International Journal of Clinical Trials
Mishra RT et al. Int J Clin Trials. 2024 Nov;11(4):266-269
http://www.ijclinicaltrials.com
pISSN 2349-3240 | eISSN 2349-3259
DOI: https://dx.doi.org/10.18203/2349-3259.ijct20242671

Original Research Article

Cytological spectrum of malignant lesions of lymph node

Ranu Tiwari Mishra, Rashmi Nayak*, Sanjay Totade

Department of Pathology, Netaji Subhash Chandra Bose Medical College, Jabalpur, Madhya Pradesh, India

Received: 20 August 2024
Revised: 09 September 2024
Accepted: 10 September 2024

***Correspondence:**
Dr. Rashmi Nayak,
E-mail: drrashminayak007@gmail.com

ABSTRACT

Background: Fine needle aspiration cytology (FNAC) is a safe, simple, non-invasive and inexpensive procedure for diagnosing the lesions of lymph nodes. It helps in the diagnosis of benign, infectious lesions as well as malignant lesions. It not only confirms or excludes metastasis in a case of a known primary malignancy but, also, helps to detect occult primary malignancy. Aim of the present study was to determine the frequency of malignant lesions of lymph nodes in FNAC.
Methods: Retrospective study included all cervical lymph node lesions reported on FNAC, in the department of pathology, NSCB Medical College, Jabalpur from January 2023 to June 2024 (18 months).
Results: Total cases of 414 lymph node aspiration were done, of which 78 cases (18.84%) were positive for malignancy. Among malignant lesion metastasis was the predominant lesion. Majority of cases were seen in 51-60 years age group with male predominance and male: female ratio was 6.1:1. The most common metastasis was from squamous cell carcinoma which was reported in 65 cases (84%), followed by 4 cases of adenocarcinoma and malignancy of epithelial origin each. One case each of metastasis from papillary carcinoma thyroid, anaplastic carcinoma thyroid and malignant melanoma was reported. In two cases cytological diagnosis of lymphoma (NHL) was made.
Conclusions: FNAC gives early and accurate results with minimal invasion and reduces the need for surgical biopsies, thus saves cost and time to reach the final diagnosis. It is concluded that FNAC is a useful tool in diagnosing malignant lesions of lymph nodes with a good certainty.

Keywords: FNAC, Lymph node, Lymphadenopathy

INTRODUCTION

Lymphadenopathy is a common clinical presentation of various infectious, non-infectious lesions and underlying malignancies. In developing countries like India infectious lymphadenopathy is quite common, mainly due to high prevalence of tuberculosis. However, large proportion of lymphadenopathy in adults is also due to metastatic tumor deposits.[1]

Since lymph nodes are easily approachable and fine needle aspiration cytology (FNAC) being a simple safe reliable procedure, we can easily diagnose metastasis in a lymph node without any surgery with the help of FNAC.

FNAC avoids the physical and psychological trauma occasionally encountered after an open surgical biopsy, is convenient for the patient and physician alike, is a useful outpatient procedure, is relatively painless and provides a good correlation between cytology and histopathology.[2]

Although for definitive diagnosis histopathological examination and immune-phenotyping is necessary but FNAC as initial investigation in lymphadenopathy cases can help in guiding further management and investigations.

Metastatic cervical lymphadenopathy is commonly due to primary in oropharynx, larynx, and thyroid. Most of the metastatic deposits in lymph nodes can easily be diagnosed

by FNAC as the metastatic cells look totally different from the normal cells of lymph nodes. In patients without previous diagnosis of malignancy, FNAC not only confirms metastatic deposit, but in most conditions gives a clue

Aim of this study was to determine the frequency of different malignant lesions of cervical lymph nodes by FNAC.

METHODS

This was a retrospective study done for all malignant lymph node lesions diagnosed on FNAC, in the department of pathology, NSCB Medical College, Jabalpur from January 2023 to June 2024 (18 months). A total of 414 lymph node aspirations were done of which 78 cases of malignancy were reported which were included in the study. FNAC of all patients was performed in our department.

Inclusion criteria

Patients of any group presenting with lymphadenopathy and cervical lymph node enlargement of any size were included in the study.

Exclusion criteria

Lymph nodes other than cervical region and inadequate sampling. Relevant data of the patients was collected and analyzed as per designed proforma. The data obtained were tabulated and expressed as percentage and proportion.

Informed consent was taken from patients with cervical lymphadenopathy, referred for lymph node FNAC, and cytological diagnosis, in cytology section of pathology department, NSCB Medical College, Jabalpur.

Statistical analysis

The collected data was analyzed by using IBM statistical package for the social sciences (SPSS) version 27.0. The appropriate statistical methods were used to make tabulation, frequencies, graphs and independent t-test, Pearson correlation coefficient were also used.

A detailed history and clinical examination were done. Patients were explained about the procedure and all sterile precautions were taken. FNAC was performed by using 10 ml disposable syringe with 23 G or 24 G needles.10 ml syringe gives sufficient negative pressure and this needle size yield good material with minimal mixing of blood. Lesion was fixed with one hand and needle was inserted into the lymph node. In case of deep-seated lesions, ultrasonography (USG) guided FNAC was performed. Negative pressure was applied by pulling plunger and needle was moved back and forward rapidly and three to four passes were given. Once material was inside the hub, negative pressure was released. Glass slides were prepared from aspirated material and stained with hematoxylin and eosin-stain. Stained smears were examined. Cyto-morphological features like the overall cell population, predominant pattern of arrangement was assessed by examination under low power. Then the individual cell morphology was studied under high power objective. Cytological findings were noted in all the cases.

RESULTS

In present study, out of total 414 cases of lymph node aspirations done, malignant cytological results were seen in 78 cases (18.8%). Other lymph nodes aspirates were reported as “reactive” and granulomatous lymphadenitis. Maximum number of cases of metastasis were seen in 51-60 years age group with male predominance and male: female ratio was 6.1:1. As shown in Table 1, out of 78 cases of malignant lesions maximum number of cases were of metastatic squamous cell carcinoma 65 cases (83.3%), followed by adenocarcinoma and malignancy of epithelial origin 4 cases each (5.1%). In cases where we see malignant epithelial cells but we cannot definitely say that whether it is squamous cell or adenocarcinoma, such cases were assigned as malignancy of epithelial origin. There was one case each of metastasis from papillary carcinoma and anaplastic carcinoma thyroid. One case of malignant melanoma lip and two cases of lymphoma were also diagnosed on cytology of cervical lymph node.

Table 1: Cytological diagnosis of the cases.

Cytological diagnosis	No. of cases	Approx %
Squamous cell carcinoma	65	83.3
Adenocarcinoma	04	5.1
Malignancy of epithelial origin	04	5.1
Lymphoma (NHL)	02	1.3
Papillary carcinoma thyroid	01	1.3
Anaplastic carcinoma thyroid	01	1.3
Malignant melanoma	01	03
Total	78	100

Table 2 shows age wise distribution of cases. In present study, the age of the patients ranged from 25 to 80 years. Maximum number of cases were seen in 51 to 60 years of age group followed by 61-70 years of age group, there were only 2 cases in more than 70 years of age group.

Table 3 shows gender wise distribution of cases. Malignant lesions were more in males (85.9%) as compared to females (14.1%), with male to female ratio 6.1:1.

Table 2: Age wise distribution of cases.

Variables	Age distribution (years)							
Malignant lesion	**<10**	**11-20**	**21-30**	**31-40**	**41-50**	**51-60**	**61-70**	**71-80**
Squamous cell carcinoma	-	-	-	-	12	34	17	02
Adenocarcinoma	-	-	-	01	01	02	-	-
Malignancy of epithelial origin		-	-	01	-	03	-	-
Papillary Ca. thyroid	-	-	01	-	-	-	-	-
Anaplastic Ca. thyroid	-	-	-	-	-	-	01	-
Malignant melanoma	-	-	-	-	-	-	01	-
Lymphoma	-	-	-	02	-	-	-	-

Table 3: Gender wise distribution of cases.

Malignant lesion	Male	Female
Squamous cell carcinoma	58	7
Adenocarcinoma	03	1
Malignancy of epithelial origin	03	01
Papillary carcinoma thyroid	-	01
Anaplastic carcinoma thyroid	-	01
Malignant melanoma	01	-
Lymphoma	02	-
Total	67	11

Table 4 shows that lesions were more common on left side of neck.

Table 4: Distribution of cases according to laterality of lymphadenopathy.

Sites of cervical lymphadenopathy	No. of cases	Percentage
Right	34	43.6
Left	39	50
Bilateral	5	6.4
Total	78	100

Table 5: Distribution of cases according to primary site.

Primary site	No. of cases	Cytological diagnosis
Orophar-ynx	50	Squamous cell carcinoma (50)
Larynx	09	Squamous cell Ca (8), epithelial malignancy (1)
GIT	01	Adenocarcinoma (1)
Lung	01	Adenocarcinoma (1)
Thyroid	02	Papillary Ca thyroid (1), anaplastic carcinoma (1)
Skin	01	Malignant melanoma (1)
Lymph node	02	Lymphoma (2)
Unknown primary	12	SCC (7), adenocarcinoma (2), epithelial malignancy (3)
Total cases	78	

Table 5 shows most common primary site for metastatic squamous cell carcinoma was oropharynx 48% followed by larynx. In 9 cases and in 7 cases of metastatic squamous cell carcinoma primary site was unknown. 2 cases of adenocarcinoma, primary sites were gastrointestinal tract and lung respectively and in 2 cases primary was unknown.

DISCUSSION

In present study, out of total 414 cases of lymph node aspirations done, malignancy was seen in 76 cases and 2 cases of primary lymphoma were reported. The age of the patients ranged from 25 to 80 years in this study. The most common age group affected in metastatic tumor, in present study was 51-70 years which correlates with the studies of Bhavani et al, Khajuria et al and Pandav et al.[3-5]

In our institute, 18.8% of lymph nodes were diagnosed as malignant on cytology. Other studies also have incidence close to our study of Bhavani et al (12.46%) and Wilkinson et al (15.4%).[3,6]

The cervical lymph nodes were most common lymph node involved by metastatic deposits. The primary site in most cases was oral cavity. Squamous cell carcinoma was the most common type. Similar findings were observed by Bhavani et al, Wilkinson et al and Anila et al.[3,6,7]

Anila et al observed that out of cases 130 cases of metastatic deposits in lymph nodes, 51 cases were of metastatic squamous cell carcinoma of which 40 cases have primary in the head and neck region.[7]

In the present study majority of cases were of metastatic involvement of lymph node (97.4%), rather than lymphoma (2.5%). Wilkinson et al also reported 90% metastatic cases and 10% lymphoma cases in their study.[6] Gupta et al reported 80.4% metastatic cases and 19.6% lymphoma cases.[6,8]

The incidence of malignancy was more in males (85.9%) as compared to females (14.1%), with male to female ratio 6.1:1. Male preponderance was noted in our study, which correlates with other studies.[4,5,6,10] This may be because of increased incidence of various addictions habits in males

especially tobacco smoking and various tobacco products addiction. In present study primary site of metastasis could be identified in approximately 84.6% cases with the help of FNAC.

Metastasis from papillary carcinoma thyroid was incidentally detected, in a 25-year female as the patient presented with cervical lymph node enlargement without any other complaint. When FNAC was performed the smear showed papillary aggregates and monolayered sheets. Cell nuclei was characteristic of papillary carcinoma thyroid having powdery fine chromatin, longitudinal nuclear groove in most of the areas along with some irregular nuclei and intranuclear pseudoinclusions.

Similarly, cervical lymph node cytology in a 56-year-old male showed discohesive cells with eccentrically placed large nuclei and prominent 1-2 macronucleoli. Intra and extracellular melanin pigment was seen. Cytology report was given with the impression -suspicious of metastatic deposits of malignant melanoma. Later, with strong suspicion of malignant melanoma when we examined the patient we noticed a brown black pigmented lesion on his lip.

A case of anaplastic carcinoma thyroid was diagnosed on cytology in a longstanding case of multinodular goiter in a 68-year-old female whose cytology from thyroid as well as from enlarged lymph node show similar cytological picture of anaplastic carcinoma.

These cases strongly emphasize the importance of FNAC, as apart from being simple, less invasive and cost effective, how important it can be to first detect metastatic malignancy and guide towards further investigations and management of the patients.

Limitations

Cytological evaluation along with proper clinico-radiological correlation is useful in diagnosing malignant lesions of lymph nodes. However, study for a longer period with a larger sample size involving all sites of lymphadenopathy is needed for better representation of the community.

CONCLUSION

FNAC is a rapid, safe and cost-effective technique. It gives early and accurate diagnosis with minimal invasion and reduces the need for surgical biopsies. Thus, saves cost and time to reach to final diagnosis. It is therefore concluded that cytology evaluation along with proper clinico-radiological correlation is useful in diagnosing malignancy with certainty.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Ghartimagar D, Ghosh A, Ranabhat S, Shrestha MK, Narasimhan R, Talwar OP. Utility of fine needle aspiration cytology in metastatic lymph nodes. J Pathol Nepal. 2011;1(2):92-5.
2. Giri S, Singh K. Role of fine needle aspiration cytology in evaluation of patients with superficial lymphadenopathy. Int J Biol Med Res. 2012;3(4):2475-9.
3. Bhavani C, Neeraja M, Varalakshmi KPV, Ramana Babu PV, Chaitanya B, Sravani P. Role of FNAC in the Diagnosis of Cervical Lymphadenopathy. Int J Med Res Rev. 2014;2(6):599-603.
4. Khajuria R, Goswami KC, Singh K, Dubey VK. Pattern of lymphadenopathy on fine needle aspiration cytology in Jammu. J K Sci. 2006;8(3).157-9.
5. Pandav AB, Patil PP, Lanjewar DN. Cervical lymphadenopathy- diagnosis by F.N.A.C., a study of 219 cases. Asian J Med Res. 2012;1(3):79-83.
6. Wilkinson AR, Mahore SD, Maimoon SA. FNAC in the diagnosis of lymph node malignancies: A simple and sensitive tool. Indian J Med Paediatr Oncol. 2012;33(1):21-4.
7. Anila KR, Nayak N, George PS, Jayasree K. Utility of Fine needle aspiration cytology in evaluation of lymphadenopathy. An audit from a cancer centre in southindia. GJO Issue. 2015;19:50-6.
8. Gupta C, Gupta R, Bhardwaj S, Role of FNAC in diagnosis of lymph node malignancies – An institutional experience. IP Arch Cytol Histopathol Res. 2023;8(1):19-22.
9. Schafernak KT, Kluskens LF, Ariga R, Reddy VB, Gattuso P. Fine-needle aspiration of superficial and deeply seated lymph nodes on patients with and without a history of malignancy: review of 439 cases. Diagn Cytopathol. 2003;29(6):315-9.
10. Shah MG, Goel DK, Patel TS, Trivedi PP. Cervical lymph node FNAC: a simple and sensitive tool to diagnosis malignancies. Trop J Path Micro. 2019;5(9):656-62.

Cite this article as: Mishra RT, Nayak R, Totade S. Cytological spectrum of malignant lesions of lymph node. Int J Clin Trials 2024;11(4):266-9.