

Infectious diseases, several neoplastic conditions, lipid storage diseases, endocrine abnormalities, and a number of other conditions, including sarcoidosis and histiocytosis, frequently affect lymph nodes [1]. The gold standard for diagnosis is a surgical biopsy. Unfortunately, it is expensive, time-consuming, and linked to numerous issues. For the initial diagnosis and treatment of individuals with lymphadenopathy, fine needle aspiration (FNAC) is recommended because swollen lymph nodes are conveniently accessible for aspiration [2]. The procedure is straightforward and minimises difficulties. Many illnesses, such as reactive lymphadenitis/inflammatory ailments, granulomatous disorders, and neoplastic disorders, have been found to be practically entirely diagnosed by it. It identifies cases that require additional research or follow-up. Hence, in the majority of cases, an excisional biopsy can be avoided [3]. De May used the term SAFE to summarise the benefits of FNAC. ESI stands for Easy, Quick, Accurate, and Economical [4].

In different regions of the nation, the pattern of diseases identified by FNAC of peripheral lymph nodes has been documented by a number of studies [6–13]. There hasn't been much research in this field that deals with this. Hence, this investigation was carried out.

The purpose of the current study was to evaluate the cytomorphological pattern of peripheral lymph node swellings in patients by FNAC.

METHOD:

Study Design: The current study lasted from September 2021 through October 2022 at Department of General Medicine, Indira Gandhi Institute of Medical Sciences, Patna. The current research was cross-sectional in design.

Methodology: The patients were cases of peripheral lymph node swellings that the doctors had submitted to the laboratory for FNAC. The patients' histories were obtained, and observations were made. The process was explained to the patients, and their informed consent was obtained. Using the appropriate aseptic measures, FNAC was performed using a disposable 10 cc syringe and a 20/22-gauge needle utilising both aspiration and non-aspiration techniques. Two slides were made for smears. An air-dried slide was stained with May-Grunwald Giemsa stain. Another slide had Papanicolaou stain on it and had been wet-fixed with alcohol. Careful microscopic investigation came next, and the cytological diagnosis was made. The results were noted using a semistructured proforma that had been evaluated beforehand.

Sample size: Patients who presented to the lab for FNAC and had peripheral lymph node swellings were considered as study subjects. 160 cases in all were examined.

Inclusion criteria: The current study comprised patients over the age of 17 who underwent FNAC and had peripheral lymph node swellings.

Exclusion criteria: Extremely ill patients, those who refused to consent, and situations in which FNAC was not recommended were omitted.

Statistical Analysis: The Statistical Package for Social Sciences (SPSS) version 16.0 was used for data analysis after the data were entered in Microsoft Excel 2013 for this study. Frequency and percentage were used to summarise the data for categorical variables, whereas mean and SD were used for numerical variables. As required, statistical tests were conducted. It was determined that the p-value <0.04 was statistically significant.

Ethical Consideration: This study was approved by the Ethical Committee of Indira Gandhi Institute of Medical Sciences, Patna.

RESULTS:

160 cases of peripheral lymph node swellings presenting for FNAC were included in the current investigation. The patients were between the ages of 1 and 78. Most of the incidents involved people between the ages of 20 and 31. Male to female ratio was 1.71:1, with 63.1% of the population being male and 36.9% female.

The typical sites of lymphadenopathy are shown in **Figure 1**. The majority of cases had cervical lymphadenopathy. In 1.1% of instances, generalized lymphadenopathy was present.

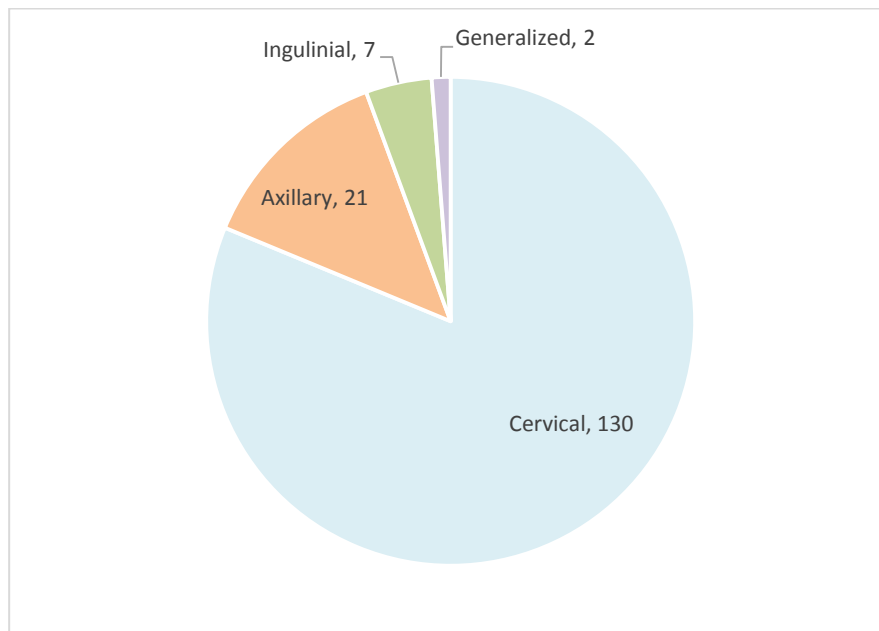


Figure 1: Site of peripheral lymphadenitis

Table 1 displays the cases' cytological diagnoses. In 41.0% of cases, the most frequent finding was tubercular lymphadenitis, which was followed by reactive hyperplasia (27.5%). 9.7% of instances with cancer had metastatic disease.

Table 1: Cytological Diagnosis

Diagnosis	Occurrence	Percentage
Acute lymphadenitis	26	16.5%
Chronic reactive hyperplasia	44	27.5%
Tuberculosis reactive hyperplasia	66	41.2%
Metastatic carcinoma	15	9.7%
Lymphoma	9	5.1%
Total	160	100

The most frequent observation was reactive hyperplasia in younger age groups (<21 years). Middle-aged people were more likely to have TB than younger people (20-41 years). The elderly (>61 years) were more likely to have malignant alterations.

DISCUSSION:

One of the common disorders seen in outpatients is lymphadenopathy. It is a clinical symptom of localized or systemic illnesses and reveals the underlying illness. There are both benign and malignant causes of it. The etiology differs depending on the local environment.

Identification of the underlying cause becomes crucial for accurate diagnosis and effective treatment.

The gold standard diagnostic procedure is an excision biopsy, although it has drawbacks.

A safe, affordable, and trustworthy test for the diagnosis of superficial masses is the FNAC. It has been promoted as a beneficial procedure in comparison to more expensive surgical excision biopsies, especially in poor countries with limited resources. It is utilized as the first-line examination in the initial care of lymphadenopathy cases.

The duty of the clinician is made easier by knowledge of the typical pattern of lymphadenopathy causes in a certain area. In order to evaluate the cytomorphological pattern of lymph node swellings by FNAC in patients presenting with peripheral lymph node swellings, the current investigation was carried out.

The present study comprised a total of 160 instances of peripheral lymphadenopathy reporting for FNAC. The patients' histories were obtained, and observations were made. The process was explained to the patients, and their informed consent was obtained. Slides were made, and FNAC was performed in accordance with regulations under aseptic conditions. A microscopic analysis was conducted, and results were noted.

158 slides (98.4%) were analysed despite the fact that appropriate material could not be acquired in two situations. Malhotra et al. stated that 1.6% of cases produced insufficient data. According to Shah et al. [14], cytomorphological characteristics were employed to diagnose pathology. The presence of epithelioid cell granulomas in a Giemsa stained smear at a 400X magnification was used to identify granulomatous lymphadenitis.

The polymorphous population of lymphoid cells, which consists of centrocytes, centroblasts, tiny lymphocytes, and immunoblasts, was used to detect reactive lymph node hyperplasia. Neutrophil sheets were used to diagnose suppurative lymphadenitis. Large regions of necrosis were the hallmark of necrotizing lymphadenitis. For locating AFB, Ziehl-Nelson stain was employed. When AFB tested positive, tuberculosis was identified. The lymph node aspirate was also examined for microfilaria. A monomorphic population of lymphocytes dispersed singly in a highly cellular smear and the absence of RS cells were used to identify non-lymphoma. Hodgkin's

The presence of mononuclear Hodgkin's cells or Classical RS cells in the background of lymphocytes, eosinophils, plasma cells, and histiocytes was used to make the diagnosis of Hodgkin's lymphoma. Cytological features and cellular information were used to identify metastatic deposits.

The age of the patients in the study conducted by Badge et al. ranged from 2.5 to 87 years. The diagnosis for the youngest patient was tubercular lymphadenitis, while the diagnosis for the oldest patient was squamous cell carcinoma metastatic lymph node deposits. The majority (74.3%) of the patients were between the ages of 11 and 50, with the age group 21 to 30 having the highest percentage. It's a good idea to have a backup plan in case the backup fails. The ratio of men to women was 1:1.64 [5].

Sharma et al. also discovered that patients ranged in age from 6 months to 65 years, with 54% of them being men and 46% of them being women. The diagnosis for the lymphadenopathy in the youngest patient was suppurative lymphadenitis, while the diagnosis for the oldest

patient was metastatic adenocarcinoma [15]. The average patient age, according to Farooq et al., was 32.55 years old. The majority of the patients (41%) were in the 15–45 age range [3].

Malhotra et al discovered comparable outcomes. All of the patients who presented with lymphadenopathy had an average age of 21.67 years. Males contributed 54.7% of the cases, and females contributed 45.29%, yielding a male-to-female ratio of 1.2:1. Age-based groupings were used by Shrivastav et al. to categorise cases: Group I (0-20 Years), Group II (adolescent and middle-aged patients; 21-50 Years), and Group III (elderly patients; >51 Years).

Male: female ratio in Group I was 1.22:1, male: female ratio in Group II was 0.92:1, while male: female ratio in Group III was 13.90%. In Group I, there were 36.98% patients. Shah et al. discovered that patients ranged in age from 5 months to 90 years, with 60.2% of male patients and 39.8% of female patients. According to Farooq et al., there were 42% of females and 58% of males [4].

According to research by Shrivastav et al, cervical lymph nodes were the most often affected site (85.82%), followed by supraclavicular nodes (4.22%), inguinal nodes (3.48%), axillary nodes (2.73%), and several sites (3.73%) of the time [4].

According to Shah et al., the cervical region had the highest percentage of affected lymph nodes (88.5%), followed by the axillary region (6.5%) and the inguinal region (4.1%). There was widespread lymphadenopathy in 0.9% of cases [14]. In the study by Farooq et al. [3], the cervical lymph nodes represented the majority (32%) of the patients and were the most often involved site.

According to Sharma et al., cervical lymph nodes were most frequently affected (84%) and were followed by axillary (3%), inguinal (2%) and nonspecific (1%) lymph nodes [15].

In addition, Badge et al. discovered that granulomatous lymphadenitis, reactive hyperplasia, metastatic carcinoma, suppurative granulomatous, acute suppurative lymphadenitis, non-lymphoma, Hodgkin's and Hodgkin's lymphoma were all present in 0.64%, 0.64%, and 0.32% of patients, respectively. Elderly age groups were more likely to have metastatic deposits (greater than the sixth decade). In the third to fourth decade, granulomatous and tuberculous lymphadenopathies were more prevalent [5].

CONCLUSION:

According to the findings of the current study, lymphadenopathy's aetiology varied depending on the age group. Lymphadenopathy in younger age groups, tubercular lymphadenitis in middle age groups, and metastatic cancer in individuals over 61 years of age were all most frequently caused by reactive hyperplasia. Due to the high prevalence of cancer in the elderly, extra care should be given while performing FNAC on these patients, including preparing more wet fixed smears and preserving unstained smears that may be required for additional staining and research. A dependable and practical screening tool for the initial diagnosis is the FNAC. Further histological testing can be done for conclusive treatment in circumstances when the diagnosis is uncertain.

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