

Spectrum of Lymph Node Lesions Diagnosed by FNAC and Histopathology**Binay Kumar Gupta¹, Rajesh Kumar²**¹Assistant Professor, Department of Pathology, Katihar Medical College, Katihar, Bihar²Professor, Department of Pathology, Katihar Medical College, Katihar, Bihar

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Corresponding author: Dr. Binay Kumar Gupta

Conflict of interest: Nil

Abstract:

Background: Many non-neoplastic and neoplastic illness presentations frequently appear clinically in lymph nodes. Fine needle aspiration cytology (FNAC) is a straightforward, minimally invasive method that can be used to diagnose very superficial lesions. This study's objective is to examine the cytomorphological characteristics of diverse lymph node lesions, both benign and malignant, using fine needle aspiration of enlarging lymph nodes.

Methods: The current prospective study is being undertaken over a 12-month period (January 2022 to December 2022) to analyze the cytomorphological characteristics of pathological lesions lymph nodes by FNAC. All individuals with clinical signs of lymphadenopathy, regardless of gender and with ages ranging from one to 70 years, were included in the study.

Results: Out of 330 patients with lymphadenopathy who had FNAC, the cervical group of lymph nodes was the most frequent site (74.24%) and had a female preponderance (62.42%). After reactive lymphadenitis (25.45%), granulomatous lymphadenitis (23.33%), acute suppurative lymphadenitis (3.63%), metastatic malignant lesions (3.33%), lymphoproliferative lesions of undetermined significance (0.90%), and neoplastic lesions like non-Hodgkin's lymphoma (0.30%), tuberculous lymphadenitis was identified by cytomorphology (32.18%).

Conclusion: FNAC is a simple, safe, reliable, and inexpensive method that could be employed in cytological study and early detection of inflammatory, reactive and neoplastic conditions leading to clinical lymphadenopathy.

Keywords: Fine Needle Aspiration Cytology (FNAC), Lymphadenopathy, reactive lymphadenitis, metastatic lesions, tuberculous lymphadenitis.

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Introduction

In the clinical setting, a variety of pathological lesions that affect lymph nodes, an essential part of the immune system, most frequently present as lymphadenopathy. Localized clusters of lymphoreticular tissue surrounded by a fibrous capsule, known as lymph nodes, are found along the lymphatic system's path at anatomically typically constant locations. They are divided into many categories, such as cervical, axillary, mediastinal, retroperitoneal, iliac, and inguinal lymph nodes, depending on where they drain specific topographic regions.[1]

Fine needle aspiration cytology (FNAC) has rapidly advanced in technology, making it much simpler to diagnose the majority of lymph node lesions and reducing the need for invasive open lymph node biopsy.

Aspiration Using Fine Needles for establishing the diagnosis of pathological lesions occurring in lymph nodes on the exposed, easily accessible

areas of the body, cytology is a straightforward procedure that is safe, quick, affordable, and relatively less invasive.

It can be performed as an out-patient procedure without anesthesia.[2,3] When used in conjunction with guidance from other ancillary diagnostic tools in lymphadenopathy cases, FNAC is very helpful in making a quick diagnosis of some pathological conditions, such as reactive lymphadenitis, tuberculous lymphadenitis, metastatic neoplastic lesions, and lymphoproliferative conditions, including the majority of lymphomas.[3-5]

The primary objectives of the current prospective study are to characterize various pathological lesions of lymph nodes into various categories of clinical diagnostic entities, such as into inflammatory, reactive, and various neoplastic and lymphoproliferative lesions, using fine needle aspiration cytology of lymph nodes to diagnose clinical lesions of lymph nodes.

Material and Methods

The current prospective study was conducted at Department of Pathology, Katihar Medical College, Katihar, and Bihar. The trial ran for 12 months, from January 2022 to December 2022, and 225 cases of lymphadenopathy were assessed by FNAC (fine needle aspiration cytology) throughout that time. Fine needle aspiration cytology was performed by aspirating cytological material from

lymphadenopathy lesions using disposable 10 ml syringes attached to 22 to 24 diameter hypodermic needles. Standard cytological stains were used to color the cytological smears made from the aspirate.

Where appropriate, specialized stains including Grocott's Methenamine Silver, PAS, and modified Ziehl-Neelsen stain were utilized.

Results

Table 1: Age wise distribution of the cases

Age group (years)	Number of cases	Percentage (%)
0-10	23	6.96%
11-20	52	15.75%
21-30	121	36.66%
31-40	70	21.21%
41-50	31	9.39%
51-60	13	3.93%
61-70	18	5.45%
71-80	02	0.60

According to Table 1, the patients' ages ranged from 1 year to 75 years old.

Table 2: Gender distribution of the cases

Gender	Number of cases	Percentage (%)
Male	124	37.57%
Female	206	62.42%

A total of 330 patients with diverse variegated cases of lymphadenopathy were investigated throughout the current prospective investigation. There were 206 (62.42%) female patients and 124 (37.57%) male patients among them (Table 2).

Table 3: Cytological diagnosis of lymphnode Lesions

Diagnosis	Number of cases	Percentage (%)
Reactive Lymphadenitis	84	25.45%
Granulomatous Lymphadenitis	77	23.33%
Tuberculous Lymphadenitis	106	32.12%
Chronic Non Specific Lymphadenitis	29	8.78%
Metastatic Lymphadenopathy	11	3.33%
Malignant Lymphoma	01	0.30%
Acute Suppurative Lymphadenitis	12	3.63%
Inadequate	07	2.12%
Lymphoproliferative	03	0.90%

Seven cases had insufficient evidence and were therefore unsuitable for opinions. With 106 cases (32.1%), tuberculous lymphadenitis was shown to be the most common cause of lymphadenopathy. Reactive was the second most frequent diagnosis, with 84 cases (25.4%), followed by granulomatous lymphadenitis (23.33%) in 77 cases, and metastatic lymphadenopathy (3.33%) in 11 cases. In 12 instances (3.63%) and one case (0.30%), respectively, acute suppurative lymphadenitis was observed (Table 3).

Table 4: Site of Lymphnode Involvement

Site	Number of cases	Percentage (%)
Cervical	245	74.24%
Supraclavicular	42	12.72%
Submandibular	17	5.15%
Axillary	09	2.72%
Submental	07	2.12%
Inguinal	10	3.03%

The most frequently affected group of lymph nodes was the cervical region, which accounted for 245 of the 330 cases (74.24%), followed by the supraclavicular region in 42 cases (12.72%), the submandibular region in 17 cases (5.15%), the inguinal region in 10 cases (3.03%), and the axillary and submental regions in 9 cases (2.72%) and 7 cases (2.12%), respectively (Table 4).

Discussion

The most frequent causes of peripheral lymphadenopathy are always found to be inflammatory diseases, both symptomatic and asymptomatic.[1] The study of cellular aspirate taken using a fine needle under a negative pressure is known as fine needle aspiration cytology (FNAC). The FNAC test is an easy, safe, dependable, quick, and affordable way to diagnose lesions and masses in numerous sites and organs.

Out of 330 instances, the majority in the current study were between the ages of 21 and 30. This is analogous to the study by Smita P. Bhide et al.[2], where the majority of cases were recorded between the ages of 11 and 30.

The cervical area lymph nodes are the most frequently affected group of lymph nodes (74.24%), which is comparable to the findings of the study by Uma et al[6-11] in which the cervical node was involved in 62.9% of patients.

The most frequent causes of lymphadenopathy in underdeveloped nations like India include tuberculosis, severe upper respiratory tract infections, and suppurative lymphadenitis.[1] The current study demonstrates that the majority of diseases that impact lymph nodes are caused by tuberculosis, followed by reactive lymphadenopathy. 106 instances out of 330 (32.12%) cases were due to tuberculosis. Of the 330 cases of lymphadenopathy, the second most frequent cause accounted for 25.45% (84 cases), which is comparable to the findings of a study by Gayatri et al.[6] in which 26.2% of cases were attributable to reactive lymphadenitis. The incidence of lymphadenopathy of all sources in the present study showed a female preponderance, with 206 (62.42%) of the 330 patients being female and 124 (37.37%) of the patients being male. This data compares favorably with studies by Smita P. Bhide et al.[2]

Conclusion

According to the current prospective study, reactive lymphadenitis is the second most prevalent cause of lymphadenopathy, with tuberculous lymphadenitis being the most common cause of lymphadenitis in India. In the majority of pathological lesions, the cervical group of lymph nodes and supraclavicular lymph nodes are the

lymph nodes that are most frequently impacted. In the current study, the axillary group of lymph nodes is the least afflicted group. In the current investigation, there was very little evidence of lymphoproliferative lesions that could be identified using fine needle aspiration cytology (FNAC).

In conclusion, fine needle aspiration cytology (FNAC) is the most straightforward, practical, and swift minimally invasive outpatient procedure with few significant complications that could be used as the first line of clinical investigation in the ideal setting of developing country health care facilities to make a definitive diagnosis in the majority of cases of lymphadenopathy.

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