

Acta Biomedica Scientia

e - ISSN - 2348 - 2168 Print ISSN - 2348 - 215X

www.mcmed.us/journal/abs

Research Article

CLINICOPATHOLOGICAL SPECTRUM OF LYMPH NODE LESIONS ENCOUNTERED ON FINE NEEDLE ASPIRATION CYTOLOGY IN SOUTH INDIA

Aravind Kumar M¹, Rashmi Kunder²*

¹Assistant Professor of General Surgery, Sri Lakshmi Narayana Institute of Medical Sciences, Pondichery, India. ²Associate Professor of Pathology, Sri Lakshmi Narayana Institute of Medical Sciences, Pondichery, India.

ABSTRACT

Fine needle aspiration cytology (FNAC) is becoming preoperative method of choice for diagnosis and management of various lumps and lesions since few decades. It helps clinician to decide mode of treatment in most cases in both nonneoplastic and neoplastic disorders. As cervical, axillary and inguinal lymphadenopathies are commonly encountered clinical problems, in this study, we evaluated the utility of FNAC for assessment of lymphadenopathy. The present randomized Double blinded cross section Prospective study was conducted over 275 patients presenting with lymphadenopathy in the SLIMS, Pondicherry, central India over a period of one year and 4 months (September 2019 to December 2020), to evaluate the usefulness of FNAC as a diagnostic tool in the management of patients with superficial lymphadenopathy, distribution of various lesions among the different age groups, and to study cytological features of nonneoplastic & neoplastic lesions of enlarged lymph nodes by FNAC. Cervical lymph node was the most commonly involved group. Tuberculous lymphadenitis was most common lesion followed by reactive Hyperplasia, Metastatic carcinoma, Suppurative lymphadenitis, and non-Hodgkin's lymphoma than Hodgkin's lymphoma. Incidence of metastatic carcinoma was high during & after 40 years of age & seen more common in males. Squamous cell carcinoma is the most common metastatic lesion. Most command site of metastasis in squamous cell carcinoma was cervical group of nodes where as in breast carcinoma axillary group of nodes. Fine needle aspiration is simple, rapid and cost-effective method to know the cause of lymphadenopathy and also a reliable method to categorize the cause of lymphadenopathy into reactive, inflammatory, metastatic, and lymphoproliferative, avoiding the necessity of biopsy.

Keywords: - FNAC, Lymph node, Lymphadenopathy, Morphology, Metastatic lymphadenopathy, Tuberculous lymphadenitis.

Access this article online								
DOI: www.mcmed.us/journ	al/abs	Quick Response code						
Received:25.02.2021	.2021 Accepted:15.03.2021							

INTRODUCTION

Fine needle aspiration (FNA) [fine needle aspiration Cytology (FNAC)] technique was first introduced by Greig and Grey. [1] Since the 1960's, it has been used extensively as a diagnostic tool for rapid evaluation of mainly superficial lesions, especially of lymph nodes. It is cost effective, relatively less traumatic, and enables the pathologist to provide the clinician with a

diagnosis in a very short time, and hence is ideal especially for OP patients. [2] Lymphadenopathy is a commonly encountered clinical entity. The diagnosis of the cause underlying the enlarged lymph node(s) enables the clinician to plan appropriate management for each patient. Enlarged superficial lymph nodes are easily amenable to evaluation by FNA technique and hence FNAC forms an important diagnostic tool in the

Corresponding Author Dr. Rashmi Kunder Email: drpebyreddy@gmail.com

armamentarium of the pathologist. [3]. While histopathological evaluation of surgically excised lymph nodes is a more specific and accurate diagnostic parameter, it is relatively more costly, time consuming and discomfiting to the patient, and may not be warranted in every patient. FNAC is more cost effective and relatively non-invasive. [4] FNAC evaluation may prevent a patient having to undergo unnecessary surgery and permit the treating clinician to offer conservative therapy instead.

MATERIAL AND METHODS

The present study is a Randomized Double blinded cross section Prospective study was undertaken to evaluate the FNAC as a diagnostic tool in our clinical setup because of early availability of results, simplicity, minimal trauma & complications. To study non neoplastic & neoplastic lesions of enlarged lymph nodes by FNAC in patients presenting with lymphadenopathy, and to know the distribution of various lesions among the different age groups our study aim is to establish FNAC as a diagnostic tool in lymphadenopathy evaluation, to study the frequency of various lymph node lesions in all age groups & their cytological correlation, to compare the frequency of involvement of diffuse lymph node sites. The material was obtained from SLIMS, Pondicherry and 275 (137 males & 138 females) outdoor & indoor patients of age group (1 to 70 years) over a period of 1 year & 4 months (September 2019 to December 2020). In each instance, a brief history & physical examination along with relevant investigations were performed.

Peripheral lymph nodes were aspirated using 22G needle attached to 10–20 ml disposable syringe. The aspirated material was expressed onto the slides & smear prepared; air dried & stained with May Grunwald Giemsa (MGG) stain. Where ever needed alcohol fixed smear was prepared & stained by papanicolaou (Pap method). Ziehl Nelson staining performed for the demonstration of Acid-fast bacilli (AFB).

RESULTS

Tuberculous lymphadenitis (35.6%) was the most common lesions followed by reactive hyperplasia (25.8%), metastatic carcinoma (19.6%), suppurative lymphadenitis in (14.5%), non-hodgkins lymphoma (2.5%) & lastly Hodgkin's lymphoma (1.8%) (Table 1). Reactive hyperplasia was seen most often (32.3%) in first two decades of life (Table 2), tuberculous lymphadenitis in the second and third decades (61.22%) & incidence of metastatic carcinoma are high during & after fourth decade was observed. Males show preponderance of reactive hyperplasia, lymphoma & metastatic carcinoma, while females show slight preponderance of tuberculous lymphadenitis. In all type of lymphadenitis, cervical group of nodes were most commonly involved. (Table 3) In metastatic lesions of lymph nodes most common was in male's Squamous cell carcinoma where as in female's breast carcinoma. (Table 4) Most common site of metastasis in Squamous cell carcinoma was cervical group of nodes where as in breast carcinoma axillary group of nodes.

Cytologicaldaignosis	Noofcasesmale	Noofcasesfemale	Total	Percentage (%)				
Tuberculous lymphadenitis	33	65	98	35.6%				
Reactive hyperplasia	40	31	71	25.8%				
Suppurative lymphadenitis	19	21	40	14.5%				
Hodgkin's lymphoma	03	02	05	1.8%				
Non Hodgkin's lymphoma	04	03	07	2.5%				
Metastatic carcinoma	38	16	54	19.6%				

 Table 1: Cytological Diagnosis of 275 Cases of Lymphadenopathy

TABLE 2: <i>A</i>	Age and	Incidence of	Lymp	hadenopath	Ŋ
--------------------------	---------	--------------	------	------------	---

S.NO		0-10	11-20	21-30	31-40	41-50	51-60	>60
	Cytologic daignosis	YRS	YRS	YRS	YRS	YRS	YRS	YRS
1	Tuberculous Lymphadenitis	12	19	41	14	07	03	02
2	Reactive Hyperplasia	19	18	15	12	-	04	03
3	Suppurative Lymphadenitis	11	04	03	03	15	02	02
4	Hodgkins Lymphoma	-	-	03	-	02	-	-
5	Non-hodgkins	-	-	-	04	-	-	03
6	Metastatic Carcinoma	-	-	01	06	11	12	24

Lymphnode	TB Lymp hade Nitis	%	Reactive Hyperplasia	%	HL	%	NHL	%	Metastasis	%
Cervical	69	70.4	58	81.6	5	100	0	-	49	90.7
Axillary	06	6.1	04	5.6	0	-	03	42.8	03	5.5
Inguinal	17	17.3	06	8.4	0	-	02	28.7	02	3.7
Generalised	06	6.1	03	4.2	0	-	02	28.7	0	-
Total	98	-	71		5		7		54	

 Table 3: Lymph Node Involved in Various Type of Lymphadenopathy

Table 4: Incidence of Distribution of Metastatic Lesions

S. No	Metastatic Lesions	Males	Females	Total	%
1	Squamous Carcinoma	36	01	37	68.5
2	Adenocarcinoma	01	02	03	5.5
3	Ductal Carcinoma Breast	-	09	09	16.6
4	Papillary Carcinoma Thyroid	01	02	03	5.5
5	Undifferentiated Carcinoma	-	02	02	3.7

DISCUSSION

FNAC is a valuable diagnostic tool for establishing a diagnosis in cases of superficial lymphadenopathy. [1] The use of this technique has limited the need for excision of enlarged lymph nodes, especially in cases of reactive and tubercular lymphadenitis. However grey areas still exist in the establishment of an exact diagnosis especially in the case of primary lymphoproliferative disorders, where distinguishing low grade non - Hodgkin's lymphoma from a reactive hyperplasia may pose a diagnostic conundrum even in experienced hands. [5, 6]

The pattern of lesion consisted of tuberculous reactive hyperplasia, lymphadenitis, metastatic carcinoma, suppurative lymphadenitis, lymphoma seen in our study, more or less is same reported in other studies in India & other developing countries (7-9). Lymphadenopathy is one of the most common clinical problems posing diagnostic difficulties and tuberculous lymphadenopathy is the commonest manifestation of extra-pulmonary tuberculosis where cervical groups of lymph nodes are most frequently involved. In this study, we found that FNAC is a highly diagnostic technique in the evaluation of superficial lymphadenopathy of cervical, axillary, and inguinal regions. We also noted that tuberculous lymphadenitis was the most common in middle age group, in the younger age group, reactive lymphadenopathy was more common, in contrast to the older age group where metastatic carcinoma was more frequent.

Maximum number of cases seen in our study was of tuberculous lymphadenitis. Patra en all had 37.8 % cases of tubercular lymphadenitis and present study has 35.6 %. This has shown quite resemblance to our study. A similar study was done by Khajuria et al [7] which showed tubercolous lymphadenitis as 52.3 % & Bhaskara et all [6] found 67.57 % (Table 5).

Suppurative lesions were more common in females than males in our study in accordance with Reddy et al.5 Metastatic lesions were more common in males compared to females which is in accordance with Reddy et al and Qadri et al. [8-9]. The highest incidence of reactive hyperplasia was seen in first two decades of life (32.3%) with male preponderance. These findings are agreement with experience of other studies [10-11]. Metastatic malignancies are significantly more common in males; superficial lymph nodes are common sites of metastasis. Cervical lymph node is the most common lymph node involved in the metastasis & Squamous cell carcinoma is the most common form of metastatic lesion. Metastatic carcinoma was observed in 14.5 % of cases BT Patra AK et al [7], 3.8 % cases by Ruchi Khajuria (9) & 5.6 % cases by Bhaskaran et al [8] and our present study showed 19.6 %.

The slight variation in results of different studies is due to difference in age groups of patients (Table 4). Predominant metastatic deposits were of squamous cell carcinoma of all metastatic lymph nodes, which correlates with findings of studies by Pavithra et al [12]. The high incidence of squamous cell carcinoma may be due to high incidence of smoking and tobacco chewing in this region. The most common cause for enlarged lymph nodes were tuberculous lymphadenitis and reactive lymphadenopathy followed by malignant neoplasm, especially metastatic squamous cell carcinoma. The reason behind for higher metastasis is the regional variation, as in this area (central India) beetle & tobacco chewing is most commonly seen

irrespective of sex, which is one of the major predisposing factors for malignancy.

The anatomical site of involved node along with age & sex may give some indication to the location of primary carcinoma. For e.g. Axillary lymph node are most commonly involved in the metastatic deposition from Breast, lungs & ovaries of middle-aged females. The incidence of squamous cell carcinoma is the most common metastatic lesion of lymph node, which is comparable to other studies. Benign reactive inguinal lymphadenopathy is the most common aetiologies, and inguinal lymphadenopathy is of low suspicion for malignancy. In our study we received least amount cases of inguinal lymphadenopathy. carcinoma of external genital region, the lymphomas & melanoma involved this group of lymph node (13).

This integrative methodology plays a pivotal role in elucidating the nature of lesions, facilitating precise diagnosis, and guiding therapeutic interventions. Within this diagnostic landscape, Fine Needle Aspiration Cytology (FNAC) stands out as a highly effective and minimally invasive tool. Its efficacy in head and neck lesions lies in its ability to provide nuanced insights, contributing significantly to the overall diagnostic accuracy. The seamless integration of cytological and histopathological data enhances our understanding, enabling clinicians to make informed decisions for optimal patient care (14).

Lymph node FNAC is an effective and less invasive method for diagnosing lymph node lesions. It aids in distinguishing between non-neoplastic and neoplastic etiology. Therefore, preventing unnecessary surgical interventions. FNAC, when correlated with clinic-radiological findings, may serve as the first diagnostic test for evaluating lymph node lesions. Metastatic deposits constituted the pathologies; acute suppurative lymphadenitis, lymphoproliferative disorders and necrotic lymphadenitis were the other diagnoses given on FNAC evaluation of the superficial lymph nodes in our series. FNAC continues to be an important diagnostic tool in the evaluation of superficial lymph nodes. The most common cause for enlarged lymph nodes were tuberculous lymphadenitis and reactive lymphadenopathy followed by malignant neoplasm, especially metastatic squamous cell carcinoma

CONCLUSION

In cases of primary malignant lesion and metastases, lymph node aspiration also provides

material for special studies such as cytochemistry, immunopathology or culture and assist in the guidance of therapy in time, thus reducing mortality and morbidity. From the results of this study and those from the literature, FNAC is recommended as the initial reliable diagnostic tool in peripheral lymphadenopathy. In the evaluation of lymph nodes lesions, FNAC is established as a minimally invasive, cost effective & rapid diagnostic tool. It has very high degree of patient acceptance because it does not cause any scars, inconvenient incision lines. It is one of the reliable diagnostic tools in evaluation of lymphadenopathy for both screening & follows up and can be performed as outpatient procedure. The aspiration cytology is now considered as a valuable diagnostic aid & is gaining popularity as it provide ease in following patients with known malignancy & ready identification of metastasis or reoccurrence.

Despite its limitations, FNAC appears as a good first line method for investigating the cases of lymphadenopathy and also a simple, rapid, cost effective and minimally invasive method to know the cause of lymphadenopathy. It has definitely and significantly reduced unnecessary surgical biopsy for diagnosis of lymphadenopathies. Categorization of the cause of lymphadenopathy into reactive, inflammatory/infectious, metastatic, and lymphoproliferative disorder can be reliably done by FNAC, avoiding the need for truct/excisional biopsy. It not only helps clinician in early detection of lesion but also helps in early plan of treatment especially in metastasis and lymphoma. In patients without previous diagnosis of malignancy, FNAC not only confirms metastatic deposit, but in most conditions gives a clue regarding site of primary.

Acknowledgement:

I am very thankful to Dr.E.Prabhakar Reddy,Professor of biochemistry for helping to statistical analysis and also writing the article.

REFERENCES

- 1. Malaker D, Jajoo ILN, Swarup K, Gupta OP, Jain AP, Poflee VW. (1991). A clinical evaluation of fine needle aspiration cytology in the diagnosis of lymphadenopathy. *Ind J Tub.*, 17-19.
- 2. Shah PC, Patel CB, Bhagat V, Modi H. (2016). Evaluation of peripheral lymphadenopathy by fine needle aspiration cytology; a one-year study at a tertiary centre. *Int J Res Med Sci.*, 4(1), 120-125.
- 3. Wilkinson AR, Mahore SD, Maimoon SA. (2012). FNAC in the diagnosis of lymph node malignancies. A simple and sensitive tool. *Indian J Med Pediatr Oncol.*, 33(1), 21-24.
- 4. Kumar N, Gupta BB, Sharma B, Kaushal M, Rewari BB, Sundriyal D. (2015). Role of fine needle aspiration cytology in human immunodeficiency virus-associated lymphadenopathy: A cross-sectional study from Northern India. *Hong Kong Med J.*, 21(1), 39-44.

- 5. Arif SH, Hassan MJ, Jain M, Verma AK, Naim M. (2011). Role of imprint cytology in diagnosis of lymph node lesions. *Indian Medical Gazette*, 385-390.
- 6. Stewart CJR, Duncan JA, Farquharson M, Richmond J. (1998). Fine needle aspiration diagnosis of malignant lymphomas and reactive lymphoid hyperplasia. *J Clin Pathol.*, 51, 197-203.
- 7. Patra AK, Nanda BK, Mahapatra BVK, Panda AK. (1983). Diagnosis of lymphadenopathy by fine needle aspiration cytology. *Indian J Pathol Microbiol.*, 26, 272-278.
- Bhaskaran CS, Kumar GH, Sreenivas M, Kamleshwari R, Rao G, Aruna CA. (1990). Fine needle aspiration cytology review of 1731 cases. *Indian J Pathol Microbiol.*, 83, 387-397.
- 9. Khajuria R, Goswami KC, Singh K, Dubey VK. (2006). Pattern of lymphadenopathy on fine needle aspiration cytology in Jammu. *JK Sci.*, 8(3), 157-159.
- 10. Reddy S, Kumar VR, Kushtagi AV, Reddey H, Husain KZ. (2018). Morphological patterns of FNAC of lymph nodes. *Indian J Pathol Oncol.*, 5(2), 269-272.
- 11. Qadri SK, Hamdani NH, Shah P, Lone MI, Baba KB. (2012). Profile of lymphadenopathy in Kashmir valley: A cytological study. *Asian Pacific J Cancer Prev.*, 13, 3621-3625.
- 12. Pavithra P, Geetha JP. (2014). Role of fine needle aspiration cytology in the evaluation of the spectrum of lymph node lesions. *Int J Pharm Bio Sci.*, 5(4), 377-384.
- 13. Paul PC, Goswami BK, Chakrabarti S, Giri A, Pramnik R. (2004). Fine needle aspiration cytology of lymph nodes an institutional study of 1448 cases over a five-year period. *J Cytol.*, 21, 187-190.
- 14. Mohanty R, Wilkinson A. (2013). Utility of fine needle aspiration of lymph nodes. IOSR J Dent Med Sci., 8(5), 13-18.

Cite this article:

Aravind Kumar M & Rashmi Kunder. (2021). "Clinicopathological Spectrum of Lymph Node Lesions Encountered on Fine Needle Aspiration Cytology in South India". *Acta Biomedica Scientia*, 8(2): 120-124.



Attribution-NonCommercial-NoDerivatives 4.0 International