

Role of FNAC in study of cytomorphological patterns in cervical lymph node

Sameer A. Kadam, Arun T. Miskin, Vijay D. Dombale

¹Assistant professor, Department of Pathology, B.K.L. Walawalkar Rural Medical College, Dervan, Chiplun, Ratnagiri, Maharashtra, India

²Associate Professor, Department of Pathology, S.N. Medical College, Bagalkot, Karnataka, India

³Professor, Department of Pathology, B.K.L. Walawalkar Rural Medical College, Dervan, Chiplun, Ratnagiri, Maharashtra, India

Abstract

Background: Lymphadenopathy is one of the commonest clinical presentations of the patients. Lymph nodes in head and neck form groups, drains lymphatic fluid from different regions in head and neck. Localized cervical lymphadenopathy is lymph node enlargement that is restricted to cervical area.

Objective: To study role of FNAC in study of cytomorphological patterns in cervical lymphadenopathy.

Methods: All the patients referred to Department of Pathology, S.N. Medical College and HSK Hospital and Research Centre, Bagalkot with palpable lymph node were included in the present study, a one year cross sectional study. FNAC was done and standard procedure adopted. All the slides were reviewed and their diagnosis was made.

Results: A total of 112 patients were included in present study. Maximum numbers of cases were below 30 years age group with male preponderance. Submandibular lymph node was most commonly involved. Benign lymphadenopathies were diagnosed in 81.81% of cases. Metastatic deposits were diagnosed in 14.54% cases, lymphomas in 1.81% cases and ALL/leukemic infiltration in 1.81% cases.

Conclusion: FNAC is simple, rapid and cost effective method which is helpful in early diagnosis and monitoring the prognosis of cervical lymphadenopathy.

Keywords: FNAC, Cervical lymph node, cytomorphological patterns.

Introduction

Enlarged lymph nodes were first organ to be biopsied by fine needle aspiration; today they are frequently sampled tissues.^[1] 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.^[2]

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.^[2] 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.^[2] 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.^[3] 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.^[3]

The present cross-sectional study was undertaken to study role of FNAC in study of different cytomorphological patterns of cervical lymphadenopathy in S.N. Medical College and Hospital, Bagalkot.

Materials and Methods

A total of 112 patients with palpable cervical lymph node were subjected to FNAC. Smears were prepared

Corresponding Author:

Dr. Arun T Miskin

Associate Professor of Pathology, S.N. Medical College Bagalkot, Karnataka, India

E-mail: arun.miskin@gmail.com

and stained with Romanowsky and H and E stain. Special stain such as Ziehl Neelsen's stain were used wherever necessary. All the slides were reviewed and analysed.

Inclusion Criteria: All the patients with cervical lymph node enlargement were included in study.

Exclusion Criteria: Patients with other neck swellings such as thyroid and salivary gland enlargement were excluded.

Interpretation of aspirate was done as follows:

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

Results

Maximum numbers of patients were below 30 years age group with male preponderance. Most of the patient presented clinically with neck swelling (88.18%) cases & fever (27.27%). Submandibular lymph nodes were most commonly involved (85.45%) followed by submental (7.27%), anterior

jugular in (5.45%) and external jugular in (3.63%). On palpation the consistency of nodes was firm to hard with sanguineous to purulent aspirate. The microscopic analysis revealed 90 benign lesion, 16 were of metastatic, 4 were of lymphomas and 2 of ALL/leukemic infiltration. Benign lesion showed predominantly granulomatous lesions 48.88%, reactive lymphadenopathies (44.44%) cases, (6.66%) cases were suppurative. Squamous cell carcinoma was commonest metastatic lesion, followed by adenocarcinoma. Two cases of Non-Hodgkin's lymphoma 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 112 patients underwent FNAC in period of one year. Age of the patient varied between 1 year to 80 years with maximum number of patients were below 30 years age. The M: F ratio is 1.4:1. The most frequently involved node in cervical region was submandibular (85.45%). The other group involved were submental in (7.27%). The consistency of the nodes was firm in 56.36% cases followed by soft in 32.72% cases. Hard nodes were present in (12.72%) cases and was common manifestation of

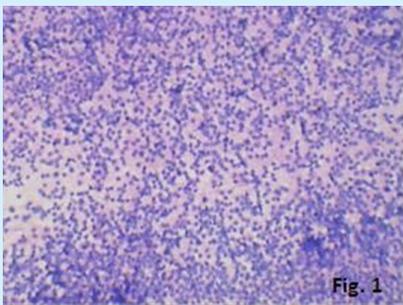


Fig. 1

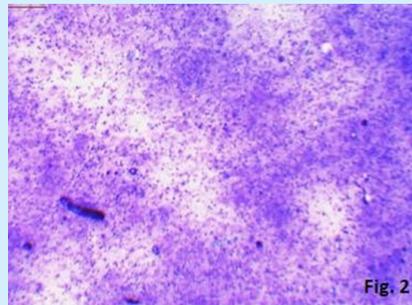


Fig. 2

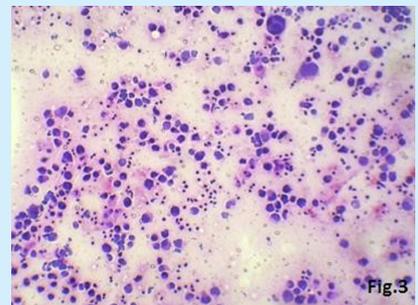


Fig.3

Fig.1 Reactive Lymphadenitis showing neutrophils. H&E 10x.

Fig. 2 Granulomatous Lymphadenitis showing caseous necrosis. Leishman 4x.

Fig. 3 Non Hodgkin's Lymphoma Diffuse Large Cell Type. H&E 4x.

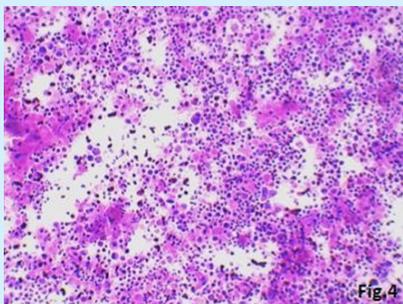


Fig.4

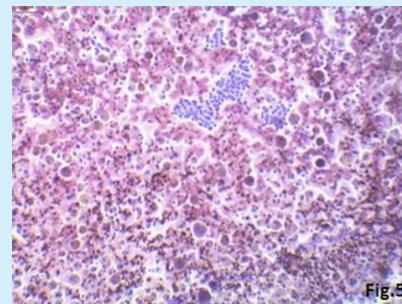


Fig.5

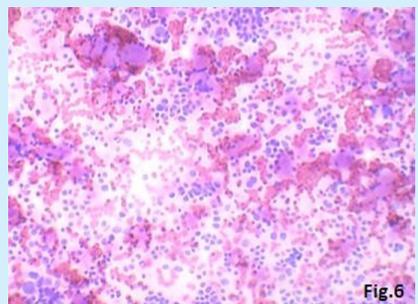


Fig.6

Fig. 4 Cystic metastasis of Squamous cell carcinoma. H & E 4x.

Fig. 5 Papillary carcinoma Thyroid deposits showing cells arranged in papillae along with cyst macrophages. Leishman 4x.

Fig. 6 Metastatic Medullary carcinoma showing pleomorphic cells and amyloid. H&E 10 x

malignancy. Soft nodes were seen in suppurative and granulomatous lymphadenitis. In (70.53%) cases single lymph node was involved and in (28.57%) cases 2 groups were involved. In 66.96% of cases aspirate was sanguineous, caseous in (23.21%), grey white in (4.46%) cases. Of the 110 cases, 90 cases reported benign constituting (81.81%). 16 cases as metastasis (14.54%), 2 cases of lymphomas (1.81%) and 2 cases of ALL/Leukemic infiltration. The comparison of present study with other studies is tabulated in table 1:

Table 1 Comparison of various lymphadenopathies

Lesions	Arun kumar et al ^[4]	Serrano Egea A ^[5]	Present study
Benign	67.2%	58.7%	81.81%
Metastatic	10%	22.6%	14.54%
Lymphoma	1.8%	9%	1.81%

In benign lesions, the most common diagnosis offered was reactive lymphadenitis (44.44%) cases. A study conducted by Paul P C et al reported (18.92%) cases as reactive lymphadenitis^[6], and Shakya G et al reported 50.4% cases as reactive lymphadenitis.^[7]

Suppurative Lymphadenitis was diagnosed in 6.66% cases and Granulomatous lymphadenitis in 48.88%. In a study done by Anuradha S et al observed 22% cases of granulomatous lymphadenitis.^[8]

Sixteen cases showed metastatic deposits and the most common malignancy was squamous cell carcinoma (56.25%) with head and neck region being a primary site and was similar to study done by Anne Wilkinson^[9]. Adenocarcinoma was diagnosed in 12.5% and the primary sites of origin were stomach, breast and lung. Two cases of metastatic thyroid carcinoma were reported in our study. Machado et al reported a case of papillary carcinoma of thyroid metastatic to lymph node^[10]. We also reported a single case of metastatic medullary carcinoma of thyroid. Kini et al has reported occult medullary carcinoma of thyroid with lymph node metastases.^[11]

Table 2. Comparative study of metastatic carcinomas

Types of metastasis	Kiran Alam et al ^[12]	Present study
Squamous cell carcinoma	67.9%	56.25%
Adenocarcinoma	9%	12.5%

Lymphoma was detected in (1.81%). Katz R emphasised that an attempt to diagnose and classify Non Hodgkin Lymphoma should be made on FNAC although definitive diagnosis was possible only by use of immunohistochemistry and flow cytometry^[13].

Ola Landgren et al concluded that FNAC is an accurate method of diagnosis of lymphomas when cytologic diagnosis is corroborated by immunophenotyping^[14].

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.^[15]

In our study we have reported two cases of lymph node infiltration by leukaemia. A study done by Nada A et al also reported a case of involvement of lymph nodes by leukemia.^[16] A study done by Kumar PV et al 23 cases had lymphadenopathy simultaneously with marrow leukaemia and in 13 other cases lymphadenopathy was noticed during relapse. They emphasized that clinical findings, previous history, hematologic studies and immunocytochemical studies are essential for differentiation of leukemic smear.^[19] Chen Wx et al concluded that lymph node was commonest site for leukemic infiltration^[20].

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.

References

- Lambert Shoog, Torsten Low Hagen and Edina Taani: *Lymph Node*, In Winfred Gray : *Diagnostic Cytopathology*, Honkong, Churchill Livingstone;1995: 479- 526.
- S Shamsad Ahmad, Akhtar Shakeel et al. *Study of Fine Aspiration Cytology in Lymphadenopathy with special reference to Acid Fast Staining in cases of Tuberculosis*. JK Science 2005;7(1),1-4.
- Orell SR, Sterret GF, Whitaker D, Heerde PV, Miliukus J, and Field A. *Lymph Node Chapter 5*. In Orell SR, Sterret GF, Whitaker D (eds): *Fine Needle Aspiration Cytology*, 4th edition, New Delhi, Elsevier. 2005 ; 83-124.
- Gupta A K et al. *Critical appraisal of fine needle aspiration cytology in tuberculous lymphadenitis*. Acta Cytol. 1992 May-Jun;36(3):391-394.
- Serrano Egea S et al. *Usefulness of light microscopy in lymph node fine needle aspiration biopsy*. Acta Cytol. 2002 Mar-Apr;46(2):364-368.
- Paul P C et al. *Fine Needle Aspiration Cytology of Lymph Nodes-An Institutional Study of 1448 cases over a five year period*. Journal of Cytology. 2004;21(4):187-190.
- Shakys et al. *A study of FNAC of cervical lymph nodes*. JNHRC 2009;7(14);1-5.
- Anuradha S et al. *Usefulness of imprint and fine needle aspiration cytology (FNAC) in diagnosis of lymphadenopathies and other tumours*. Indian J Pathol Microbiology. 1989 Oct; 32(4): 291-6.
- Wilkinson et al. *FNAC in Diagnosis of lymph node malignancies: A simple and sensitive tool*. Indian J Med Paediatric Oncology. 2012;33:21-24.

10. Norman O Machado et al. *Papillary Carcinoma of the Thyroid Presenting Primarily as Cervical Lymphadenopathy An approach to management*. SQU Medical Journal Dec 2009;9(3):328-329.
11. Kini et al. *Occult Medullary Carcinoma of Thyroid with Lymph node Metastases: A case report*. Acta Cytologica 2008 Jan-Feb;52(1):105-108.
12. K. Alam et al. *Fine Needle Aspiration Cytology(FNAC), a handy tool for metastatic lymphadenopathy*. The Internet Journal of Pathology.2010;10(2).DOI:10.5580.1df3.
13. Katz RL et al. *Cytologic diagnosis of leukaemia and lymphoma. Values and limitations*. Clinics in Laboratory Medicine. 1991;11(2);469-499.
14. Ola Landgren et al. *A prospective comparison of fine-needle aspiration cytology and Histopathology in the diagnosis and classification of lymphomas*. The Haematology Journal.2004;5:69–76.
15. I D Bule. *Fine needle aspiration of lymph nodes*. J Clin Pathol 1998;51:881- 885.
16. Hirachand S et al. *Evaluation of Fine Needle Aspiration Cytology of Lymph Nodes in Kathmandu Medical College. Teaching Hospital*. Kathmandu Medical Journal 2009; 72(2) 26:139-142.
17. Tilak et al. *Fine Needle Aspiration Cytology of Head and Masses*. Indian J. Pathol Microbiol 2002; 45(1):23-30.
18. Nada A Alwan. *Fine needle aspiration cytology versus histopathology in diagnosing lymph node lesions*. Eastern Mediterranean Health Journal 1996 ; 2(2) 320-325.
19. Kumar PV et al. *Cytology of Leukemic Lymphadenopathy*. Acta Cytologica 2002;46(5):801-807.
20. Che Wx et al. *Fine Needle Aspiration Cytology Diagnosis of extra Medullary leukemic infiltration*. Zhonghua Bing Li Xue Za Zhi 2004 Dec;33(6):527-31.

Conflict of interest: Nil

Source of funding: Nil

Date of submission: August 6th 2020

Date of acceptance: September 10th 2020