Print ISSN: 2321-6379
Online ISSN: 2321-595X
DOI: 10.17354/ijss/2017/363

Original Article

Spectrum of Reactive and Metastatic Pathologies in Evaluation of Peripheral Lymph Node in Tertiary Health Center

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Abstract

Introduction: Lymphadenoapthy is commonly encountered clinical entity. Appropriate diagnosis and thus treatment modality of cause is important in approach to such cases. Fine-needle aspiration cytology being less discomforting to patients is preferred before going for open biopsy of such swellings.

Purpose of Study: The aim of this study was to evaluate the spectrum from reactive pathologies to metastases to peripheral lymph nodes in various malignancies in tertiary health center.

Materials and Methods: The data pertaining to the details of the patients who underwent fine-needle aspiration (FNA) evaluation of superficial and deep lymph nodes from the period May 2016 to May 2017 at Silchar Medical College and Hospital, Silchar was analyzed to determine the age- and sex-distribution of the patients and the distribution of pathologies diagnosed on FNA evaluation of the lymph nodes.

Results: In this study, a total of 128 patients underwent evaluation of peripheral lymphadenopathies. 58 were male patients (74.24%) outnumbering females (25.76%). The majority of patients were in age group of 21-60 years. Non-specific reactive lymphadenitis is most common cause for reactive hyperplasia of lymph nodes followed by granulomatous lymphadenitis. Among various metastatic malignancies squamous cell carcinoma metastasis are most common.

Conclusion: FNA evaluation is a quick, easy, relatively non-traumatic, and, in expert hands, a reliable method of diagnosing the pathology underlying enlarged peripheral lymph nodes.

Key words: Peripheral lymphadenopathy, Ractive hyperplasia of lymph nodes, Squamous cell carcinoma metastasis

INTRODUCTION

Among patients attending the outdoor department one of the most common clinical presentations is lymphadenopathy. Spectrum of etiology varies from inflammatory causes to malignant ones.[1] Fine-needle aspiration cytology (FNAC) is a clinical technique to obtain cells, tissues and/or fluid through a thin needle attached with disposable syringe for the purpose of diagnosis of enlarged swellings.[2] De may has summarized the FNAC with the acronym of SAFE: Simple, accurate, fast, and economical.[3] It can differentiate between non-neoplastic and neoplastic lesions.[3,4] Because of early availability of results, simplicity, minimal trauma, and absence of complications, the aspiration cytology is now considered a valuable diagnostic aid. The cytomorphological features collaborates with histopathology and has qualities of a micro-biopsy.[5,6] The outcome of FNAC can be improved by proper clinical assessment of lesion, careful procedure, and adequate smear preparation.

This study was undertaken to identify the causes of lymphadenopathy among patients referred for FNAC evaluation of their enlarged lymph nodes to the department of our tertiary care hospital located in Silchar, India.

Access this article online

www.ijss-sn.com

Month of Submission : 05-2017
Month of Peer Review : 06-2017
Month of Acceptance : 07-2017
Month of Publishing : 07-2017

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MATERIALS AND METHODS

In this study, retrospective, systematic data were retrieved from existing records in Department of Pathology, Silchar Medical College and Hospital.

During the study period of 1 year (May 2016 to May 2017), a total of 128 patients were referred to cytopathology Department in Silchar Medical College and Hospital for FNAC of single or multiple enlargements of lymph nodes. Patients with either superficial or deep lymph node enlargements were included in the study.

These patients underwent FNAC evaluation of enlarged lymh nodes using 22 to 23 G needles with 10 cc syringe attached. Consent was taken before aspiration procedure. Consequent to the study clinical profile of each patient persuing relevant investigation results were collected.

Smears were prepared on clean glass slides as per standard techniques, and the smears either wet fixed by immersing the slides in 95% methanol or air-dried. Where aspirate was scanty, all slides were wet-fixed only. Wet-fixed smears were stained by hematoxylin and eosin and Papanicolaou's (Pap) stains. Air-dried smears were stained by Giemsa stain. Special stains like Ziehl–Neelsen stains were also used wherever required.

All slides after staining were mounted using standard cover slips, and then, analyzed by standard microscopy. Diagnosis was made by either a single cytopathologist or, where mandated, by two or more cytopathologists. In cases where malignant deposits or lymphoproliferative disorders were diagnosed on FNAC, it was recommended that the patients be referred to biopsy and histopathologic examination of the lesions.

At the end of the study period, the results of the FNAC analyses were retrieved from the cytopathology archives and analyzed to establish the spectrum of pathologies reported on FNAC during the period under study. The age and gender profile of the patients was also studied. Data were analyzed using MS Excel sheet and calculations of incidence made from the same.

No correlation with biopsy reports was undertaken during this study as in the majority of cases excised lymph nodes were not received for histopathological evaluation.

RESULTS

A total of 128 patients reported for FNAC evaluation of enlarged peripheral lymph nodes during the period May 2016 to May 2017. The distribution of lesions diagnosed is given in Figure 1. During the entire study period, a diagnosis of non-specific reactive lymphadenitis was given in 54 aspirates, out of 128 (42.25% of cases) and was the most common diagnosis offered. Granulomatous lymphadenitis, caseating or non-caseating, was diagnosed in 42 aspirates (33.15%) and was the second most common diagnosis offered.

The age and gender distribution of all the cases, year wise, is given in Table 1. Male patients constituted 74.24% of the cases overall (95 out of 128 aspirates). Most of the patients were in the age group 21-60 years. No age or gender specific predilection was seen for any of the pathologies reported.

Granulomatous lymphadenitis was diagnosed by the presence of epithelioid cell granulomas, with or without central caseating necrosis. We routinely do AFB stain on such smears in our laboratory.

In our spectrum, non-specific reactive lymphadenitis is most common pathology. Key features to assign the diagnosis of the same are the presence of polymorphous lymphoid population and tingible body macrophage.

Among small round cell tumor (which total count for 9 cases out of 128; 7.03%), in six cases poorly differentiated carcinoma were suspected while in three cases provisionally, diagnosis of non-Hodgkins lymphoma was given.

Non-Hodgkin's lymphoma was diagnosed by the presence of a monotonously uniform population of lymphocytic cells scattered singly in a highly cellular smear and the absence of Reed Sternberg cells.

Diagnosis of metastatic deposits was seen in 16 cases. Possible types of metastatic deposits are given in Table 2. The majority of case are above 50 years of age. Metastatic

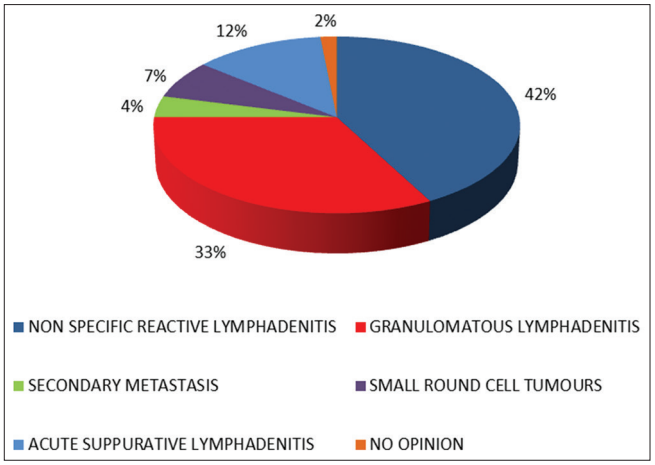

Figure 1: Distribution of lymph nodes pathologies

Table 1: Age and sex distribution

Age (years)	NSRL	Granulomatous	Acute suppurative	SRCT	Metastasis	No opinion
0-10	2 (m) 2 (f)	1 (m) 0 (f)				
11-20	8 (m) 1 (f)	4 (m) 2 (f)	1 (m) 0 (f)	1 (m) 0 (f)		
21-30	8 (m) 3 (f)	4 (m) 5 (f)	0 (m) 1 (f)	2 (m) 0 (f)	0 (m) 1 (f)	
31-40	9 (m) 4 (f)	11 (m) 2 (f)	2 (m) 0 (f)	0 (m) 1 (f)	1 (m) 1 (f)	0 (m) 1 (f)
41-50	8 (m) 2 (f)	5 (m) 2 (f)	0 (m) 1 (f)	3 (m) 0 (f)	3 (m) 1 (f)	
51-60	4 (m) 1 (f)	4 (m) 1 (f)		2 (m) 0 (f)	3 (m) 0 (f)	1 (m) 0 (f)
>60	2 (m) 0 (f)	1 (m) 0 (f)			5 (m) 1 (f)	
Total	41 (m) 13 (f)	30 (m) 12 (f)	3 (m) 2 (f)	8 (m) 1 (f)	12 (m) 4 (f)	1 (m) 1 (f)
Total (%)	54 (42.19)	42 (32.81)	5 (3.91)	9 (7.03)	16 (12.5)	2 (1.56)

m: Males, f: Females, NSRL: Non-specific reactive lymphadenitis, SRTC: Small round cell tumor

Table 2: Types of metastatic deposits

Type of metastatic deposit	Total	Male	Female	>50 years	<50 years
Squamous cell carcinoma	7	5	2	6	1
Invasive ductal carcinoma	4	2	2	4	0
Adenocarcinoma	3	2	1	3	0
Undifferentiated carcinoma	2	1	1	1	1
Total	16	10	6	14	2

squamous cell carcinoma is the most common etiology seen. However, for the rest, distribution is fairly equal among all morphologies.

Metastatic deposits were diagnosed based upon morphological patterns and cellular details. Squamous cell carcinoma and adenocarcinoma metastases are shown in Figures 2-9.

No opinion was possible in 2 out of 128 cases (1.56%) due to inadequate aspirated material on the smears. This was due to the extremely small size of the lymph nodes accessed.

DISCUSSION

FNAC is a valuable diagnostic tool for establishing a diagnosis in cases of superficial lymphadenopathy.[1] This technique has limited the need for excision of enlarged lymph nodes, especially in cases of reactive and tubercular lymphadenitis. However, gray areas still exist in the establishment of an exact diagnosis, especially in the case of one of the small round cell tumors, where distinguishing low-grade non-Hodgkin's lymphoma from a reactive hyperplasia may pose a diagnostic dilema even in experienced hands.[5,6]

In this series of cases, non-specific reactive lymphadenitis was the most common diagnosis. Similar findings were noted by Shrivastav *et al.*, Mohanty and Wilkinson and Pandey *et al.*[7-9]

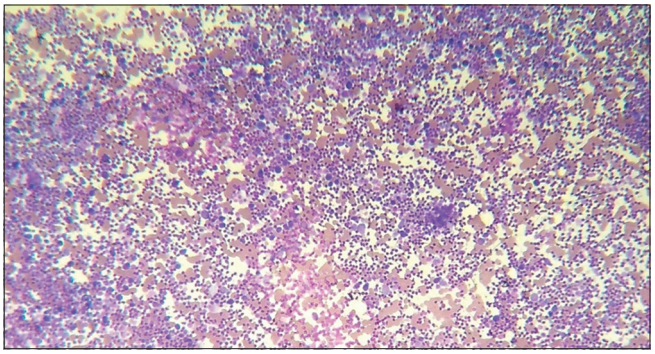

Figure 2: Non-specific reactive lymphadenitis (MGG stain, ×10)

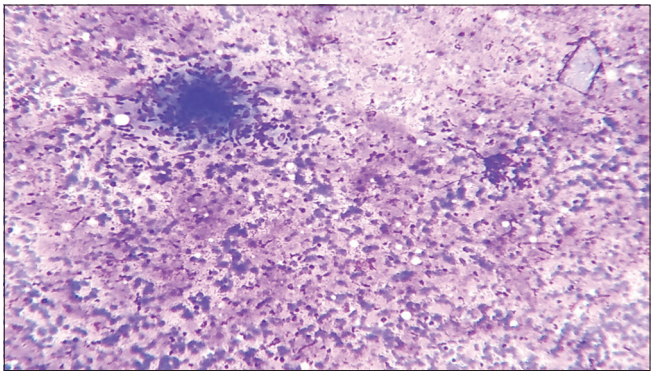

Figure 3: Granulomatous lymphadenitis (MGG stain, ×10)

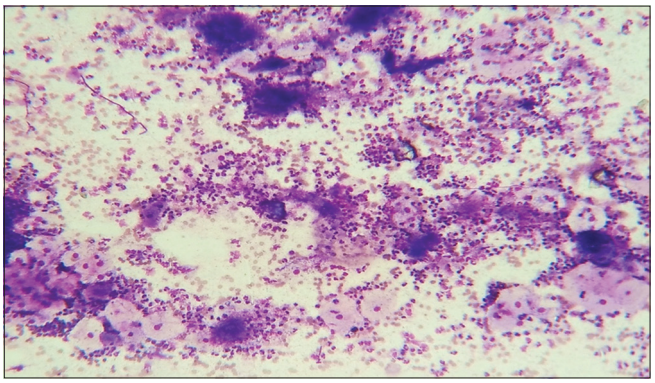

Figure 4: Metastatic suamous cell carcinoma (MGG stain, ×10)

This is in contrast to the series of Shah *et al.* where tubercular lymphadenitis was the most common diagnosis.[10] In this

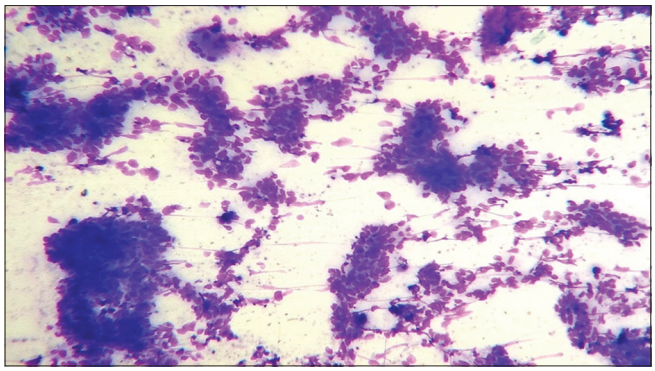

Figure 5: Metastatic invasive duct carcinoma of breast (MGG stain, ×10)

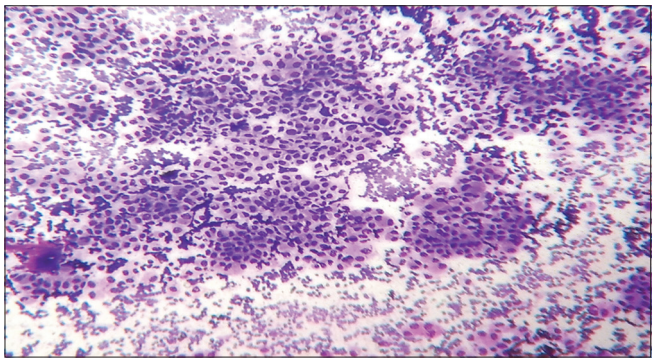

Figure 6: Metastatic adenocarcinoma (MGG stain, ×10)

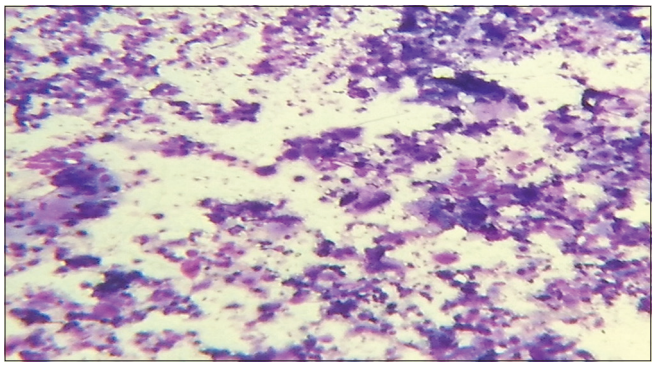

Figure 7: Poorly differentiated carcinoma (MGG stain, ×10)

series, granulomatous lymphadenitis was the second most common diagnosis offered.

In the series of Kumar *et al.* and Shilpa and Nataraju, reactive lymph node hyperplasia was the second most common diagnosis.[11,12] The relative frequency of pathologies varies with the type of hospital and the demographics of the dependent population.[13,14]

In this study, there was a preponderance of male patients with a total of 95 (74.24%) in concordance to other studies.[1,15-17] No reason for this difference can be ascribed.

Metastatic deposits in the enlarged lymph nodes were diagnosed in 16 cases (12.5%). Among the metastatic

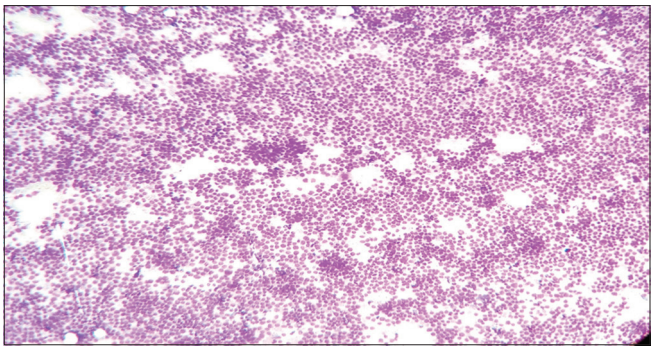

Figure 8: Non-Hodgkin's lymphoma (MGG stain, ×10)

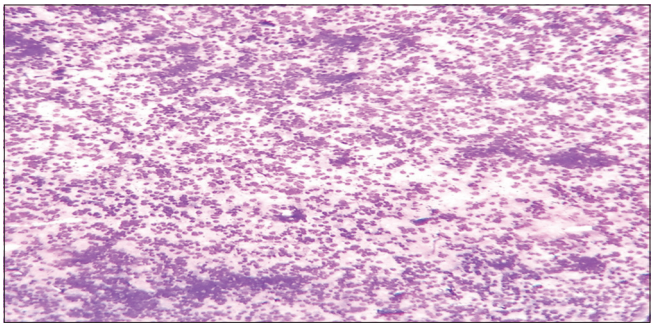

Figure 9: Small round cell tumor (MGG stain, ×10)

lesions diagnosed, metastatic squamous cell carcinoma was the most common microscopic variant seen.

Other series showed a higher incidence of squamous cell carcinoma.[13,14] There was no significantly higher incidence of any particular microscopic variant among the metastatic deposits reported in our study.

Small round cell tumors were diagnosed in 9 out of 128 cases (7.03%) and formed a very small percentage of the total pathologies reported.

Dowerah *et al.*, however, reported an incidence of 10.6% cases of lymphomas in their series.[15]

Excision biopsy of the affected lymph node was done in one case of non-Hodgkin's lymphoma, and histopathological evaluation of the excised node confirmed the diagnosis.

Other pathologies in our series were acute suppurative lymphadenitis and granulomatous lymphadenitis which was found in 5 (3.91%) and 42 (32.81%) aspirates, respectively. Shah *et al.* reported 30 cases of acute lymphadenitis in their series of 555 aspirates analyzed (5.4%) which is similar to our findings.

CONCLUSION

Being a convenient, non-traumatic, and quick invasive procedure, FNAC continues to be an important tool in

diagnosing lymph nodes pathologies. We found that the majority of patients had non-specific reactive lymphadenitis in our series; granulomatous lymphadenitis was the second most common pathology. Metastatic deposits constituted 12.5% of the pathologies. It is better to perform FNAC for possible cytological diagnosis than to plan for invasive procedure of open biopsy.

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How to cite this article: Naiding M, Singh S, Agarwal S, Choubey RN. Spectrum of Reactive and Metastatic Pathologies in Evaluation of Peripheral Lymph Node in Tertiary Health Center. Int J Sci Stud 2017;5(4):192-196.

Source of Support: Nil, **Conflict of Interest:** None declared.