

Original Research Article


# A study on usefulness of FNAC in head and neck region lymphadenopathy

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## Abstract

**Background:** FNAC of head and neck region lymph nodes provides a great opportunity to explore the myriad lesions that involve these lymph nodes. Fine needle aspiration in the investigation of lymphadenopathy has become a standard and frequently practiced invasive technique and it is cheap and accurate first line of investigation in lymphadenopathy.

**Materials and methods:** This study was carried out over a period of 6 months (March 2020 to August 2020). A total of 73 patients with head and neck lymphadenopathy were subjected to FNAC. Out of 73 cases, 3 cases were excluded because of failure to aspirate the material from lymph nodes; hence only 70 cases were available for analysis.

**Results:** In the present study, the various causes of head and neck lymphadenopathy were classified according to cytomorphological patterns. Among the diagnostic outcome, overall prevalence of tuberculosis was 25 (35.71%), reactive hyperplasia was 16 (22.85%), secondary metastases were 14 (20%), lymphoma was 9 (12.85%) and acute non-specific lymphadenitis was 6 (8.57%).

**Conclusion:** The present study confirmed that FNAC of lymph nodes is an excellent first line method for investigating the nature of the lesions. Also combination of fine needle aspiration cytology with acid fast staining is highly valuable for routine diagnosis of tuberculosis.

## Key words

FNAC, Lymph nodes, Head and neck, Tuberculosis.

## Introduction

FNAC of head and neck region lymph nodes provides a great opportunity to explore the myriad lesions that involve these lymph nodes.

Fine needle aspiration in the investigation of lymphadenopathy has become a standard and frequently practiced invasive technique and it is cheap and accurate first line of investigation in lymphadenopathy [1]. FNAC is a simple, quick,

and inexpensive and is equally reliable procedure which can be used as a routine outdoor patient department (OPD) procedure for diagnosis of lymphadenopathy [2]. FNAC is also widely used in the head and neck regions, such as in the thyroid, lymph nodes, major salivary glands, and other neoplasias [3-7]. In the head and neck regions, FNAC is of great value because of the multiplicity of accessible organs and heterogeneous pathologies encountered. An early differentiation of benign from malignant pathology greatly influences the planned treatment [8].

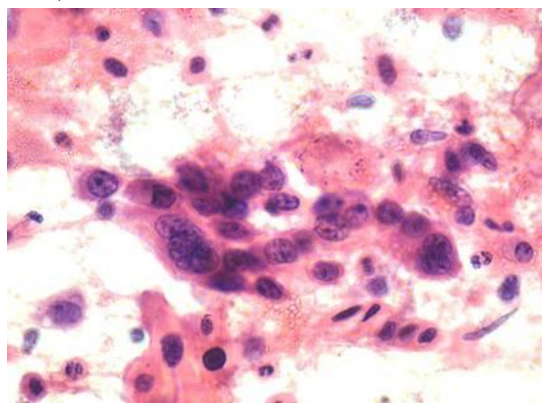
**Photograph – 1:** Cervical lymph node swelling.



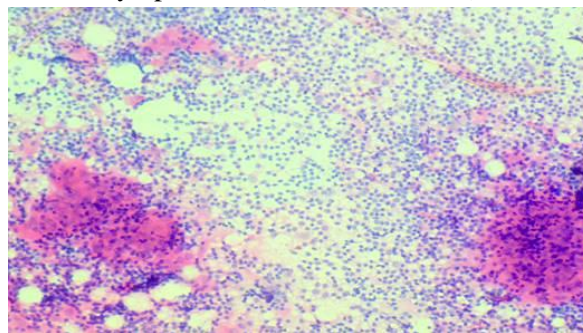
**Photograph – 2:** Cervical lymph node swelling in posterior triangle.



**Photograph – 3:** Metastatic squamous carcinoma in cervical lymph node (H & E stain, 40X).



**Photograph – 4:** Tuberculosis granuloma in cervical lymph node (H & E stain, 10X).



## Materials and methods

This study was carried out over a period of 6 months (March 2020 to August 2020). A total of 73 patients with head and neck lymphadenopathy were subjected to FNAC (**Photograph - 1, 2**). The palpable lymph node was fixed with one hand and the skin was cleansed and 23-25 gauge -1.5 cm long, needle with 10 ml syringe was inserted into the lymph node and a full suction pressure was applied. The tip of the needle was moved around. The pressure was neutralized and the needle was withdrawn. The aspirated material was placed on the glass slides. The slides were both air dried and wet fixed in alcohol for May-Gruenwald and Giemsa and Papanicolaou stains respectively [9-14]. The criteria of selection of patients were lymphadenopathy of more than four weeks duration. Documentation of age, sex, site, size, duration, involvement of other lymph nodes and other investigations were done. The patients were followed up and in 22 patients, lymph node biopsy was performed. Whenever possible, the histopathological findings were compared with initial cytology report rendered. Out of 73 cases, 3 cases were excluded because of failure to aspirate the material from lymph nodes; hence only 70 cases were available for analysis.

## Results

In the present study, a total of 70 patients presented with head and neck lymphadenopathy that were clinically assessed and investigated, by laboratory test and FNAC were included. FNAC was found to be convenient and safe test without

any complication. Among 70 patients, highest number of patients (38.57%) was between 31-40 years of age group and 38 were males and 32 were females (**Table – 1**). The various causes of head and neck lymphadenopathy were classified according to cytomorphological patterns (**Table – 2**). Tuberculosis was more common in age group of 21-30 years (35.71%) while metastatic malignant lesions were more common in 41-50 years (20%) (**Photograph - 3, 4**). Tuberculosis and lymphoma were more common among the

females, while reactive hyperplasia and secondary metastatic lesions in cervical lymph nodes were more common among males. Among the diagnostic outcome, overall prevalence of tuberculosis was 25 (35.71%), reactive hyperplasia was 16 (22.85%), secondary metastasis was 14 (20%), lymphoma was 9 (12.85%), acute non-specific lymphadenitis was 6 (8.57%). In almost all the groups, diagnostic accuracy by FNAC was 100%.

**Table – 1:** Age and sex distribution of cases.

Age group (Years)	Number of cases		Total	Percentage (%)
	Male	Female		
<10	4	3	7	10
11-20	4	3	7	10
21-30	6	6	12	17.15
31-40	15	12	27	38.57
41-50	5	4	9	12.85
51-60	4	2	6	8.57
>60	0	2	2	2.86
Total	38	32	70	100

**Table – 2:** Distribution of causes of lymphadenopathy according to FNAC findings.

FNAC findings	Number of cases	Percentage (%)
Reactive hyperplasia	16	22.86
Acute non-specific lymphadenitis	6	8.57
Tuberculous lymphadenitis	25	35.72
Metastatic tumors	14	20
Lymphoma (Hodgkin's and non-Hodgkin's)	09	12.85
Total	70	100

## Discussion

In this study, FNAC was performed in swellings of the head and neck regions of the 70 patients. All procedures performed in this study were done in an outpatient clinic and were executed by a clinician, with or without local anesthesia. There were no contraindications in patients with co-morbidities and the procedure was performed without complication, as described in the literature [15]. The complications of this procedure may be bleeding, infection, nerve injury, swelling, and bruising of the area in which the procedure was performed. We noted that in fibrous lesions, there was difficulty with

aspiration and the ability to obtain a sufficient amount of material for the cytological analysis, which interfered with the interpretation by the pathologist. Lesions with high blood content, presence of necrosis and fibers with scattered atypical cells also proved difficult to analyze cytologically, resulting in the nine inconclusive cases of FNAC. The presence of a pathologist at the time of sample collection, as well as during the staining for the rapid interpretation, may help the clinician at the time of aspiration. This can, therefore, help to minimize the rate of inconclusive cases. Maximum number of cases in present study was recorded in the age group of

31- 40 years, which is comparable with those of other studies by P. Bhargav, et al. [16] and S. Rajshekaran, et al. [17]. In these studies, maximum cases of tuberculosis were found in this age group which is also true for our study [18, 19]. In the study performed by Bhattacharya, et al. [18], FNAC was found to be very useful adjunct in the diagnosis of T.B which can be made by the demonstration of epithelioid granuloma with or without caseation) even in the absence of acid fast bacilli (AFB) [18]. In our study, the incidence of reactive lymph node enlargement fell steadily as the age is increasing and malignant lesions took over. Hence, the pressing need for FNAC of neck node is significant in the elderly that can provide an early clue to the diagnosis. Reactive glands were mostly small and less than 1 cm in size in 80% cases whereas tubercular and malignant glands were larger and over 1 cm in size in 84.8% and 83.1% cases, respectively [19]. In metastatic lesions, FNAC is not only helpful to detect the lesion but also gives clue to the physician about the primary tumor. Metastasis of unknown origin (MUO) is a clinical diagnostic challenge and often manifest as cervical lymphadenopathy [20]. In our study, metastatic squamous cell carcinoma (73.34%) formed bulk of the lesion, followed by metastatic adenocarcinoma (13.04 %) followed by metastatic malignant melanoma (6.66%) and metastatic papillary carcinoma of thyroid (6.66%). Diagnostic accuracy of metastatic carcinoma found in this study is comparable with other studies [21, 22]. The diagnostic accuracy of FNAC in cases of lymphoma is variable, but accuracy increases in higher grade lesions [23, 24]. Out of 5 non-Hodgkin's lymphoma, we had reported 2 cases of diffuse large B cell lymphoma which is high grade lymphoma. In lymphoma group, with presence of Reed Sternberg cell, the cytological diagnosis of Hodgkin's lymphoma is easy. FNAC is helpful in diagnosis of Hodgkin's lymphoma though biopsy is recommended for confirmation and classification.

## Conclusion

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Nowadays, with increasing cost of medical facilities, any technique which speeds up the process of diagnosis, limits the physical and psychological trauma to the patient, and saves the expenditure of hospitalization, will be of tremendous value. It may also help the surgeon to select, guide, and modify surgical planning in patients requiring surgery. The present study confirmed that FNAC of lymph nodes is an excellent first line method for investigating the nature of the lesions. Also combination of fine needle aspiration cytology with acid fast staining is highly valuable for routine diagnosis of tuberculosis.

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