

Are all left supraclavicular lymphadenopathies Virchow's? A retrospective study of 320 left cervical lymphadenopathy

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ABSTRACT

Background: Cervical Lymphadenopathy is one of the commonest and sometimes only clinical finding for a benign and malignant lesion. Fine needle aspiration cytology (FNAC) is a simple, safe, rapid and inexpensive method for establishing the diagnosis of lesions. Metastasis is more common in cervical lymph node and enlarged cervical nodes in an elderly patient must be considered as metastatic until proved otherwise. **Methods:** Retrospectively, 320 cases of left cervical lymph node FNAC were collected from five years record (May 2010 - June 2014) at Sri Devaraj Urs Medical College, Tamaka, Kolar. Review of all cytological reports were done according to standard guidelines and the morphological features of all non-neoplastic and neoplastic lesions were analysed. **Results:** Out of 320 cases 33% showed reactive lymphadenitis, 29% showed metastatic deposits, 14% showed features of granulomatous and necrotizing lymphadenitis, 9% were tuberculous lymphadenitis. In the present study, reactive lymphadenitis was the most common cause of enlarged lymph nodes followed by metastatic deposits. Squamous cell carcinoma is the most common metastatic lesions of lymphnode and comprise of 65% of the cases. Out of 62 cases of SCC 74% were keratinized, 16% were non keratinized, 29% cases showed granulomas. Non keratinization, presence of granuloma, plasma cells and eosinophils favours metastasis from nasopharyngeal carcinoma. Keratinization favours squamous cell carcinoma and absence of eosinophils and plasma cells in the background favors SCC metastasis from other sites. **Conclusion:** The present study highlight the usefulness of FNAC in left cervical lymphadenopathy where metastasis is common. Thus the knowledge about the cytological features and patterns will help the clinician to detect the respective cases early for investigations and treatment.

Key words: Left supraclavicular node, metastasis, Virchow's node

INTRODUCTION

Lymphadenopathy is an abnormal increase in size and altered consistency of lymph nodes. Cervical lymphadenopathy is one of the most common clinical presentation.^[1,2] This may be caused by a benign condition such as reactive hyperplasia, infectious, or malignant

conditions such as metastasis.^[3,4] Fine needle aspiration cytology (FNAC) plays a vital role as a rapid diagnostic technique because of its simplicity, cost-effectiveness, early availability of results, accuracy, and minimal invasion.^[5,6] Malignancies in lymph nodes in our country are predominantly metastatic in nature with an incidence varying from 65.7% to 80.4%, and lymphomas range from 2% to 15.3%.^[7] Metastasis is more common in cervical lymph node and enlarged cervical nodes in an elderly patient must be considered as metastatic until proved otherwise.^[8] The left supraclavicular lymph node (Virchow's node) may

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be involved by metastatic malignancies, including those of abdominal or pelvic origin.^[9,10] The cytomorphological features will help in distinguishing benign and malignant lesion and also gives clue for the primary in case of metastasis.^[11,12] Although histopathological examination is considered to be gold standard in diagnosis, especially in lymphomas, FNAC may be the only tool for diagnosis and further management of the patients in some cases of metastatic malignancy.^[13] Thus, the aim is to study the causes for enlarged left supraclavicular lymphadenopathy by FNAC and to study the various cytological features of nonneoplastic and neoplastic lesions.

MATERIALS AND METHODS

Retrospectively, 320 cases of left cervical lymph node FNAC were collected from 5 years record (May 2010 to June 2014) at Sri Devaraj Urs Medical College, Tamaka, Kolar, Karnataka. There were total 438 cases of left cervical swelling, among that 320 turned out to be lymph nodes, and those were included in the study to know the pattern of lymphadenopathy and, in particular, to study the frequency of metastasis in this region. Review of all cytological reports was done according to standard cytological diagnostic criteria. The diagnosis was correlated with patient's age to assess the pattern of different diseases that can present with left cervical lymphadenopathy, especially in the older age group where Virchow's lymph node is a strong contender.

RESULTS

Out of 320 cases, 36% showed reactive lymphadenitis, 29% showed metastatic deposits, and 23% showed features of granulomatous and necrotizing lymphadenitis. In this study, reactive lymphadenitis was the most common cause of enlarged lymph nodes followed by metastatic deposits. Out of 320 cases, benign lesions were 217 (67.81%), malignant lesions were 102 (31.87%), and one case of suspicious of lymphoma (0.31%). Among 217 cases of benign lesions, 106 were males and 111 were females; and among 102 malignant lesions, 59 were males and 43 were females, 1 case of suspicious of lymphoma was found in male patient [Tables 1 and 2] represents the various lesions responsible for left cervical lymphadenopathy, Reactive lymphadenitis being the most common lesion among benign cases followed by granulomatous and necrotizing lymphadenitis and squamous cell carcinoma (SCC) metastasis being the most common malignant lesion followed by adenocarcinoma metastasis. Age-wise distribution of lesion is shown in Table 3 in which the most common benign lesion being reactive lymphadenitis presents mostly in <20 years of age group and most common malignant lesion being SCC presents mostly among the age group of 40–60 years.

Among malignant lesions, metastasis is more common than the primary. The distribution of metastatic lesions is shown in Table 4. The left supraclavicular lymph node which is known as Virchow's node is most commonly involved in cases of metastasis. In our study, 52/320 cases showed left supraclavicular lymphadenopathy. Out of 52 cases, 24 were benign, and 28 were malignant [Table 5]. The most common metastatic lesion presenting in Virchow's node is adenocarcinoma. The distribution of lesion in Virchow's node is shown in Table 6.

DISCUSSION

FNAC of lymph node has become a window for diagnosis of many diseases.^[3] The cytological features of lymphadenopathy are helpful to diagnose the most of the metastatic lesions.^[3-5] We have analyzed a total number of 320 cases presenting with left cervical lymphadenopathy. Our aim was to know the distribution of lesions presenting as left cervical swelling and to study the cytomorphological features which will help in cases of metastatic lesions to find out the primary. Cytomorphological features of epithelioid and Langhans giant cells with caseation necrosis were reported as Tubercular lymphadenitis. Chronic granulomatous lymphadenitis was grouped with the cytological features of epithelioid cells, lymphocytes, and Langhans giant cells without caseous material.

Table 1: Distribution of various lesions of cervical lymphadenopathy among males and females

Cytological diagnosis	Number of cases (n=320)		Total (%)
	Male	Female	
Benign lesions	106	111	217 (67.81)
Malignant lesions	59	43	102 (31.87)
Suspicious of lymphoma	1	-	1 (0.31)

Table 2: Various lesions responsible for cervical lymphadenopathy

Cytological findings	Male	Female	Total (n=320) (%)
Reactive lymphadenitis	62	53	115 (35.93)
Granulomatous and necrotizing lymphadenitis	28	47	75 (23.43)
Acute suppurative lymphadenitis	16	11	27 (8.43)
Squamous cell carcinoma	38	24	62 (19.37)
Adenocarcinoma	11	4	15 (4.68)
Adenosquamous carcinoma	1	-	1 (0.31)
Hodgkin's lymphoma	2	1	3 (0.93)
NonHodgkin's lymphoma	2	2	4 (1.25)
Positive for malignancy	2	3	5 (1.56)
Ductal carcinoma breast	-	6	6 (1.87)
Papillary carcinoma thyroid	1	2	3 (0.93)
Suspicious of lymphoma	1	-	1 (0.31)
Poorly differentiated carcinoma	-	1	1 (0.31)
Seminoma deposits	1	-	1 (0.31)
Malignant round cell neoplasm	1	-	1 (0.31)

Table 3: Representing distribution of lesions among various age groups

Cytological diagnosis	0-10	11-20	21-30	31-40	41-50	51-60	61-70	>70	Total
Reactive lymphadenitis	38	30	11	14	9	6	5	2	115
Granulomatous and necrotizing lymphadenitis	2	18	26	11	13	2	3	-	75
Acute suppurative lymphadenitis	4	4	1	4	4	6	2	2	27
Squamous cell carcinoma	-	-	1	10	16	18	13	4	62
Adenocarcinoma	-	-	-	1	4	-	8	2	15
Adenosquamous carcinoma	-	-	-	-	-	-	1	-	1
Hodgkin's lymphoma	1	2	-	-	-	-	-	-	3
NonHodgkin's lymphoma	-	-	1	-	1	2	-	-	4
Positive for malignancy	-	-	-	-	1	1	2	1	5
Ductal carcinoma breast	-	-	-	3	2	1	-	-	6
Papillary carcinoma thyroid	-	-	-	1	1	1	-	-	3
Suspicious of lymphoma	-	1	-	-	-	-	-	-	1
Poorly differentiated carcinoma	-	-	-	-	-	-	1	-	1
Seminoma deposits	-	-	-	1	-	-	-	-	1
Malignant round cell neoplasm	-	-	-	1	-	-	-	-	1

Table 4: Distribution of metastatic lesions

Metastatic lesions	Male	Female	Total (n=95) (%)
Squamous cell carcinoma	38	24	62 (65.26)
Adenocarcinoma	11	4	15 (15.78)
Adenosquamous carcinoma	1	-	1 (1.05)
Positive for malignancy	2	3	5 (5.26)
Ductal carcinoma breast	-	6	6 (6.31)
Papillary carcinoma thyroid	1	2	3 (3.15)
Poorly differentiated carcinoma	-	1	1 (1.05)
Seminoma deposits	1	-	1 (1.05)
Malignant round cell neoplasm	1	-	1 (1.05)

Table 5: Comparison of benign and malignant lesion in left supraclavicular lymph node (Virchow's node)

Cytological diagnosis	Total cases (n=52) (%)
Benign lesions	24 (47.05)
Malignant lesions	28 (54.90)

Table 6: Various lesions presenting as left supraclavicular lymphadenopathy

Cytological diagnosis	Total cases (n=52) (%)
Adenocarcinoma	13 (25.49)
Squamous cell carcinoma	8 (15.68)
Ductal carcinoma breast	4 (7.84)
Adenosquamous carcinoma	1 (1.96)
Seminoma deposits	1 (1.96)
Poorly differentiated carcinoma	1 (1.96)
Reactive lymphadenitis	9 (17.64)
Granulomatous and necrotizing lymphadenitis	12 (23.07)
Acute suppurative lymphadenitis	3 (5.88)

Features of necrotic cellular debris mainly, with scattered polymorphonuclear leukocytes was grouped under suppurative lymphadenitis. Features with polymorphous population of lymphocytes with scattered histiocytes and tingible body macrophages were reported as reactive lymphadenitis. Hodgkin's disease with Reed-Sternberg cells (RS cells) was classified separately. Metastatic malignancy was classified based on the morphology of the cells.

In this study, reactive lymphadenitis was the most common lesion consisting of 36% of cases and presents more commonly under 20 years of age followed by granulomatous and necrotizing lymphadenitis and acute suppurative lymphadenitis. Among malignant lesions, SCC being the most common and presents in the age group between 40 and 60 years followed by adenocarcinoma. When compared to other studies which showed tubercular lymphadenitis being the most common cause of cervical lymphadenopathy, our study shows reactive lymphadenitis being the most common cause and among malignant lesions metastasis being the most common and is well-correlated with other studies [Table 7].

The search for a primary in a patient presenting with metastasis in cervical lymph node may represent a diagnostic challenge. When primary cancer is known the differential cytological diagnosis of lymph node metastasis is simplified by the possibility of comparing the nature of the aspiration cell with the primary tumor. If the primary tumor is unknown, cytological features help in tracing the origin of metastasis.^[6-8] Table 8 represents a comparison of metastatic lesions with other studies.

Carcinoma metastatic from the head and neck region is the most important of these and is usually of squamous cell type. Out of 62 cases of SCC, 74% were keratinized, 16% were nonkeratinized, and 29% cases showed granulomas. Nonkeratinization, the presence of granuloma, plasma cells, and eosinophils, sometimes epithelioid cell granulomas favors metastasis from nasopharyngeal carcinoma. Keratinization and the absence of eosinophils and plasma cells in the background favor SCC metastasis from other sites [Table 9].^[9-16]

The cervical region is the most common site for tuberculous lymphadenitis, followed by axillary and inguinal region. The cytology smears were grouped into three categories: Epithelioid granulomas without necrosis,

Table 7: Comparison of different lesions in cervical lymphadenopathy with other studies

Etiological group (%)	Patra <i>et al.</i> 1983	Bhaskaran <i>et al.</i> 1990	Khajuria 2006	Kocher <i>et al.</i> 2012	Present study
Tuberculous lymphadenitis	37.8	67.57	52.3	35.71	9.06
Reactive lymphadenitis	33.0	20.86	37.2	31.31	33.43
Suppurative lymphadenitis	5.8	1.5	1.0	1.0	8.43
Hodgkin's lymphoma	1.9	0.74	0.8	1.09	0.93
NonHodgkin's lymphoma	4.8	2.23	1.2	1.64	1.25
Leukemic infiltration	0.9	-	-	-	-
Metastatic carcinoma	14.5	5.6	3.8	20.33	29.68

Table 8: Comparison of metastatic lesions with other studies

Study	Year	Total cases	Squamous cell carcinoma (%)	Adenocarcinoma (%)	Miscellaneous malignancy (%)
Engzell and Associate	1971	962	40.0	38.6	21.4
Davil L Kinsey	1975	150	89.33	6.66	4
Hajdu, Steven	1973	116	68	25	7
Betsill and Hajdu	1980	339	53	29	18
Arora	1999	102	37.20	7.80	55
Kumar, Keyuri	2007	49	81.63	6.12	12.16
Present study	2014	95	65.26	15.78	18.94

Table 9: Cytological features of squamous cell carcinoma

Cytological features	Keratization	Nonkeratinization	N	L	N/M	Granulomas
Total cases (n=62) (%)	46 (74.19)	16 (25.80)	28 (45.16)	3 (4.83)	31 (50)	18 (29.03)

epithelioid granulomas with caseous necrosis, and necrosis without epithelioid granulomas.^[17,18] In our study, 34/75 granulomatous and necrotizing cases showed only granuloma, 4/34 (11.76%) were positive for Acid fast bacilli (AFB). 29/75 cases had both granuloma and necrosis, 16/29 (55.17%) were positive for AFB. 9/75 cases showed only necrosis without granuloma. 9/12 (75%) showed AFB positivity. Thus, tuberculosis can be suspected in the presence of necrosis and granuloma with necrosis, and this finding correlates with other study done by Bezabih *et al.* [Table 10].^[17]

The cytomorphological features in the case of adenocarcinoma help in differentiating the primary from different areas. Glandular cells arranged in a gland in gland or in cribriform pattern with moderate pleomorphism suggest prostatic carcinoma. Columnar cells with elongated nuclei arranged in palisades, stringy mucus, and necrosis suggest primary in the large bowel. Mucin containing signet ring cells suggest metastasis from stomach [Table 11].^[1,4]

The cytological features helpful in case of Hodgkin's lymphoma are RS cells and polymorphous population of lymphocytes in the background with inflammatory cells predominantly eosinophils and plasma cells. In a study done by Iyengar *et al.* described the presence of granulomas and discrete epithelioid cells in smears of Hodgkin's disease.^[16] In our study, there were three cases of Hodgkin's lymphoma, 3/3 cases showed RS cells, and none of the cases showed granulomas.

Table 10: Cytological features of granulomatous and necrotizing lesions

Group	Granuloma (%)	Granuloma with necrosis (%)	Necrosis (%)
Total cases (n=75)	34 (45.3)	29 (38.6)	12 (16)
AFB positive	4 (11.76)	16 (55.17)	9 (75)

AFB: Acid-fast bacilli

Table 11: Cytological features of adenocarcinoma

Cytological features	Neutrophils in cell clusters	Macrophages/foam cells	Background mucin	Signet ring cells	Necrosis
Total cases (n=15) (%)	8 (53.33)	8 (53.33)	3 (20)	2 (13.33)	4 (26.66)

The cytological features to diagnose a case of NonHodgkin's lymphoma are discohesive cells, bizarre cells with prominent nucleoli. In our study, discohesive cells are seen in all 4 cases. Bizarre cells with prominent nucleoli seen in 2/4 cases. None of the cases showed granuloma or the presence of inflammatory cells in the background.

The left supraclavicular lymph node (Virchow's node) may be involved by metastatic malignancies, including those of abdominal or pelvic origin. Thorax, breast, head, and neck malignancies show no difference in metastatic patterns to the right or left supraclavicular lymph nodes.^[10] In our study, there were overall 52 cases of left cervical lymphadenopathy. 24/52 were benign among which granulomatous and necrotizing lymphadenitis was the most common lesion followed by reactive lymphadenitis. 28/52

were malignant, among malignant lesions metastasis is the most common lesion causing left cervical lymphadenopathy. Adenocarcinoma is the most common metastasis responsible for left cervical lymphadenopathy followed by SCC. Thus, the knowledge about the cytological features helps in differentiating benign and malignant lesions and also to find out the primary in case of metastasis.

CONCLUSION

This study highlights the usefulness of FNAC in left cervical lymphadenopathy where metastasis is common. Metastatic deposits were the most common cause in patients above the age of 40 years constituting 54% of left supraclavicular swellings. Thus, Virchow's node is not always malignant. Even benign lesion can present as left supraclavicular swellings mimicking Virchow's node. Thus, the knowledge about the cytological features and patterns will help the clinician to detect the respective cases early for investigations and treatment. Early diagnosis can save the patient from high mortality and morbidity in the case of metastasis as this is the only initial presentation of visceral malignancy in some cases. Thus, FNAC is an easy and reliable procedure to identify the various lesions and helps in identifying the primary in case of metastasis.

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Conflicts of interest

There are no conflicts of interest.

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