

Original Research Article

A Clinicopathological study on Cervical Lymphadenopathy

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Abstract

Background: Cervical lymphadenopathy can be a confounding problem in surgical practice. The analysis of cervical lymphadenopathy is never straightforward and the difficulty is compounded by the differential diagnoses that include several diseases that resemble each other. Clinical evaluation, aspiration cytology, and open biopsy are some of the methods available for this purpose.

Aim: To study the prevalence of the cervical lymphadenopathy in respect to age, sex, to study about the various clinical presentation of cervical lymphadenopathy, to correlate the pathological findings with the clinical diagnosis and to study the role of FNAC by correlating with confirmed biopsy report.

Materials and methods: 75 patients with cervical lymphadenopathy were selected from the General Surgery OPD of Tirunelveli medical college. They were subjected to FNAC and excision biopsy of the nodes after a thorough history and clinical examination. The results were tabulated and analyzed.

Results: The most common diagnosis was Tuberculous lymphadenitis (67%) followed by reactive (9%) and non-specific lymphadenitis (9%) with malignant secondaries (11%) and lymphomas (4%). There was a slight male preponderance (57.3%) The most common presenting age groups were between 31 to 40 years followed by 21 to 30 years. The most common presenting symptom was neck swelling (88%) followed by fever (37.3%) and Loss of weight (18.7%).

Conclusion: Tuberculous lymphadenopathy continues to be the major reason for cervical lymphadenopathy with malignancy as an important differential diagnosis. FNAC is a versatile diagnostic tool and one of the least invasive tests in the workup of cervical lymphadenopathy. It is very accurate in diagnosing malignancy and lymphomas and reasonably so in diagnosing tuberculosis.

Key words

Cervical Lymphadenopathy, FNAC, Tuberculosis, Malignancy, Lymphoma.

Introduction

Lymphadenopathy is a common clinical presentation. It may be a primary or secondary manifestation of numerous diseases. Cervical lymphadenopathy can be a confounding problem in surgical practice [1]. The analysis of cervical lymphadenopathy is never straightforward and the difficulty is compounded by the differential diagnoses that include several diseases that resemble each other. These include inflammatory as well as neoplastic disorders [2-5].

Clinical evaluation, aspiration cytology, and open biopsy are some of the methods available for this purpose. While each method has its own advantages and disadvantages, open biopsy with histopathological examination is currently the gold standard for diagnosis of cervical lymphadenopathy [6, 7]. However, the microscopic examination of pathological lymph nodes is quite difficult. In this study, the different pathological conditions presenting with cervical lymphadenopathy shall be enumerated along with various modes of clinical presentation. The role of FNAC in diagnosing these conditions will also be evaluated in correlation with open lymph node biopsy.

Materials and methods

75 patients were selected randomly from the OPD of the Department of General Surgery at Tirunelveli medical college Hospital. Most patients were from Tirunelveli and surrounding areas. The clinical data consists of that collected during the study period from July 2014 to July 2016. Detailed case history and clinical examination of the patient was done. Investigations carried out were CBC, viral markers, Coagulation profile, FNAC from cervical lymph nodes, Chest X-Ray, ENT opinion (selected cases), CECT (selected cases).

Inclusion criteria

- Patients of age greater than 12 years presenting to the General Surgery O.P.D with neck swelling for more than 3 weeks.

- Patients whose diagnosis has been done by USG (ultrasonography)/ CT scan neck are also included for thorough clinical evaluation and FNAC/Biopsy of the neck node.

Exclusion criteria

- Patients coming with acute attack of lymphadenitis of less than 3 weeks.
- Patients having any bleeding disorders or patients with cardiorespiratory failure.

Results

In the present study, 75 patients were evaluated for cervical lymphadenopathy. All patients were subjected to FNAC as well as open biopsy. Out of the 75 patients included in the study the most common diagnosis was Tuberculous lymphadenitis, which was present in 50 patients (67% of total). Reactive lymphadenitis was diagnosed in 7 patients (9.0%). A diagnosis of chronic non-specific lymphadenitis was diagnosed in 7 patients (9.0%). Malignant secondaries were diagnosed in 8 patients (11.0%), whereas 3 patients (4.0%) were found to be suffering from lymphomas. Thus among the various causes for cervical lymphadenopathy, tuberculosis was the most common cause (**Table – 1**). Sex distribution of cases was as per **Table – 2**.

Table – 1: Histopathological diagnosis.

Histopathological diagnosis	No	%
Tubercular lymphadenitis	50	67%
Reactive lymphadenitis	7	9%
Chronic non-specific lymphadenitis	7	9%
Secondaries	8	11.0%
Hodgkin's lymphoma	2	2.7%
Non-Hodgkin's lymphoma	1	1.3%
Total	75	100

Table – 2: Sex distribution of cases.

Sex	No	Percentage
Male	43	57.3 %
Female	32	42.7 %

There was a male preponderance of 1.34:1.

Thus it was observed that the maximum number of patients belonged to the age group of 31 to 40 years with 25 cases (35%), followed by the age group of 21-30 years with 25 cases (33%). The

youngest patient included in the study was 15 years old whereas the oldest patient was 65 years old (**Table – 3**).

Table – 3: Age and sex distribution.

Age Group (years)	Male	Female	Total	Percentage
12 to 20	7	5	12	16
21 to 30	10	15	25	33
31 to 40	16	10	26	35
41 to 50	4	0	4	5.3
>50	6	2	8	10.7
Total	43	32	75	100

Table – 4: Age-wise distribution of different etiologies.

Age group (in years)	Tuberculosis	Reactive and Chronic nonspecific lymphadenitis	Malignant secondaries	Lymphomas
12-20	5	6	0	1
21-30	22	1	0	2
31-40	19	6	1	0
41-50	3	1	0	0
>50	1	0	7	0
Total	50	14	8	3

Tuberculosis was diagnosed in all age groups with clustering of cases in the age groups of 21 to 30 years and 31 to 40 years. Malignant secondaries were clustered in patients above the age of 50 years (**Table – 4**).

In the present study most cases of tuberculous lymphadenitis presented with enlargement of the level 2 lymph nodes (50 % of cases with tuberculosis), followed by involvement of multiple lymph node groups in 32 % of cases. All cases of lymphomas were associated with the involvement of multiple lymph node levels (**Table – 6**).

Thus in the present study, neck swelling was the most common presenting complaint (88% of cases), followed by fever (37.3%) and loss of weight (18.7%) (**Table – 5**).

In the present study only 8% of patients with tuberculosis had findings consistent with tuberculosis on chest X-ray (**Table – 7**).

Table – 5: Incidence of presenting symptoms.

Presenting symptoms	No	%
Neck swelling	66	88
Fever	28	37.3
Change of voice	2	2.7
Cough	20	27
Malaise	10	13.3
Loss of appetite	3	4.0
Loss of weight	14	18.7

Of the 3 patients confirmed to be suffering from lymphoma, 2 cases (67%) were confirmed to be Hodgkin’s lymphoma, whereas 1 case (33%) was found to be a case of Non-Hodgkin’s lymphoma (**Table – 8**).

Discussion

Data has been analysed with regard to age and sex of patients, presenting complaints and other symptoms, clinical findings, investigation results,

and results of FNAC and Excision biopsy. In the present study, out of 75 cases, 64 were found to be non neoplastic lesions (85.3 %), whereas 11 cases (14.7%) were found to be neoplastic. A study by Shafiullah and Syed Humayun Shah, et al. [1],

showed the incidence of non-neoplastic and neoplastic lesions to be 90.6% and 9.4% respectively. The results of the present study are thus comparable to the above mentioned study.

Table – 6: Site specific lymph node involvement.

Site	Number of cases (with percentage)	
	Tubercular lymphadenitis	Lymphomas
Level 1 (submental and submandibular group)	1 (2%)	0
Level 2 (upper jugular group)	25 (50%)	0
Level 3 (middle jugular group)	3 (6%)	0
Level 4 (lower jugular group)	2 (4%)	0
Level 5 (posterior triangle group)	1 (25)	0
Level 6 (anterior compartment group)	2 (4%)	0
More than one site in neck	16 (32%)	3 (100%)
Total	50	

Table – 7: Chest X-Ray findings in patients with Tuberculosis.

Chest X-ray	Number of cases	Percentage
Positive	4	8
Negative	46	92
Total	50	

Table - 8: Different types of Lymphomas.

Types of lymphoma	No	%
Hodgkin's lymphoma	2	67%
Non-Hodgkin's lymphoma	1	33%
Total	3	

Table – 9: Sensitivity and specificity of FNAC for Tuberculous lymphadenopathy.

FNAC result	Results of histopathological examination	
	Tuberculous lymphadenitis	Non-tuberculous lymphadenitis
Tuberculous lymphadenitis	41	3
Non-tuberculous lymphadenitis	9	22
	50	25

- Sensitivity = 82.0%
- Specificity = 88.0%

Table - 10: Sensitivity and specificity of FNAC for Chronic non-specific lymphadenitis.

FNAC	Number
True positive (a)	5
False positive (b)	7
False negative (c)	2
True negative (d)	61

Sensitivity = $5 / (5+2) * 100 = 72 \%$

Specificity = $61 / (7+61) * 100 = 89.7 \%$

Table - 11: Sensitivity and specificity of FNAC for Malignant secondaries.

FNAC	Number
True positive (a)	7
False positive (b)	0
False negative (c)	1
True negative (d)	67

Sensitivity = $8 / (8+1) * 100 = 88.9 \%$

Specificity = $67 / (0 + 67) * 100 = 100 \%$

Table - 12: Sensitivity and specificity of FNAC for Lymphomas.

FNAC	Number
True positive (a)	3
False positive (b)	0
False negative (c)	0
True negative (d)	72

Sensitivity = $3 / (3+0) * 100 = 100 \%$

Specificity = $72 / (72+0) * 100 = 100 \%$

In the present study, 50 cases (67% of the total) turned out to have tuberculous lymphadenitis, whereas 7 cases (9%) had acute lymphadenitis, 7 cases (9%) had chronic non-specific lymphadenitis, 8 cases had malignant secondaries in the neck (11.0%), 2 cases were diagnosed as Hodgkin's lymphoma (2.7%) and 1 case was found out to be a case of Non-Hodgkin's lymphoma (1.3%) [8-12].

Table - 13: Frequency of various causes for cervical lymphadenopathy.

Studies	TB (%)	Chronic (%)	Reactive (%)	Secondaries (%)	HL (%)	NHL (%)
Shafiullah, et al. [1]	69	3.8	17.8	2.9	3.1	3.4
Jha B. C., et al. (2001) [2]	63.8	5.9	9.6	20.7		
Jindal N., et al. [3]	48.4	22.8		13.3	15.8	
Nataraj G., et al. [4]	82.6	8		9.4		
Arora B., et al. (1990) [5]	62	17		6	4	11
Kim L. H., et al. [6]	13.9	2.2	33.1	25.7	4.4	8
Aruna Das, et al. [7]	38	11	21	15	15	
Present study	67.0	9.0	9.0	11.0	2.7	1.3

Table - 14: Age distribution of cases.

Age group (in years)	Bedi R, et al. [16]	Shafiullah, et al. [1]	Present study
12-20	32.5%	71.9%	16
21-30	29.8%		33
31-40	6.5%	16.1%	35
41-50	0.4%		5.3
51-60	--	6.2%	10.7%
>60	--		

Table - 15: Sex distribution of cases.

	Bedi R.S., et al. [16]	Ammari FF, et al. [17]	Dworski I [18]	Dandapat M.C., et al. [8]	Present study
M:F ratio	1:1.7	1:2	1:1.38	1:1.2	1.34:1

Similar observations were made in the study by Jha.B.C., et al. [2], where 94 cases were studied among whom, a diagnosis of tuberculosis was made in 63.8 % cases. The findings in the present study are also comparable to those observed by Nataraj G., et al. [4], and Arora B., et al. [5]. The lower incidence of tuberculosis in the study by Kim L.H., et al. [6], can be explained by the fact that the patients included in the study were probably from non-prevalent areas (Table – 13).

Age distribution in cervical lymphadenopathy

The most common age group involved was that of 31-40 years with 26 cases (35%), followed by 21-

30 years with 25 cases (33%) and 12-20 with 12 cases (16%). In the study by Jha B.C., et al. [2], the most commonly involved age group was 11-20 years whereas that by Shafiullah, et al. [1], had 72% cases within 11-30 years. The findings of the present study are comparable to those of the above mentioned studies. The present study is also comparable to that by Kim L.H., et al. [6], in which the maximum number of cases had been between 20-50 years (Table – 14).

Most of the studies show a female preponderance. The sex ratio in the present study

is a male: female ratio of 1.34:1, which is comparable to that of other study (Table – 15).

History of constitutional symptoms

In the present study, out of 50 cases with tuberculosis 28 cases (56%) had constitutional symptoms whereas 22 cases (44%) did not. All 3 case of lymphomas had constitutional symptoms upon presentation. Similar observations were made by Jha B.C., et al. [2].

Site distribution in tuberculous cervical lymphadenopathy:

In the present study, out of 50 cases with tuberculous lymphadenitis, 25 patients (50%) presented with involvement of the level II lymph nodes, whereas 16 patients (32%) presented with involvement of multiple groups of lymph nodes. All cases of lymphomas had involvement of multiple levels of neck nodes upon presentation. These findings are comparable to the study by Jha B.C., et al. [2] in which the upper deep jugular group was the most commonly involved. In Baskota D.K., et al. [9]. 79 study posterior triangle was the commonest at 51%.

Chest X-ray findings consistent with tuberculosis were seen only in 8% of patients with tuberculosis in the present study. This is comparable to the study by Jha B.C., et al. [2] which showed 16% positivity.

Open biopsy and histopathological examination is the gold standard for diagnosis. Jha B.C., et al. [2] reported a sensitivity of 92.8% in diagnosing tuberculous lymphadenitis. One study attributed a sensitivity of 88% and a specificity of 96% for the same. Dandapat M.C., et al. [8] reported a sensitivity of 83% for diagnosing tuberculosis. Dasgupta A. et al. [10] had a sensitivity of 84.4% for tuberculosis and 89% for malignant secondary deposits. Out of 444 cases, Mondal A., et al. [11] reported 100% sensitivity in diagnosing tuberculous and pyogenic lymphadenitis, and Hodgkin's disease, 98% for metastatic deposits; 97% for chronic non-specific lymphadenitis; 92% for Non-Hodgkin's lymphomas [13-18].

Table – 16: Sensitivity and specificity of FNAC.

Histopathological diagnosis	Sensitivity	Specificity
Tubercular lymphadenitis	82	88
Chronic non-specific lymphadenitis	72	89.7
Malignant secondaries	88.9	100
Lymphomas	100	100

Conclusion

The clinical material for this study includes the clinical details and investigation reports of 75 cases of cervical lymphadenopathy who had attended the Department of General Surgery, Government Medical College, Tirunelveli between February 2015 to August 2016. A brief introduction to cervical lymphadenopathy as well as review of literature with regard to anatomy, physiology, etiopathogenesis, clinical features and investigations have been discussed.

The findings in the present study have been compared with those reported previously in literature.

- In the present study, out 75 patients ,all were subjected to FNAC as well as open biopsy.
- Tuberculous lymphadenitis, was diagnosed in 50 patients (67 % of total). Reactive lymphadenitis in 7 patients (9.0%). Chronic non-specific lymphadenitis was diagnosed in 7 patients (9.0%). Malignant secondaries in 8 patients (11.0 %), whereas 3 patients (4.0 %) were found to be suffering from lymphomas. Thus tuberculosis was the most common cause for cervical lymphadenopathy.
- Most of the patients belonged to the age group of 31 to 40 years with 25 cases (35%), followed by the age group of 21-30 years with 25 cases (33%).
- There were 43 male patients and 32 female patients included in the study. Thus there is a male preponderance of 1.34:1.

- Only 16 % of patients with tuberculous lymphadenitis had history of prior exposure to the disease.
- Most cases of tuberculous lymphadenitis presented with enlargement of the level 2 lymph nodes (50% of cases with tuberculosis), followed by involvement of multiple lymph node groups in 32% of cases. All cases of lymphomas were associated with involvement of multiple levels of neck nodes.
- Of the 3 histologically confirmed cases of lymphomas, 2 were Hodgkin's lymphomas and one was a case of Non-Hodgkin's lymphoma.
- Open biopsy with histopathological examination is the definitive investigation.
- FNAC is an investigation that is cheap, easy to perform and widely available. It can be considered to be the first line invasive test for any case with cervical lymphadenopathy. The correlation between FNAC and Open biopsy with histopathology was found to be good in the present study.

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