

Utility of fine needle aspiration cytology (FNAC) in evaluation of cervical lymphadenopathy

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Abstract

Introduction: Lymphadenopathy is the commonest clinical presentation encountered in outpatient as well as in inpatient departments, irrespective of age.⁽¹⁾ It is one of the common clinical presentation in both benign and malignant diseases.⁽²⁾ Differential diagnoses include reactive hyperplasia/inflammatory conditions, granulomatous disorders and malignancy. Cervical group of lymph nodes are easily accessible for FNAC. Because of the accessibility cervical group of lymph nodes are more commonly subjected for FNAC.⁽⁶⁾ Hence cytological study of these lymphnodes is very important first line of investigation in distinguishing between reactive hyperplasia and malignancy.

Methods and Material: Patients presented with palpable cervical lymphadenopathy referred for cytological evaluation were included. Thorough examination of the patients was done and also detailed clinical history was taken. Standard FNAC procedure was performed; multiple smears were prepared and analyzed.

Results: Total number of cases was 220. Out of which, 162 cases were benign/ infectious and 58 were malignant. Most of the cases were in the age group of 20-39years (32.7%) Reactive lymphadenitis was the commonest diagnosis on cytology constituting to 41.4% followed by malignant cases (26.3 %), granulomatous lymphadenitis (17.7%), suppurative lymphadenitis (10%) and necrotizing lymphadenitis (3.6%). Out of total 58 malignant cases, 51 (87.9%) cases were metastatic lesions, 4 cases were lymphoma and in 3 cases differential diagnosis of lymphoma/ metastatic poorly differentiated carcinoma was considered. Squamous cell carcinoma (67.2%) was the most common morphological type diagnosed on cytology in metastatic lymph nodes, followed by adenocarcinoma.

Conclusion: FNAC is a cost effective, quick and reliable, simple tool in diagnosing patients presenting with cervical lymphadenopathy. FNAC serves as a rapid tool for the diagnosis of common and treatable causes of cervical lymphadenopathy. It is also a good sensitive first line method in patients with suspected malignant cervical lymphadenopathy.

Keywords: FNAC, Lymphadenopathy, Cervical, Biopsy, Malignancy.

Introduction

Lymphadenopathy is the commonest clinical presentation encountered in outpatient as well as in inpatient departments, irrespective of age.⁽¹⁾ It is one of the common clinical presentation in both benign and malignant diseases.⁽²⁾ Differential diagnoses include reactive hyperplasia/ inflammatory conditions, granulomatous disorders and malignancy.⁽³⁾ Depending on the etiology further evaluation and treatment varies. Most commonly enlarged lymphnodes are cervical group, axillary, mediastinal, inguinal and mesenteric group.⁽⁴⁾ Fine needle aspiration cytology (FNAC) has emerged as a new diagnostic tool recently since last half of the century.⁽⁵⁾ Kun M (1847) was the first person to report the recovery of tumor cells by needle aspiration for microscopic examination. Enlarged lymph nodes are accessible for fine needle aspiration cytology (FNAC) and are of importance specially to diagnose secondary or primary malignancies.

Cervical group of lymphnodes are easily accessible for FNAC. Because of the accessibility, cervical group of lymph nodes are more commonly subjected for FNAC.⁽⁶⁾ Hence cytological study of these lymphnodes is very important first line of investigation in

distinguishing between reactive hyperplasia and malignancy.

The use of FNAC in the investigation of lymphadenopathy has become an acceptable technique, which is safe, simple, rapid and relatively pain-free without the need of anaesthesia.^(7,8) FNAC is highly cost effective and accurate as a first line investigative technique for the lymph node lesions.

In our country, malignancies in lymph nodes are predominantly metastatic in nature with an incidence varying from 65.7% to 80.4% and lymphomas range from 2% to 15.3% among lymph nodes aspirated from all sites. FNAC as a first line screening method has been recommended in suspected malignancy. Clinical presentation of the patient is very important in correlating with cytological, radiological features in finding the primary site in cases of metastatic lesions. Although histopathological examination is considered to be gold standard in diagnosis especially in lymphomas, FNAC may be the only tool for diagnosis and further management of the patients in some cases of metastatic malignancy. Hence the present study was aimed to evaluate FNAC in diagnosing the different causes of cervical lymphadenopathy.

Objectives of the study

The aim of the study was to

1. To determine the utility of FNAC in evaluating enlarged cervical lymph nodes and to categorize the causes of cervical lymphadenopathy diagnosed by FNAC.
2. To categorize malignant cases in to primary /metastatic lesions.

Materials and Method

Patients presented with palpable cervical lymphadenopathy referred for cytological evaluation were included. Thorough examination of the patients was done and also detailed clinical history was taken. Standard FNAC procedure was performed by using 10ml disposable syringe and 22-23G needle and multiple smears were prepared. Smears fixed in absolute alcohol were stained with Haematoxylin and Eosin (H&E) and Papanicolaou stains, while air dried smears were stained with May-Grunewald Giemsa (MGG) stain.

Results

Table 1: Age wise distribution of patients with cervical lymphadenopathy (n=220)

| Age in years | Male | Female | Total |
|--------------|------|--------|-----------|
| 01-19 | 26 | 15 | 41(18.6)% |
| 20-39 | 40 | 32 | 72(32.7)% |
| 40-59 | 38 | 21 | 59(26.8)% |
| 60-79 | 37 | 11 | 48(21.9)% |

Most of the cases were in the age group of 20-39years (32.7%) followed by 40-59 years (26.8%), 60-79years (21.9%) and 1-19years (18.6%).

Table 2: Distribution of cases according to the cytological diagnosis (n=220)

| Cytological diagnosis | Number of cases | Percentage |
|-----------------------------|-----------------|------------|
| Reactive lymphadenitis | 91 | 41.4% |
| Granulomatous lymphadenitis | 39 | 17.7% |
| Suppurative lymphadenitis | 22 | 10% |
| Necrotizing lymphadenitis | 08 | 3.6% |
| Lymph node infarction | 02 | 1% |
| Malignant cases | 58 | 26.3% |

Reactive lymphadenitis was the commonest diagnosis on cytology constituting to 41.4% followed by malignant cases (26.3%), granulomatous lymphadenitis (17.7%), suppurative lymphadenitis (10%) and necrotizing lymphadenitis (3.6%).

Table 3: Distribution of malignant cases on cytology (n=58)

| Cytological diagnosis | Number of cases | Percentage |
|---|-----------------|------------|
| Lymphoma | 4 | 6.9 |
| Metastatic | 51 | 87.9 |
| Lymphoma/metastatic poorly differentiated | 3 | 5.2 |

Out of total 58 malignant cases, 51 (87.9%) cases were metastatic lesions, 4 cases were lymphoma (6.9%) and 3 cases with a differential diagnosis of lymphoma/metastatic poorly differentiated carcinoma (5.2%).

Table 4: Distribution of lesions in malignant lymphadenopathy (n=58)

| Cytological diagnosis | Number of cases | Percentage |
|---|-----------------|------------|
| Metastatic Squamous cell carcinoma | 39 | 67.2% |
| Metastatic Adenocarcinoma | 09 | 15.7% |
| Metastatic Papillary carcinoma of thyroid | 01 | 1.8% |
| Lymphoma/metastatic poorly differentiated carcinoma | 03 | 5.1% |
| Hodgkins lymphoma | 03 | 5.1% |
| Non hodgkins lymphoma | 03 | 5.1% |

Squamous cell carcinoma (67.2%) was the most common morphological type diagnosed on cytology in metastatic lymph nodes, followed by adenocarcinoma (15.7%).

Discussion

The present study included total of 220 cases clinically presented with palpable cervical lymphadenopathy and sent for cytological evaluation.

Age of the patient ranged from 1 year to 79 years, in which males were 141 and females were 79 with a male to female ratio of 1.78. Most of the cases were in the age group of 20-39years (32.7%) followed by 40-59years (26.8%), 60-79years (21.9%) and 1-19years (18.6%). These findings were similar to the studies done by Kumar Het al⁽⁹⁾ and Hafez N H et al.⁽¹⁰⁾

In our study, total number of cases were 220. Out of which, 162 cases were benign/ infectious and 58 were malignant. We observed that reactive lymphadenitis (41.4%) was the commonest among the benign/ infectious cases followed by granulomatous lymphadenitis (17.7%), suppurative lymphadenitis (10%), necrotizing lymphadenitis (3.6%) and infarction of lymphnode (1%). These findings were similar with the studies done by Hirachand S et al⁽¹¹⁾ and Egea S et al.⁽¹²⁾ Patients with infarction of lymphnode were found to be associated with HIV in our study.

Out of total 58 malignant cases, 51(87.9%) cases were metastatic, 4(6.9%) cases were lymphoma and in 3(5.2%) cases differential diagnosis of lymphoma/metastatic poorly differentiated carcinoma was given. These findings were similar to the studies done by Babu G S et al⁽⁵⁾ and Steel et al.⁽¹³⁾ Lymphoma was diagnosed in 4 cases, 2 each cases of Hodgkin lymphoma and Non-Hodgkin lymphoma were observed.

Squamous cell carcinoma was the most common morphological type diagnosed in metastatic lymph nodes, followed by adenocarcinoma. Similar findings were observed in studies done by Babu G S et al⁽⁵⁾ and Steel et al.⁽¹³⁾

Conclusion

FNAC is a cost effective, quick and reliable, simple tool in diagnosing patients presenting with cervical lymphadenopathy. FNAC serves as a rapid tool for the diagnosis of common and treatable causes of cervical lymphadenopathy. It is also a good sensitive first line method in patients with suspected malignant cervical lymphadenopathy.

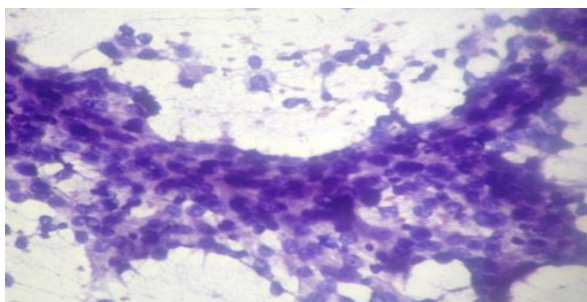


Fig. 1: MGG stain 40x Photomicrograph of metastatic squamous cell carcinoma in lymph node on cytology

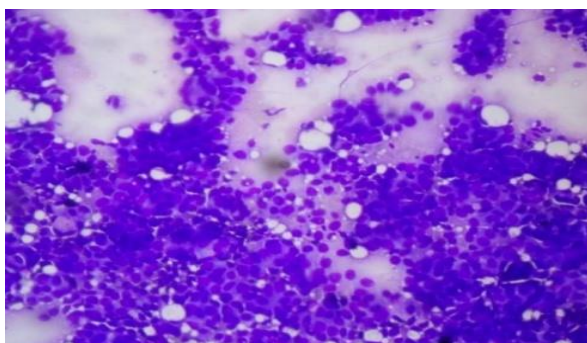


Fig. 2: MGG stain 10x. Photomicrograph metastatic adenocarcinoma

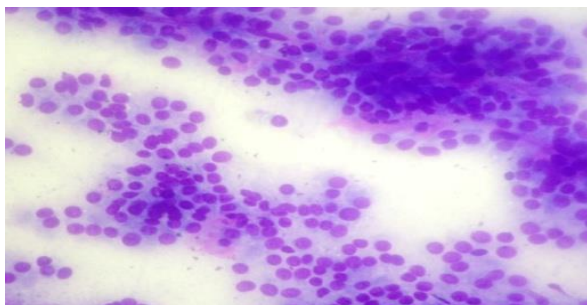


Fig. 3: H&E stain.20x. Photomicrograph of metastatic deposits from papillary carcinoma of thyroid

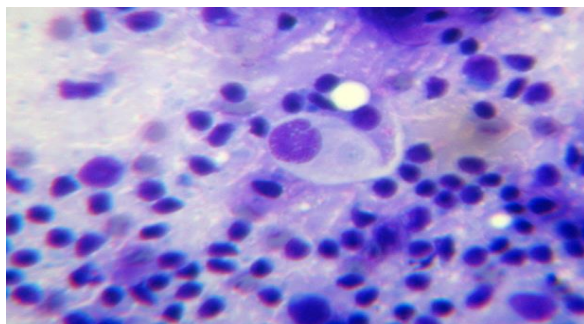


Fig. 4: MGG stain.10x. Photomicrograph showing poorly differentiated carcinoma

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