(International Print/Online Journal)

SJIF IMPACT FACTOR: 5.565
PUBMED-National Library of Medicine ID-101739732

ISSN (Print): 2209-2870
ISSN (Online): 2209-2862

International Journal of Medical Science and Current Research (IJMSCR)
Available online at: www.ijmscr.com
Volume 6, Issue 1 , Page No: 527-534
January-February 2023

IJMSCR

Evaluation Of Cytomorphological Patterns In Peripheral Lymphadenopathy: A 2 Years Retrospective Study.

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Type of Publication: Original Research Paper
Conflicts of Interest: Nil

Abstract

Background: Lymphadenopathy is one of the common health issues among all age groups. Inflammation in lymph nodes is lymphadenopathy. The abnormal enlargement of lymph nodes due to any underlying cause such as infection, malignancy, etc results in lymphadenopathy. Lymph nodes located deep in the subcutaneous tissue are called peripheral lymph nodes. Peripheral lymphadenopathy is a common clinical presentation. The cytomorphological diagnosis of lymph node is assessed by FNAC in various non-neoplastic and neoplastic conditions The aim of this study was to determine the cytomorphology of peripheral lymphadenopathy and to analyse the data in relation to age, gender, topography.

Method: A two-year retrospective study was conducted in the Post Graduate Department of Pathology, Acharya Shri Chandra College of Medical Sciences and Hospital, Jammu and cytomorphological data pertaining to lymph nodes was reviewed. Each case was analysed with respect to age, gender, site and cytomorphological type.

Results: Seventy-five cases of lymphadenopathy were analysed during this two-year period. Age range was from 3 years to 80 years with maximum cases in the age group >60 years (27%). The male : female ratio was 1.34:1. In our study Non Specific Reactive Hyperplasia (NSRH) was most common cytomorphological diagnosis seen in 37.3% cases followed by metastatic deposits in 26.7% and granulomatous lymphadenitis in 17.3% cases respectively.

Conclusion: We conclude that site specific data like this is helpful in cytomorphological evaluation of peripheral lymphadenopathy and augment the baseline data of institute and the region.

Keywords: Cytomorphology, Lymphadenopathy, Lymphadenitis, Evaluation and Lymph nodes.

Introduction

The lymphatic system is a complex component of the immune system involved in filtering substances in the body. It consists of a network of tissues, nodes, vessels, ducts and organs which allows the flow of lymph. There are about 500-600 lymph nodes throughout the human body. Lymph nodes filter the fluid from the lymphatic system.[1,2,3]

Inflammation in lymph nodes is called lymphadenopathy. The abnormal enlargement due to any underlying cause such as infection, malignancy, granulomatous diseases etc. results in lymphadenopathy.[4]

Lymphadenopathy is one of the commonly encountered health issues in all age groups. Etiology of lymphadenopathy varies from benign reactive conditions to malignant disorders. Lymphadenopathy

is characterized by increased size, number and abnormal consistency of the lymph nodes. Lymphadenopathy can be localized or generalized.[5]

Lymph nodes located deep in the subcutaneous tissue and which can be palpated when enlarged are referred to as peripheral lymph nodes. Peripheral lymphadenopathy is a common clinical presentation. Cytological evaluation of peripheral lymphadenopathy is helpful in diagnosis of infective conditions, lymphomatous etiology and metastatic lesions. Clinical and pathological staging of cancer is dependent on the identification of lymph node metastasis. The confirmatory test of lymphadenopathy is made with the help of fine needle aspiration cytology (FNAC). FNAC is a cost–effective and minimal invasive procedure and peripheral lymph nodes are easily accessible to FNAC. Surgical biopsy is the gold standard for diagnosis. [6]

The present study is aimed to assess the utility of FNAC in diagnosing underlying cause of peripheral lymphadenopathy and to evaluate the cytomorphology of peripheral lymphadenopathy as information regarding site and cytomorphological diagnosis is helpful in management of the patients. Only a few studies have been reported so far focusing overall cytomorphological spectrum of peripheral lymphadenopathy and incidence of various lymph node diseases of this region.

Materials And Methods

This study was conducted in the Post Graduate Department of Pathology, ASCOMS and Hospital, after obtaining due clearance from Institutional Ethics Committee via reference no .RP&T/2022/510. The study consisted of retrospective analysis of two years w.e.f. 1 May 2019 to 30 April 2021.

A total of 75 cases were analysed. In all the patients FNAC was performed by using 23-gauge needle under the strict septic techniques. Some of the cases were difficult to aspirate, therefore needed USG guided FNAC. The aspirated sample was smeared on four slides - 2 were immersed in 95% ethanol and other 2 were air dried. All slides were stained for every patient. Alcohol fixed slides were stained by haematoxylin and eosin (H&E) and air dried smears were stained with giemsa stain for further evaluation as per the protocols.

Each case was analysed with respect to age, gender, clinical presentation, site and cytomorphological type.

Results

A total 75 cases of peripheral lymphadenopathy were analysed.

Table 1: Shows the age distribution of study subjects. It was observed that majority of the study subjects (27%) were in >60 years of age, followed by 51-60 years (19%), <10 years (15%), 41-50years (13%), 21-30 years,11-20 years (11%) and 31-40 years (4%).

Table 2: It was reported that majority of the study participants were males (57.3%) followed by 42.7% females. The male female ratio was 1.34:1.

Table 3: The cervical lymph nodes were observed in most (72.1%) of the cases, followed by axillary lymph node (25.3%), and inguinal node (2.6%) as shown in table 3.

Table 4 depicted the distribution of cytomorphological diagnosis. Maximum number of cases were found to be of Non Specific Reactive Hyperplasia (34.6%) followed by Metastatic Deposits (22.6%), Granulomatous lymphadenitis (17.3%) , Acute suppurative lymphadenitis (9.3%), Necrotising lymphadenitis (5.3%), Non-Hodgkin lymphoma (5.3%) Hodgkin lymphoma (4%), and vascular transformation of lymph nodes (1.3%) cases.

Table 5 shows the anatomical distribution and cytodiagnosis. It was observed that involved axillary lymph nodes show acute suppurative lymphadenitis in 4 cases, granulomatous lymphadenitis in 3 cases, metastatic deposits in 4 cases, necrotising lymphadenitis in 2 cases, non-specific reactive hyperplasia in 3 cases, non-Hodgkin lymphoma in 1 case and Hodgkins lymphoma in 1 case. Cervical lymph nodes involve acute suppurative lymphadenitis in 3 cases, granulomatous lymphadenitis in 10 cases, metastatic deposits in 13 cases, necrotising lymphadenitis in 2 cases, non-specific reactive hyperplasia in 23 cases, non-Hodgkins lymphoma in 2 cases and Hodgkins lymphoma in 2 cases. Inguinal lymph nodes involve non-Hodgkin lymphoma in 2 cases and vascular transformation in 1 case. Submandibular lymph nodes involve acute

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suppurative lymphadenitis in 2 cases and granulomatous lymphadenitis in 1 case.

Table 1:Age distribution

Age	Frequency	Percentage
<10	11	15.0
11-20	8	11.0
21-30	9	12.0
31-40	3	4.0
41-50	10	13.0
51-60	14	19.0
>60	20	27.0
Total		100

Table 2: Gender distribution

Gender	Frequency	Percentage
Male	43	57.3
Female	32	42.7
Total	75	100

Table 3: Site distribution

Anatomical Distribution	Frequency	Percentage
Axillary Lymph Node	19	25.3
Cervical Lymph Node	54	72.1
Inguinal Node	2	2.6

Table 4: Distribution of Cytomorphological Diagnosis

Cyto- diagnosis	No.of cases
Acute suppurative lymphadenitis	7
Granulomatous Lymphadinitis	13

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Metastatic Deposits	17
Necrotising Lymphadinitis	4
Non Specific Reactive Hyperplasia	26
Non-Hodgkin lymphoma	4
Hodgkin lymphoma	3
Vascular Transformation of Lymph Nodes	1
Total	75

Table 5: Site distribution and Cytodiagnosis

Site	Acute suppurative lymphadenitis	Granulomatous Lymphadenitis	Metastatic Deposits	Necrotising Lymphadenitis	Non Specific Reactive Hyperplasia	Non-Hodgkin lymphoma	Vascular Transformation of Lymph Nodes	Hodgkins lymphoma
Axillary Lymph Node	**4**	**3**	**4**	**2**	**3**	1	0	1
Cervical Lymph Node	**3**	**10**	**13**	**2**	**23**	**2**	**0**	2
Inguinal Node	0	0	0	0	0	1	1	0

Figure 1: Age distribution

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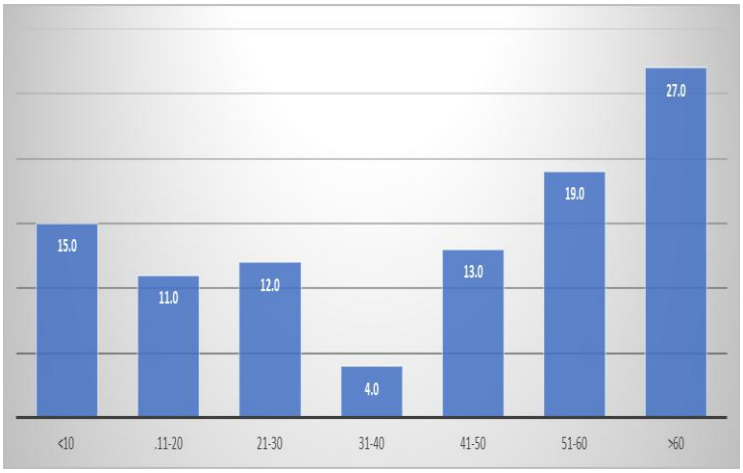

Figure 2. Gender distribution

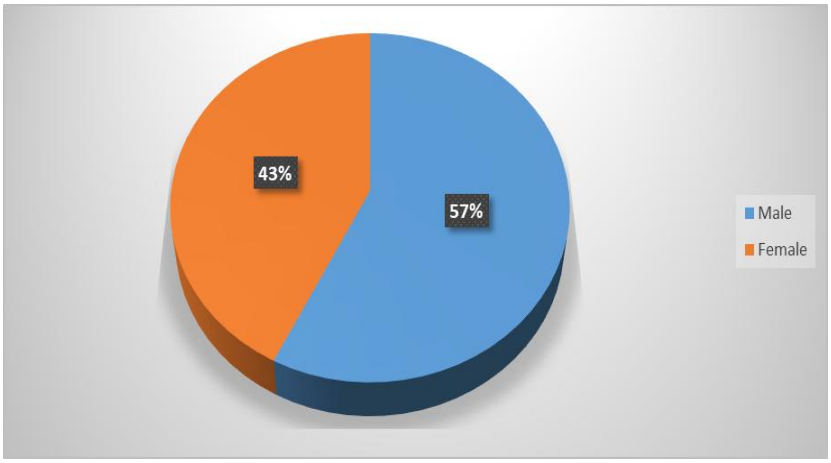

Figure 3. Site distribution

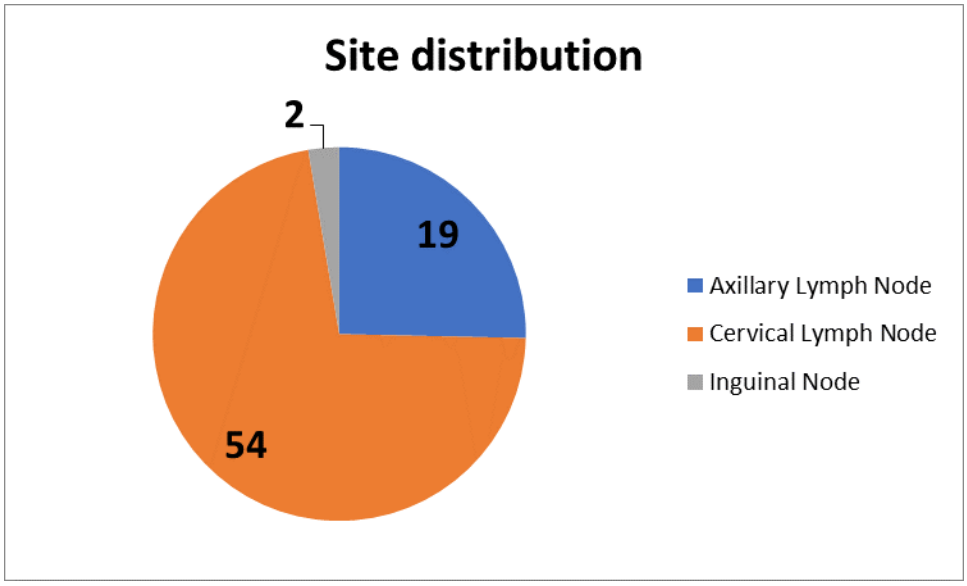

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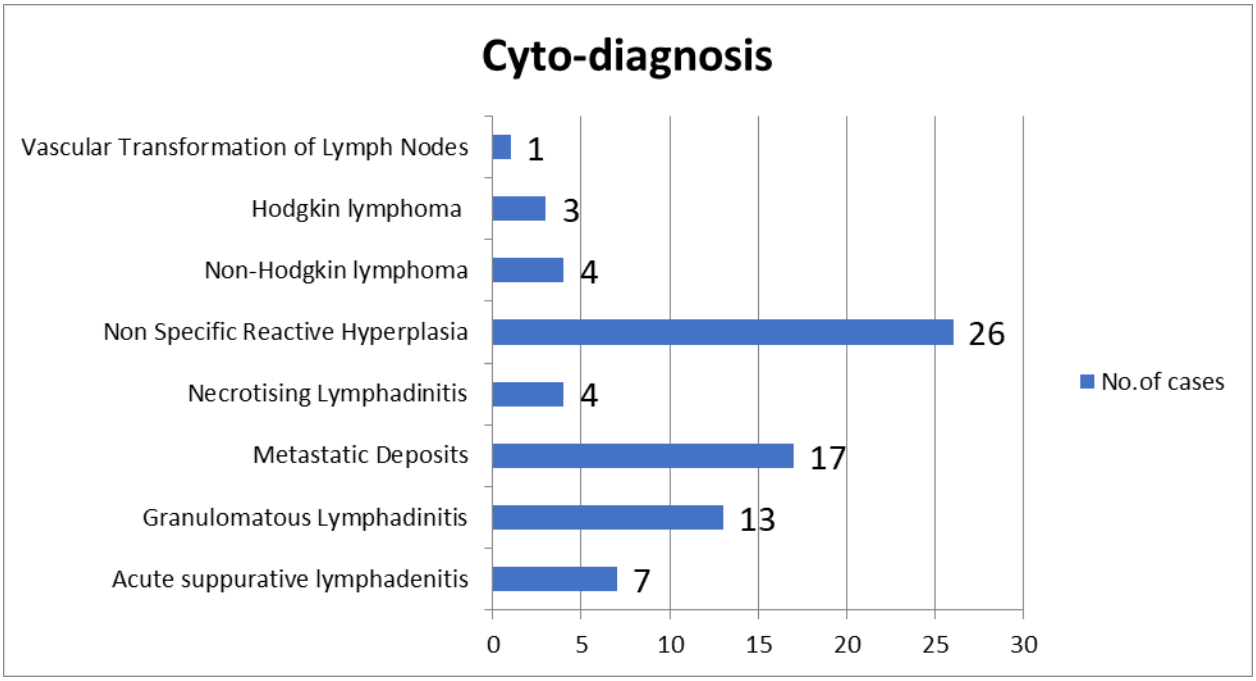
Figure 4. Distribution of Cytomorphological Diagnosis



Discussion

Peripheral lymphadenopathy is amongst one of the most commonly aspirated conditions or lesions by FNAC. Due to simplicity of FNAC and the fast results that it gives, it has now become the first investigation tool to evaluate enlarged peripheral lymph nodes. In our country where infections are still extensive, it is important to give a quick diagnosis so that the treatment can be started at the earliest. In the present study a total of 75 cases of peripheral lymphadenopathy reported during the period of 2 years w.e.f. 1 May 2019 to 30 April 2021 were analysed.

In our study majority of the cases were seen in the age group of >60 years of age (27%), followed by 51-60 years age group (19%), <10 years (15%), 41-50 years (13%), 21-30 years (12%), 11-20 years (11%) and 31-40 years (4%). Since we got higher no. of cases in the age group > 60 years. This may be because of prevailing Covid scenario during the period of this study as majority of patients reported were in dire need of diagnosis and only those patients attended OPD`s. Due to this reason also we got less number of cases for the study. However, a study conducted by Kumar A et al., majority of the patients with lymphadenopathy were in the age group of 21-30 years (21.3%), followed by 31-40 years (17.30%), 11-20 years age (9.30%).[5]

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57.3% patients were males followed by 42.7% females. The male female ratio was 1.34:1. Similarly Mustaqueen SF reported that the majority of the study participants were males (58.3%) followed by 41.7% females. The male and female ratio was 1.39:1.[7] This is also similar to the studies done by Giri and Singh [8], Hirachand et al.,[9] and Patil et al. [10].

The cervical region was observed to be the most common site (72.1%), followed by axillary lymph node (25.3%) and inguinal lymph nodes (2.6%). In a similar study conducted by Shah PC et al. (2016) reported that most common region involved was cervical (88.5%), followed by axillary lymph nodes (6.5%), inguinal lymph nodes (4.1%) and 0.9% study participants had generalized lymph nodes.[11]

It was found that Non-Specific Reactive Hyperplasia was most common (34.6%) cases followed by Metastatic Deposits in (22.6%), Granulomatous lymphadenitis in (17.3%) cases, Acute suppurative lymphadenitis in (9.3%), Necrotising lymphadenitis in (5.3%), non-Hodgkin lymphoma (5.3%), Hodgkins's lymphoma (4%) and vascular transformation of lymph nodes in (1.3%) cases. Findings are consistent with the study conducted by Srivastav A et al, Mohanty R et al and Pandey P et al. However, Malhotra AS et al. found that the tubercular lymphadenitis (44.02%) was the single most common cause of lymphadenopathy followed by reactive lymphadenitis (42.64%), metastatic lesions (9.40%), and malignant lymphoma (4.70%).[12]

It was observed that axillary lymph nodes involve acute suppurative lymphadenitis in 3 cases, granulomatous lymphadenitis in 2 cases, metastatic deposits in 4 cases, necrotising lymphadenitis in 2 cases, non-specific reactive hyperplasia in 3 cases, non-Hodgkins's lymphoma in 1 case and Hodgkin's lymphoma in 1 case. Cervical lymph nodes involve acute suppurative lymphadenitis in 2 cases, granulomatous lymphadenitis in 10, metastatic deposits in 13 cases, necrotising lymphadenitis in 2 cases, non-specific reactive hyperplasia in 23 cases, non-hodgkins lymphoma in 2 cases and Hodgkins's lymphoma in 2 cases. Inguinal lymph nodes involve non-Hodgkin lymphoma in 2 cases and vascular transformation in 1 case. Submandibular lymph nodes involve acute suppurative lymphadenitis in 2 cases and granulomatous lymphadenitis in 1 case. The findings of our study are similar to the study conducted by Pandey P et al where they reported 277 cases of benign lesions. Out of which reactive hyperplasia was found in 121(30.63%), followed by tuberculous lymphadenitis 113(28.60%) and pyogenic lymphadenitis in 43(10.88%). And among the 113 cases of malignant lesions, 90(22.78%) cases of metastatic carcinoma consisted of malignant lymphomas in 23(5.82%) ; including NHL in 15(3.80%) and HL 8(2.02%). AFB was confirmed in 78(69.02%) cases by ZN staining of FNAC smears.

In this study, it was found that FNAC is a highly diagnostic tool in the evaluation of superficial lymphadenopathy of cervical, axillary and inguinal regions. We found that non-specific reactive hyperplasia was the most common reason for lymphadenopathy. Also, in the older age group metastatic carcinoma was more common, in contrast to the younger age group where non-specific reactive hyperplasia was more frequent.

Conclusion

The present study concluded that FNAC is simple, minimally invasive, inexpensive and rapid diagnostic tool in the diagnosis of lymphadenopathy. It was found in the present study that non-specific reactive hyperplasia in 34.6% patients followed by metastatic deposits in 22.6% patients and granulomatous lymphadenitis in 17.3% patients. FNAC plays an important role in places where histopathological facilities are not available, in early diagnosis of benign and malignant lesions and also helps in planning early management of lymphadenopathies. FNAC can categorize the cause of lymphadenopathy into reactive, inflammatory/infectious, metastatic and lymphoproliferative , thus avoiding the need for excisional biopsy. Further in predicting the cause of lymphadenopathy, age, gender and site of lymphadenopathy also provides the useful information as metastatic carcinoma was more common in the older age group, tuberculous lymphadenitis in middle age, and non-specific reactive hyperplasia in the younger ae group. A cytomorphological diagnosis of metastasis helps in avoiding unwanted surgical biopsy for confirming metastasis in patients with a known histologically proven malignancy in whom a subsequent enlargement of lymph node occurs.

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