % of cases. Most of hard nodes were seen in malignant deposits. Soft nodes were found in 33.20 % cases.

Table 05 Distribution of consistency

Consistency	No. Of cases	Percentage %
Firm	50	55.15
Soft	30	33.20
Hard	12	13.32

Number of nodes

In 70.61 % of cases only single lymph node was involved and in 27.25 % cases 2 lymph nodes were involved.

Table 06 Distribution of no. of nodes at each site

No. Of nodes	No. Of cases	Percentage %
one	64	70.61
two	25	27.25
three	1	0.90

Colour of Aspirate

In 63 cases sanguineous fluid was aspirated, 22 cases caseous fluid was aspirated, 5 cases purulent material aspirated and 5 cases grey white material was aspirated.

Table 07 Distribution of different type of aspirate

Colour of aspirate	No. of cases	Percentage %
sanguineous	63	68.18
purulent	5	5.38
caseous	22	23.96
Grey white	5	4.44

Diagnosis of Lymphadenopathies by FNAC

In 90 cases 73 constituted benign lesion amounting to 81.68 % cases, 13 cases were of metastasis and 2 cases were of lymphoma and 2 cases of ALL/leukemic infiltration.

Table 08 Distribution of cases by aetiology

FNAC Diagnosis	No of cases	Percentage
Benign	73	81.68
Metastasis	13	14.29
Lymphoma	2	1.68
ALL/Leukemic infiltration	2	1.78

Distribution of Benign Lesion On FNAC

Reactive lymphadenopathies constituted 44.44% cases, while granulomatous cases were 48.88 % and 6.66% cases were suppurative.

Table 09 Distribution of Benign Lesion

Fnac diagnosis	No. of cases	Percentage %
Reactive	39	42.64
Granulomatous	43	47.78
Suppurative	9	9.58
Total	90	100

Distribution of Metastatic Lesion

Cytologically metastasis was present in 15.44 % cases. Of these 66.75% were squamous cell carcinoma, 13.5 % cases were of adenocarcinoma. Other metastatic lesion included 2 cases of metastatic papillary carcinoma of thyroid and one case of metastatic medullary carcinoma thyroid.

Table 10 Distribution of metastatic lesion

Metastasis	No. of cases	Percentage %
Squamous cell carcinoma	10	66.75
adenocarcinoma	2	13.5
Others	3	19.75

Distribution of Lymphomas

2 cases of Non-Hodgkin's lymphomas and two cases of ALL/leukemic infiltration were reported in our study

Discussion

FNAC is commonly used diagnostic approach in investigation of cervical lymphadenopathy. In present study 90 patients underwent FNAC in a period of 9 months.

Age of the patient varied between 1 year to 80 years with maximum number of patients below 30 years age group. The M: F ratio is 1.5 :1

The numbers of patients with swelling were 86.18 % . The other important presenting complaints were fever in 26.12 %, fever and swelling in 20.12 % cases and weight loss in 24.60 % cases.

Adequacy of aspirate

Aspirate was adequate in all cases except two where it was scanty. No opinion was possible in two cases.

Site of involvement

The most frequently involved node in cervical region was submandibular 83.65 %. The other group involved were submental 7.48 % cases.

Consistency of nodes

The consistency of the nodes was firm in 55.15 % cases followed by soft in 33.20 % cases. Hard nodes were present in 13.32 % cases. Soft nodes were seen in suppurative and granulomatous lymphadenitis. Hard nodes were common manifestation of malignancy.

Number of nodes

In 70.61 % cases single lymph node was involved and in 27.25 % cases 2 groups were involved.

Colour of aspirate

In 68.18% of cases aspirate was sanguineous, caseous in 23.96 %, grey white in 4.464 % cases.

Incidence of lymphadenopathies

Of the 90 , 73 cases were benign lesions constituting 81.68 % of cases.13 cases contributed to metastasis (14.29%), 2 cases tolymphomas (1.68 %) and 2 cases to ALL/Leukemic infiltration. The comparison of present study with other studies is tabulated in following table:

Table 11 Distribution of lymphadenopathies in various studies

Lesions	Arun kumar et al63	Serrano Egea A[64]	Present
Benign lymphadenopathy	67.2%	58.7%	81.68%
Metastatic	10%	22.6%	14.29%
Lymphoma	1.8%	9%	1.68%

Benign Lymphadenopathies

Reactive Lymphadenopathies

In 90 cases, 73 cases were benign of which reactive lymphadenitis was diagnosed in 42.64% cases. A study conducted by Paul P C et al reported 18.92% cases as reactive lymphadenitis[65] (2004). Another study done by Shakya G et al reported 50.4% cases as reactive lymphadenitis.[66]

Suppurative Lymphadenitis

Suppurative Lymphadenitis was diagnosed in 9.58 % cases. In study done by Shakya et al it was 12.4%.[66]

Granulomatous Lymphadenitis

Granulomatous lymphadenitis was diagnosed in 47.78 % of cases out of 73 benign cases. In study done by Anuradha S et al it was found that 22% nodes showed granulomatous lymphadenitis.[10]

Metastatic Deposits

Lymph node aspirate in 13 cases showed metastatic deposits. Following of table gives overview of different studies.

Table 12 Distribution of metastatic cases in various studies

Arun Kumar et al	10%
Serrano Egea al	22.6%
Present Study	14.29 %

Squamous Cell Carcinoma

Squamous cell carcinoma was diagnosed in 66.75 cases % of metastatic lymph node . The primary sites of origin are malignancies of head and neck region. This was most common malignancy in our study. A study done by Anne Wilkinson also reported squamous cell carcinoma (19 cases) as common metastatic tumour in cervical lymph node.[67]

Adenocarcinoma

Adenocarcinoma was diagnosed in 13.5 % of metastatic lymph node cases. The primary sites of origin are malignancies of stomach, breast and lung.

Table 13 Distribution of different metastasis in various studies

Types of metastasis	Kiran Alam el al	Present study
Squamous cell carcinoma	67.9%	66.75 %
Adenocarcinoma	9%	13.5%

Lymphoma

Lymphoma was detected in 1.68 cases % of metastatic deposits. Katz R emphasised that an attempt to diagnose and classify Non Hodgkin Lymphoma should be made on a FNAC. Although definitive diagnosis was possible only by use of immunohistochemistry and flow cytometry. Ola Landgren et al concluded that FNAC is a accurate method of diagnosis of lymphomas when cytologic diagnosis is corroborated by immunophenotyping . However sometimes there may be limitations in accuracy of cytological lymphoma diagnosis due to loss of architecture which is common to most cytological specimens and confusing mixture of malignant and reactive elements.

Table 14 Distribution of Lymphoma

Lymphomas	Percentage %
Hirachand S et al	6-1
Tilak et al	5.6
Present study	1.68

Involvement By Leukemia

In our study we have reported two cases of leukemic infiltration by leukemia. A study done By Nada A et al also reported a case of involvement of lymph nodes by leukemia.A study done by Kumar PV et al 23 cases had lymphadenopathy simultaneously with marrow leukemia and in 13 other cases lymphadenopathy was noticed during relapse. They emphasized that clinical findings, previous history, hematologic studies and immunocytochemical studies are essential to for differentiation of leukemic smear.In other study done by Chen Wx et al they concluded that lymph node was commonest site for leukemic infiltrati

Conclusion

This study was undertaken with a view to evaluate role of FNAC in diagnosis of lymphadenopathies in cervical lymph node. Cervical lymphadenopathy is commonest clinical presentation with variable aetiology ranging from inflammatory to malignancy. It not only helps clinician in early detection of lesion but also helps in early plan of treatment especially in metastasis and lymphomas. Lymph node aspiration can be important in our country where facilities and cost of treatment are not afforded by poor patients. It is especially useful in rural settings and semi urban areas where facilities for surgical intervention are not available. In addition to the other added advantage of FNAC is that it can be applied to all peripheral lymph nodes. Thus fine needle aspiration as a technique is easy, safe and convenient to perform with minimal invasiness and early availability of results. It helps clinician in confirmation and early detection of lesion .Fine Needle Aspiration Cytology is accurate diagnostic technique which helps clinician in further plan of treatment. It is safe reliable and results can be made available within an hour.

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