CYTOMORPHOLOGICAL STUDY OF LYMPHADENOPATHY AT A TERTIARY HEALTH CARE HOSPITAL IN KATHMANDU

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ABSTRACT

Lymphadenopathy is most commonly encountered problems in clinical practice. Various etiological factors can cause lymphadenopathy. Cytomorphological study of lymphadenopathy is a window for diagnosis of many disease processes. Aspiration cytology provides a reliable, safe, rapid and economical method of screening the patients with accuracy. It can differentiate neoplastic from non-neoplastic lesions and therefore influences patient management preventing patient from being subjected to unnecessary surgery. Hospital based descriptive study was carried out in the Department of Pathology of a tertiary health care hospital in Kathmandu over a period of three years (1st June 2019 to 30th May 2022). A total of 331 cases of lymphadenopathy were included in the study. The aim of this study was to evaluate the cytomorphological findings of lymphadenopathy. Out of 331 cases of lymphadenopathy, 281 (84.9%) of the cases were non-neoplastic and 47 (14.2%) were neoplastic. Among non neoplastic lesions, reactive lymphadenitis 113 (34.1%) was the most common diagnosis followed by tubercular lymphadenitis, granulomatous lymphadenitis, suppurative lymphadenitis and necrotizing lymphadenitis. Among neoplastic, 40 (12%) were metastatic carcinoma and 7 (2.1%) were lymphoma. Among metastatic carcinoma the most common was squamous cell carcinoma followed by breast carcinoma, adenocarcinoma, papillary carcinoma of thyroid. Other metastatic carcinoma were small cell carcinoma of lung and melanoma. This study showed that cytomorphological study of lymph node is a convenient procedure for accurate assessment of patients with lymphadenopathy.

KEYWORDS

Lymphadenopathy, fine needle aspiration cytology (FNAC), cytomorphology, reactive lymphadenitis, metastasis

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INTRODUCTION

Lymph nodes are a site for organized collections of lymphoreticular tissue and are pink gray bean shaped encapsulated organs. They are located at anatomically constant points along the course of lymphatic vessels. The common sites of distribution are cervical, axillary, mediastinal, retroperitoneal, iliac, and inguinal regions.[1]

Lymphadenopathy is a common presenting symptom in various diseases. There are various causes for lymphadenopathy which range from benign conditions to malignant either primary or secondary from draining primary tumor. Lymphadenopathy can be localized to a single group or generalised.[2] In developing countries, infective lymphadenopathy is quite common, mostly due to high prevalence of tuberculosis. However, still a large percentage of lymphadenopathies in adults turn out to be malignant.[3] Lymph node enlargement is also a common clinical findings in pediatric population as well. It may be normal age related physiological changes or pathologic.[4]

The modern method of fine needle aspiration cytology (FNAC) was introduced by Martin and Ellis in 1930.[5] FNAC of the lymph nodes is a simple and rapid diagnostic procedure which can decide the nature of the lymphadenophathy.[6] It is also an inexpensive diagnostic technique with minimal trauma and high specificity.[7,8]

Use of aspiration cytology decides the nature of lymphadenopathy and is thus accepted as a primary method of diagnosis in reactive, infective and metastatic lymphadenopathy.[9] FNAC in combination with immunological evaluation has distinctly improved diagnostic accuracy in cases of lymphoma as well. Being a minimally invasive technique, it is particularly suitable in sensitive area where incision biopsy is difficult and it avoids need of surgery if the lesions show non- neoplastic, suspected metastatic or recurrent tumor.[10-12]

Thus, knowledge about the pattern of lymphadenopathy facilitates pathological reporting and helps the clinician in making focused investigation and planning the treatment course. This study was carried out to determine the cytomorphological patterns of lymphadenopathy at Nepal Medical College Teaching Hospital (NMCTH) and to distinguish pathologic from non-pathologic lymph nodes as well as to develop a rational approach to the evaluation of lymphadenopathy.

MATERIALS AND METHODS

This is a hospital based descriptive study carried out in the Department of Pathology of NMCTH over a period of three years (1st June 2019 to 30th May 2022). Ethical approval was taken from Institutional Review Committee, NMCTH before starting the study. All the data, informations and findings were retrieved from the departmental records and computer. A total of 331 cases of lymphadenopathy were included in the study. Data collected were compiled and analysed using MS Excel spreadsheet. Descriptive statistics was analyzed for the quantitative outcomes. The qualitative data was presented with frequency and percentage.

RESULTS

A total of 331 cases of lymphadenopathy were included in the study. The age of the patients ranged from 3 years to 85 years. The most common age group was 21-30 years (27.8%), followed by 11-20 years (20.9%). The least common age group was < 10 years (6%) (Table 1).

Table 1: Age distribution of the patients

Age group (Years)	n	%
≤10	20	6.0
11-20	69	20.9
21-30	92	27.8
31-40	52	15.7
41-50	30	9.1
51-60	24	7.3
>60	44	13.3
Total	**331**	**100**

Among all the patients, 125 (37.8%) were males and 206 (62.2%) were females with M: F ratio of 0.6:1. Females were more commonly affected than male.

The most common site of aspiration was cervical lymph node with 275 cases (83.1%), followed by axillary lymph node 34 (10.3%), inguinal lymph

Table 2: Sites of lymph nodes

Site	n	%
Cervical	275	83.1
Axillary	34	10.3
Inguinal	15	4.5
Intraabdominal	7	2.1
Total	**331**	**100**

Table 3: Cytomorphological findings of lymph nodes

Cytomorphological findings			
Category	**Diagnosis**	**n**	**%**
Non neoplastic		281	84.9
Lymphadenitis	Reactive lymphadenitis	113	34.1
	Tubercular lymphadenitis	53	16.0
	Granulomatous lymphadenitis	49	14.8
	Necrotising granulomatous lymphadenitis	27	8.2
	Suppurative lymphadenitis	25	7.6
	Necrotising lymphadenitis	14	4.2
Others (suspicious)		**3**	**0.9**
Neoplastic lesions		**47**	**14.2**
Metastatic carcinoma	Squamous cell carcinoma	14	4.2
	Breast carcinoma	7	2.1
	Adenocarcinoma	4	1.2
	Papillary carcinoma of thyroid	3	0.9
	Small cell carcinoma of lung	2	0.6
	Poorly differentiated carcinoma	2	0.6
	Melanoma	1	0.3
	Metastatic carcinoma(differentiation was not possible)	7	2.1
Lymphoma	Non-Hodgkin's lymphoma	6	1.8
	Hodgkin's lymphoma	1	0.3
Grand Total		**331**	**100.0**

node 15 (4.5%) and intraabdominal lymph node 7 (2.1 %). Among intraabdominal lymph nodes, 5 (1.5%) were mesenteric lymph nodes and 2 (0.6%) were para-aortic lymph nodes (Table 2).

Among 331 cases, 281 (84.9%) were non-neoplastic and 47 (14.2%) were neoplastic. Suspicious for malignancy were 3 (0.9%). Among neoplastic, 40 (12%) were metastatic carcinoma and 7 (2.1%) were lymphoma.

Among non neoplastic lesions, reactive lymphadenitis 113 (34.1%) was the most common diagnosis followed by tubercular lymphadenitis, granulomatous lymphadenitis, suppurative lymphadenitis and necrotizing lymphadenitis (Table 3).

Among metastatic carcinoma, most common was squamous cell carcinoma 14 (4.2%) followed by breast carcinoma 7 (2.1%), adenocarcinoma 4 (1.2%), papillary carcinoma of thyroid 3 (0.9%). There were 2 cases (0.6%) of small cell carcinoma of lung and 2 cases (0.6%) cases of poorly differentiated carcinoma. Single case (0.3%) of metastatic melanoma was seen. Seven cases (2.1%), in which differentiation was not possible and report was given as metastatic carcinoma (Table 3).

DISCUSSION

Lymphadenopathy is a common presentation in our department and FNAC is a simple invasive OPD procedure. Different etiological factors play a major role in causation of lymphadenopathy in different age groups. Cytomorphological study of lymphadenopathy can differentiate neoplastic from non-neoplastic lesions and help the clinician to plan the management.

In this study among 331 lymphadenopathy, male: female ratio was 0.6:1. There was a slight female preponderance in our study. Similar observations were seen in the studies done by Rajsekran *et al*[13] and Ahmad *et al*.[14] However, other two studies done in central part of Nepal and India showed male predominance.[15,16]

Lymphadenopathy can be seen in patients ranging from very early to advanced age. In this study, the youngest patient was 2 years old and oldest patient was 85 years old. In this study most common age group of presentation was 21-30 years (27.8%). This correlates well with studies done by Kumar *et al*[16] and Shrestha *et al*[17] where the common age group was 21 to 40 years (64.9%) and 30-39 years (25.2%) respectively. The age related difference could be due to variation in the risk factors among the different age groups.

The most common site of aspiration was cervical lymph node with 275 cases (83.1%), followed by axillary lymph node 34 (10.3%). Similar finding was seen in a study done by Malhotra *et al*[18] where cervical region (71.7%) was the most affected one followed by axillary region (11.1%). Patel *et al*[19] also found the cervical lymph node (68.4%) as the most common finding followed by submandibular (10.8%), supraclavicular(10%) and axillary (5.2%) lymph nodes.

In the present study, non neoplastic lesions, 281 (84.9%) were more common than neoplastic lesions, 47 (14.2%). This finding was similar to other studies done in Nepal and different parts of India.[19-21]

Reactive lymphadenitis 113 (34.1%) was the most common diagnosis followed by tubercular lymphadenitis 53 (16%). Several studies done in Nepal also showed reactive lymphadenitis as the most common diagnosis.[20-23] Tubercular lymphadenitis was the most common cause of lymphadenopathy in studies done in different parts of India and Pakistan.[18, 24 -26]

In the present study most common metastatic carcinoma was squamous cell carcinoma. Similar findings were seen in studies done by Minali *et al*[27] and Hirachand *et al*.[28] In contrast to these studies, Malhotra *et al*[18] and Husu *et al*[29] found adenocarcinoma and nasopharyngeal carcinoma as the most common metastatic carcinoma.

Our study showed two cases (0.6%) of metastatic small cell carcinoma and a single case of metastatic melanoma (0.3%). This correlates well with study done by Vimal *et al*,[1] who reported two cases of metastatic melanoma and a single case of metastatic small cell carcinoma.

Seven cases (2.1%) of lymphoma were found in this study, out of which 6 cases (1.8%) were of non-Hodgkin's lymphoma and 1 case (0.3%) was of Hodgkin's lymphoma. Similar findings was seen in the study by Narang *et al*,[30] where five cases (2.67%) of lymphoma were diagnosed out of which four cases (2.14%) were non-Hodgkin's lymphoma and one case (0.53%) was Hodgkin's lymphoma. In a study by Gurung *et al*,[31] there were five cases of lymphoma (4%) and all were diagnosed as non-Hodgkin's lymphoma.

This study showed that the reactive lymphadenitis is the most common cause of lymphadenopathy followed by tubercular lymphadenitis. Since tubercular lymphadenitis is also not uncommon in our country, an early diagnosis could be of great help to plan the treatment and FNAC proved to be safe and economical outpatient department procedure. In case of metastatic carcinoma also, FNAC has contributed in the early diagnosis as well as cutting down down the necessity of trucut or excisional biopsy. Thus, FNAC has proved to be a convenient procedure to assess the lymphadenopathy.

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