



ORIGINAL RESEARCH PAPER

FINE-NEEDLE ASPIRATION CYTOLOGY FINDINGS IN SUPERFICIAL LYMPHADENOPATHY: A TERTIARY CARE CENTRE STUDY

Pathology

KEY WORDS:

lymphadenopathy; fine-needle aspiration cytology; lymph node; tuberculosis

Dr. Devangi Chandra*

Post PG Resident, Department of Pathology, Gandhi Medical College, Bhopal (M.P.), India. *Corresponding Author

Dr. Sharda Balani

Associate Professor, Department of Pathology, Gandhi Medical College, Bhopal (M.P.), India.

Dr. Maneesh Sulya

Professor and Head, Department of Pathology, Gandhi Medical College, Bhopal (M.P.), India.

ABSTRACT

Purpose: In adults, lymph nodes are usually not palpable under normal circumstances. Many individuals with asymptomatic lymphadenopathy do not seek medical attention, leading to underrecognition of this important clinical sign. Although lymphadenopathy is often benign and self-limiting, it may also reflect a wide range of underlying conditions, including infectious, inflammatory, and malignant disorders. Clinical history and physical examination frequently provide initial clues to the etiology; however, tissue diagnosis is often required for confirmation. Fine-needle aspiration cytology (FNAC) has emerged as a minimally invasive, rapid, and reliable diagnostic tool for evaluating lymphadenopathy, with or without radiological guidance. **Method:** This descriptive cross-sectional study was conducted at a tertiary care centre over a period of two years. Patients presenting with superficial lymphadenopathy were included. FNAC was performed using standard techniques. Cytological findings were recorded and analyzed. **Result:** A total of 500 patients underwent FNAC for evaluation of superficial lymphadenopathy. Tuberculous lymphadenitis was the most frequent diagnosis, accounting for 45.6% of cases, followed by reactive lymphoid hyperplasia (40%). Malignant lesions constituted a smaller proportion, with metastatic malignancy seen in 8.8 % of cases and lymphoma in 2.6%. Cervical lymph nodes were the most commonly involved site, particularly in tuberculous lymphadenitis (49.36%). Metastatic deposits and lymphomas involving cervical nodes accounted for 3.16% and 1.74% of cases, respectively. **Conclusion:** FNAC is a simple, safe, and effective diagnostic modality for the evaluation of superficial lymphadenopathy. In the present study, tuberculosis emerged as the most common etiology, with cervical lymph nodes being the most frequently affected site. FNAC serves as a valuable first-line investigation, aiding in early diagnosis and appropriate patient management.

INTRODUCTION

Lymphadenopathy, considered as an abnormality within the size or nature of lymph nodes, is produced by the invasion or dispersion of either inflammatory cells or neoplastic cells into the node. It results from an enormous array of disease processes [1]. Lymphadenopathy refers to enlarged lymph nodes and it is a frequent clinical finding presenting as an acute or chronic symptom. Lymph nodes greater than 5 mm on palpation are considered abnormal. The annual incidence of unexplained lymphadenopathy is 0.6%. Only 1.1% of cases are related to malignancy, the percentage of which increases with age [1]. About one-half of otherwise healthy children have palpable lymph nodes at any one time [2]. Lymphadenopathy in children is mostly benign or infectious in etiology. In adults and children, lymphadenopathy lasting less than two weeks or greater than 12 months without change in size is unlikely to be neoplastic in origin [3,4]. Exceptions include low-grade Hodgkin lymphoma and non-Hodgkin lymphoma both of which are associated with systemic symptoms [5].

An excision biopsy of the lymph node is the ideal investigation for diagnosis, but it requires local or generalized anesthesia. Fine needle aspiration cytology (FNAC) offers an alternative for diagnosis with little trauma and cost [6]. The diagnostic yield of FNAC can be improved if accompanied by radiological guidance like ultra-sonography and computed tomography scan [6]. FNAC is a simple and safe diagnostic that is often considered as the first line of investigation. The current study focused on cytomorphological patterns assessed by FNAC in cases of superficial lymphadenopathy presented to a tertiary care center.

MATERIALS AND METHODS

A descriptive cross-sectional study was conducted at Gandhi Medical College for a period of 2 years. A total of 500 male and female patients were enrolled in the study between the ages of 4 to 72 years. Patients were selected and informed

consent was taken from each participant. All clinically diagnosed cases of superficial lymphadenopathy as per study protocol were included. Patients previously diagnosed with lymphadenopathy were excluded from the study because lymph nodes will be difficult to aspirate.

The procedure was explained to every patient and written consent prior to the procedure was taken. The cytological smears were examined and categorised after diagnosis. The results were analysed according to the statistical analysis tool Epi Info 7.2.5.

RESULTS

Results of 500 lymph node biopsies were examined. In this study sample, 66% (330/500) of males and 34% (170/500) females had superficial lymphadenopathy (Table I).

Table I: Gender Distribution

Sex Distribution		Frequency	Percentage
GENDER	MALE	330	66%
	FEMALE	170	34%
	TOTAL	500	100%

The minimum age of presentation was 4 years while the maximum was 72 years. Maximum patients 44.8% (224/500) presented between 21 and 30 years (Table II).

Table II: Age Wise Distribution

Age Range	Frequency	Percentage
0 - 10	12	2.4%
11 - 20	35	7%
21 - 30	224	44.8%
31 - 40	97	19.4%
41 - 50	52	10.4%
51 - 60	42	8.4%
>60 years	38	7.6%
TOTAL	500	100%

Cervical lymphadenopathy was the most common presentation comprising 88.6% (n=443) followed by axillary lymphadenopathy of 7% (n=35). Generalized lymphadenopathy was seen in 4% (n=20) and inguinal lymphadenopathy in 0.4% of patients. Tuberculous lymphadenitis was the most common isolated pathology seen in 45.6 % (228/500) cases. 21.51% of patients with tuberculous lymphadenitis were between 21 and 30 years of age. Reactive hyperplasia of lymph nodes was seen in 200 (40%) cases with peak ages between 10 and 25 years. The cervical group of lymph nodes was the most common site for reactive hyperplasia seen in 196 (39.2%) cases.

DISCUSSION

FNAC is a part of the initial diagnosis and management of patients presenting with lymphadenopathy. In this study, the majority of patients were between 21 and 30 years which correlated with the study by Gupta et al. and Badge et al. [7,8]. Tuberculous lymphadenopathy was the most common lesion in this study with female predominance in the second decade correlated with a study by Badge et al. [8]. The female predominance in this study was also comparable with studies conducted in this region where the tuberculous infection was common and other granulomatous lesions were less prevalent and the presence of granuloma on FNAC was highly suggestive of tuberculosis.

A similar study done in Peshawar by Khan et al. reported tuberculous lymphadenitis 37.2% in cervical lymph nodes [9]. This study's results regarding the prevalence of tuberculous lymphadenitis in cervical lymph nodes were also consistent with the study of Khan et al. [10]. Nahid and Hopewell from Turkey showed in their study that tuberculous lymphadenitis was the most common site for extrapulmonary TB [11]. In India, tuberculous lymphadenitis was the most common cause of lymphadenopathy [12]. However, data from developed countries showed that tuberculous lymphadenitis was found more in immigrants from endemic countries [13]. It was shown in different studies from France and Germany that tuberculous lymphadenitis had a prevalence of 70% to 75% in immigrants as compared to natives [14]. A study conducted in the USA showed that tuberculous lymphadenitis was more common in immigrants of Asia between 15 and 50 years [15-17].

Reactive hyperplasia (40%) in the present study was seen more in males (n=120) as compared to females (n=80). Detailed clinical examination, history, and other investigations were done to find the cause of hyperplasia. A study conducted in Malaysia showed reactive hyperplasia of lymph nodes was the most common pathology followed by metastasis [18]. In western countries, it was significantly lower, with some studies showing 1.6%.

Squamous cell carcinoma, undifferentiated carcinoma, and adenocarcinoma were the most common cancers detected in FNAC of cervical lymph nodes. There were 44 cases of Metastatic deposits of Carcinoma, 13 cases of lymphoma, 10 cases had Hodgkin disease (6 males and 4 females, 2%) and 3 patients had non-Hodgkin disease including one male and two females (0.6%). All patients were between 15 and 40 years old. Maximum patients (5) with lymphoma were between 21 and 30 years which shows consistency with previous studies.

15 cases on FNAC yielded a polymorphous lymphoid population with no significant pathology.

CONCLUSION

FNAC is the first line safe, quick, economical, and reliable investigation tool in diagnosing non-neoplastic and neoplastic lesions. Tuberculous cervical lymphadenitis was the most common pathology in our study. The modality of treatment can be focused on the results of FNAC in patients

with lymphadenopathy. Our study highlighted various cytomorphological patterns of lymphadenopathy distribution with age and sex.

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