



FNAC: A Simple & Cost-Effective Diagnostic Tool for Benign & Malignant Pathologies Associated with Cervical Lymphadenopathy

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ABSTRACT

Introduction: Cervical lymphadenopathy is very common as the presenting complaint in our outpatient departments. Its etiology may either be benign or malignant. Fine needle aspiration cytology (FNAC) is a comparatively cheap, easy to perform minimally invasive test. It has become the go to test to determine the cause of lymphadenopathy

Aims & Objectives: To determine whether FNAC is a cost-effective diagnostic tool in evaluation of various benign and malignant Pathologies associated with cervical lymphadenopathy.

Place and duration of study: It is a retrospective study conducted at Gulab Devi Hospital from April 2019 to April 2021.

Material & Methods: The cyto-morphologic features seen in the aspirates were critically analyzed and correlated with their etiology. SPSS version 24.0 was analyzed for data analysis. A p-value of <0.05 was considered significant.

Results: Among the 100 patients 56 were females and 44 were males with a female to male ratio of 1.3:1. The age range of the patients was from 3 to 75 years. 37% were reactive lymphadenitis, 32% were tuberculosis, 12% were suppurative, 11% were lymphoproliferative disorders, 8% cases were metastatic neoplasm.

Conclusion: FNAC is a reliable and cost effective to diagnose the etiologies of cervical lymphadenopathy.

Key words: Fine needle aspiration cytology, Cervical Lymphadenopathy

INTRODUCTION

The increase in size of lymph node is called lymphadenopathy. Increase in the size of cervical lymph nodes of more than 1 cm is called cervical lymphadenopathy.¹ It is arguably the common presentations of patients in the OPD. Cervical lymphnode enlargement has multiple etiologies like infections, malignancies, auto immune pathology etc.² Treatment modalities of all the causative agents for cervical lymphadenopathy are different so it is vital to diagnose the etiology for lymph node enlargement.

There are various options for diagnosing the cause of enlargement of lymph nodes. Fine Needle Aspiration Cytology (FNAC) is one of such option. FNAC is a procedure used to procure fluid, cells and tissues by means of a disposable syringe with a thin needle inserted for diagnosing masses.³ Greig and Gray in 1904 used it first to diagnose trypanosomiasis. In 1921 Guthrie used fine-needle aspiration on lymph nodes for diagnosis on lymph

node and was further used as a diagnostic tool in 1930 by Martin and Ellis.⁴ It is a safe, quick, reliable and comparatively cheap procedure used as first line for diagnosing lymph node enlargement and plays a vital part in differentiating between benign and malignant lesions especially of cervical lymph nodes. FNAC can be conducted in Outpatient Department with very little special equipment involved and causes no disfigurement.⁵ The gold standard for the diagnosis of cervical lymph node enlargement is Excision Biopsy however, the requirement of operation theatre, anesthesia, strict asepsis and with the complication of scar formation, is not generally preferred.⁶

This article evaluates the contribution of FNAC in the diagnosis of cervical lymph node enlargement, shedding light on cervical lymph node enlargement cytopathological patterns at Gulab Devi Hospital, Lahore, Pakistan.

MATERIAL AND METHODS

A retrospective study at Gulab Devi Hospital was conducted from April 2019 to April 2021, after

acquiring the Institutional Review Board approval (IRB) letter No: AAMC/DME/IRB/EA2218. We included cases of cervical lymphadenopathy referred from various inpatient and outpatient clinical departments irrespective of gender and age. Patients with lymph node enlargement other than cervical were excluded from this study. Patients were assessed by history, physical examination, and local examination of the cervical lymph node. Informed consent was taken after explaining the entire procedure to the patient discussing the benefits and adverse effects. A 22-gauge needle bound to a 10-mL syringe was used to aspirate Lymph node without local anesthesia, under aseptic conditions. Smears were made from every patient. May-Grunwald-Giemsa (MGG) stain was used for air dried smear staining and Papanicolaou (PAP) stain was used for alcohol fixed smears staining. Ziehl-Neelsen staining was carried out in smears of all tuberculosis suspects. Hematoxylin and eosin (H & E) stains were used for histopathology slides. After reviewing slides classification of the results were made as neoplastic and non-neoplastic lesion.

Statistical analysis:

Statistical Package for Social Sciences (SPSS, version 24) for Windows was used for analysis.

RESULTS

In our study out of 100 patients 56 were female and 44 were male (Fig-1). Most of the FNACs done in Gulab Devi Hospital were of patients aged between 10 -20 years with female predominance while least number of patients presented for FNAC were in their 60s with equal gender distribution (Fig-2). The frequency of distribution of the cases shows 81 % had benign diagnosis and 19% came back malignant (Fig-3). In malignant cases we included lymphoproliferative and metastatic (Fig-10A) while rest were included in benign. In benign causes reactive (Fig-10C) was the commonest followed by tuberculous (Fig-10B) and in malignancy lymphoproliferative disorder was predominant (Fig-4). In female patients, TB was the commonest diagnosis 35.7% followed by reactive 32.1% with malignant diagnosis in 16.1% (Fig-5). In male patients, reactive lymph nodes were found in majority 43.2% of patients followed by 27.3% patients with TB. Malignancy was found in 22.7% of males (Fig-6). In 1-to-20-year age group tuberculosis was the predominant diagnosis with female dominance in benign while lymphoproliferative disorders were common also with female dominance (Fig-7). In 20 to 40 age

group reactive with male dominance was the commonest benign diagnosis while metastasis was in more female patients than males. No patients of lymphoproliferative disorders were seen (Fig-8). In age group of 40 onwards reactive with male dominance was the commonest benign diagnosis while lymphoproliferative disorders dominated with all male patients in this age group (Fig-9).

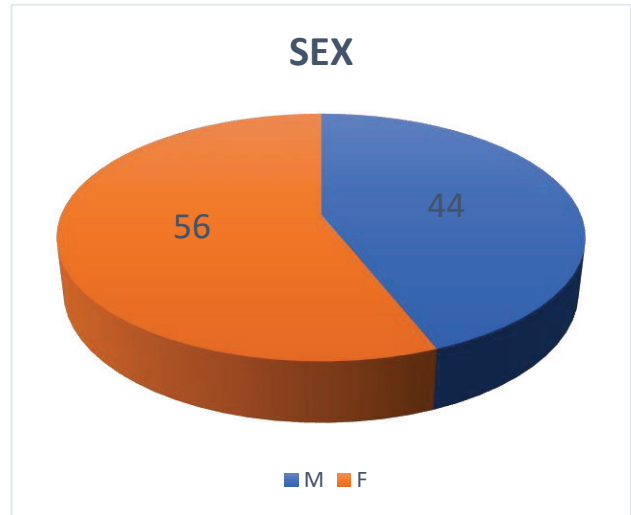


Fig-1: Distribution according to Sex

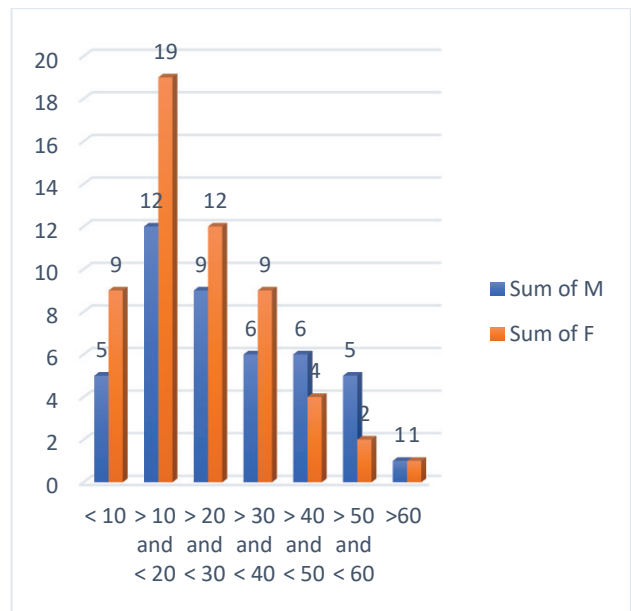


Fig-2: Distribution according to Age

FNAC DIAGNOSIS	Number of Patients %
Benign	81 %
Malignant	19 %

Fig-3: Distribution According to Severity

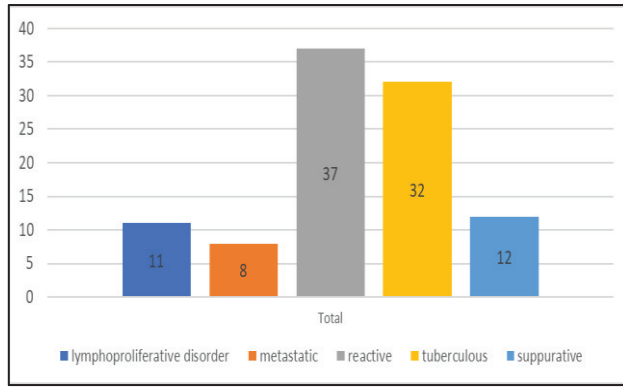


Fig-4: Distribution according to diagnosis

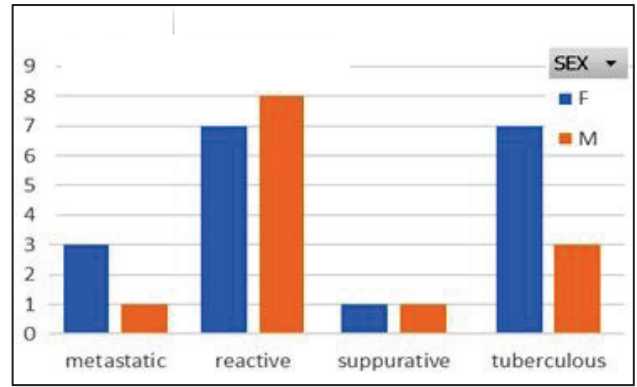


Fig-8: Pattern of distribution in 21- 40 age group

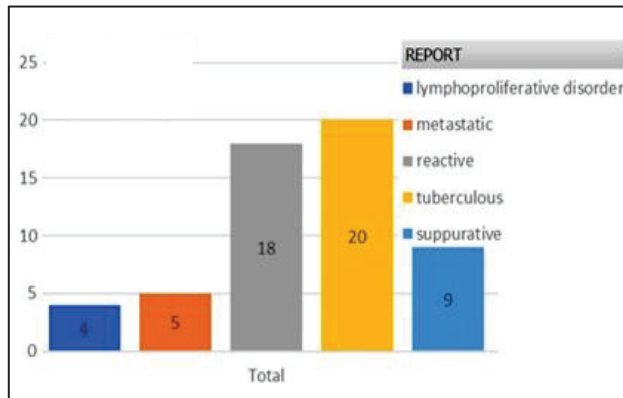


Fig-5: Distribution of cases in females

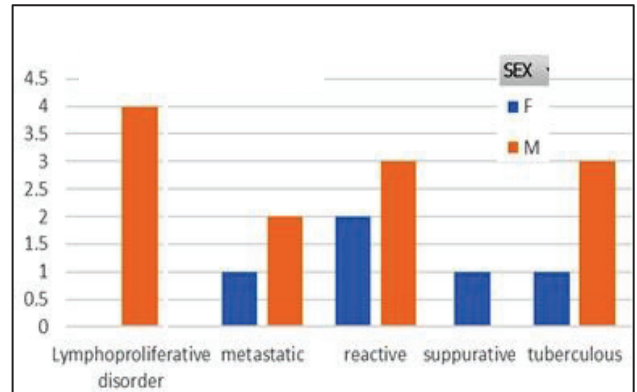


Fig-9: Pattern of distribution in more than 40 age group

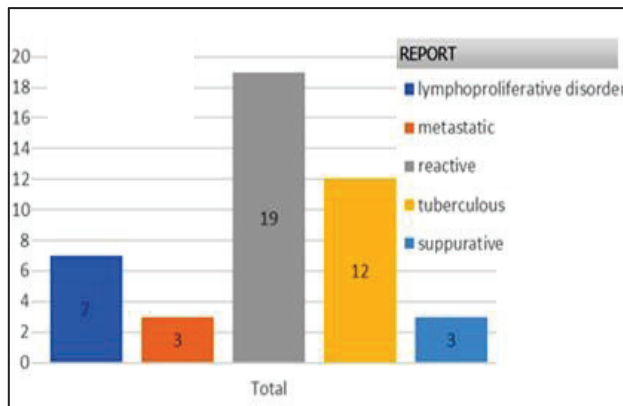


Fig-6: Distribution of cases in Males

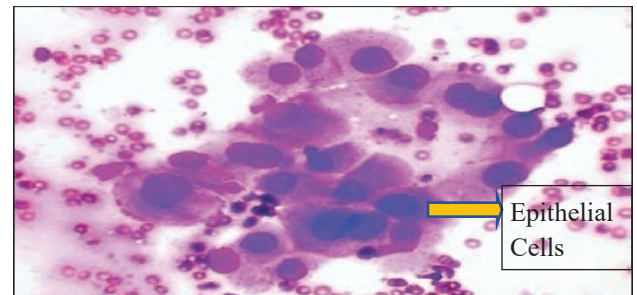


Fig-10A: Metastatic

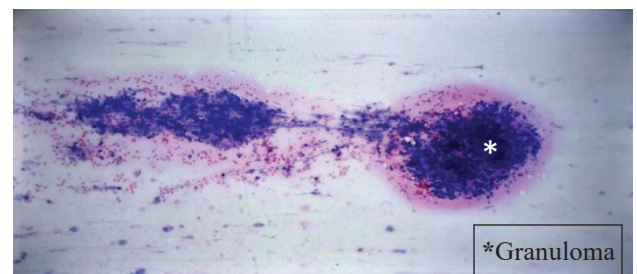


Fig-10B: Tuberculous

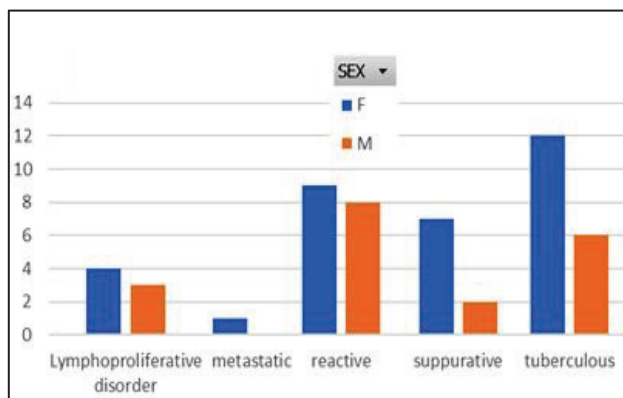


Fig-7: Pattern of Distribution in 0 – 20 age group

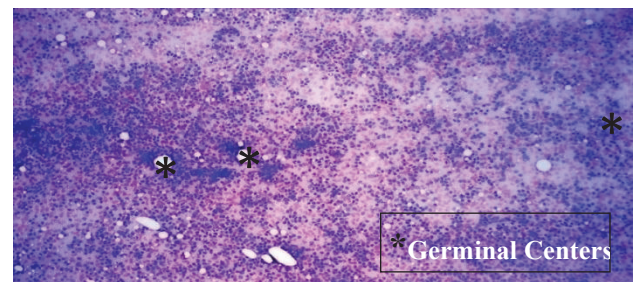


Fig-10C: Reactive

DISCUSSION

When cervical lymph nodes increase in size larger than 1 cm it is referred to as cervical lymph node enlargement. Multiple diseases can cause enlarging of lymph nodes, the spectrum of diseases varies from benign to malignant. Enlarged lymph nodes are easily palpable and approachable for fine needle aspiration cytology. This procedure's significance in the diagnosis of cervical lymph adenopathy is noteworthy especially in developing countries like Pakistan.

FNAC is a comparatively cheap procedure, easily performed with very few complications. In some instances, FNAC may be the only option available for diagnosis as surgical biopsy could not be done for very reasons. FNAC diagnosis has been shown to correlate with histopathological diagnosis after biopsy.

There is wide age range of cervical lymphadenopathy. In the present study the age range was 3-75 years. In this study there was female predominance with a ratio of 1.3:1. Which is comparable to Badge et al.⁷ However, some studies show a slight male dominance.⁸ The most frequently observed age group for cervical lymphadenopathy in our study is 11 to 20 years which is similar to those of Sejwal et al.⁹ In our study 81% were benign and 19% were malignant which is similar to Kadam et al.¹⁰ Reactive lymphadenitis was deemed to be the commonest cause of cervical lymphadenopathy in our study with its percentage among total cases being 37%. Similar results were quoted by DeDeePya M et al.¹¹ Tuberculous lymphadenitis in our study came out to be 32 % which correlates with study of Urmila et al.¹² Lymphoproliferative disorders contribute to 11% of the total cases which is near to study by Houcine et al.¹³ Metastatic carcinoma contribute to 8% of the total cases which is similar to Shrivastava et al.¹⁴

Regarding age groups, it was observed that tuberculous lymphadenitis was commonly seen in 1 to 20 age group 40%, as tuberculosis has a high incidence in a developing country like Pakistan¹⁵ while reactive lymphadenitis was common 41.7% in 21 to 40 age group similar to Shameema et al.¹⁶ In our study malignant diagnosis mainly, lymphoproliferative disorders were common in 1-20 compromising 17.8% of the total. The incidence of lymphoproliferative disorders is high in developing countries¹⁷. It again peaked in age group of 40 and above with 36.8% of the total cases which is similar to Shakera et al.¹⁸

FNAC hence proved to be an accurate and cost-effective procedure in evaluation of clinically

palpable lumps, especially in lymph nodes. The variable factors which may be responsible for low yield can be performer experience, smear spreading technique and crushing artifacts.

Based on the findings in our study we found that FNAC is an extremely useful tool in the evaluation of palpable cervical lymph node. In most of the cases excludes the need of an excision biopsy and assisting in initiating appropriate treatment. The ancillary techniques such as immunohistochemistry can be applied whenever sufficient material is available for cell blocks and this would further augment in establishing the diagnosis.

CONCLUSION

FNAC is a relatively cheap, easy to perform and dependable procedure to investigate the cause of cervical lymph node enlargement. Tuberculosis is the commonest diagnosis in a developing country like Pakistan. For malignancies FNAC can propose a preliminary diagnosis which can be further confirmed and classified by biopsy, histopathology and immunostaining.

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