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Original Research Article

A Clinico-Pathological Study of Cervical Lymphadenopathy

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Abstract: The analysis of enlarged lymph node in the neck, to assess its clinical course and come to a final diagnosis is a troublesome task for surgeon. The cause which can be neoplastic demands correct diagnosis for further management. This study intends to find out the various pathological conditions presenting with enlarged lymph nodes in the neck, behaviour of these conditions and also the various modes of clinical presentations. Relevant investigations are also been studied. The study population consisted of patients from 15-45 years presenting with cervical lymph node enlargement. Patient was examined systematically giving utmost importance to local examination. After making a clinical diagnosis, further relevant investigations were done to confirm the diagnosis. Treatment was instituted appropriately and patients are followed up regularly. Majority of the cases in this study had non-neoplastic causes for cervical lymphadenopathy in which tuberculosis is most common. Male to female ratio of 1.38:1 is noted with most cases between 15 and 30 years. Posterior triangle group of lymph nodes was most commonly affected in tuberculosis. In lymphomas level 2 group of lymph nodes is most commonly involved. Varied results were noted among the groups of lesions, with regard to local characteristics like number, laterality, mobility and involvement of other group of lymph nodes, etc. FNAC by virtue of it being inexpensive, quick in getting the results and easy to perform, is one of the important and essential diagnostic procedures.

Keywords: lymph node, lymphadenopathy, pathological conditions.

INTRODUCTION

The prime function of lymph node is to deal with antigen, whether this is in the form of organisms or soluble antigen or even other particulate material. Lymph nodes are most numerous in those areas which are in direct contact with the exterior of the individual and are strategically placed along the drainage of tissue and body fluids. Neck consists of 300 lymph nodes nearly 1/3rd of total lymph nodes of the body [1]. Lymphadenopathy is a very common clinical manifestation of many diseases. The enlargement of these nodes is significant because of many etiologic factors. It is defined as an abnormality in the size or character of lymph nodes, caused by the invasion or propagation of either inflammatory cells or neoplastic cells into the node. It results from vast array of disease process whose brand categories are "MIAMI", this represents malignancies, infections, autoimmune disorders, miscellaneous and iatrogenic causes [2-5]. The study intends to find out systematically the various pathological conditions presenting with enlarged lymph nodes in the neck, also the various modes of clinical presentation and behaviours of these conditions. It also intends to know the role of FNAC in diagnosing these conditions after correlating with a lymph node biopsy confirmation.

OBJECTIVES

1. To study about the various clinical presentations of cervical lymphadenopathy.
2. To correlate pathological findings with the clinical diagnosis.
3. To study the role of FNAC and confirming it with biopsy report.
4. To study the management, outcome and clinical behavior of cervical lymph nodes on follow up.

METHODOLOGY

The clinical material consists of 100 consecutive cases attending MNR Hospital attached to MNR Medical College, Sangareddy with cervical lymphadenopathy during the period of October 2014 to September 2016. Diagnosis is made on the basis of histopathological findings. All cases between age group of 15-45 years presenting with cervical lymph node swellings are included in the study. Patients less than 15 years of age and greater than 45 years of age and Known cases of malignancies like thyroid, parathyroid, salivary gland tumours are excluded from the study.

RESULTS

Our data shows that in 84 % (84 cases) of cases the cause of cervical lymphadenopathy is due to

non-neoplastic cause, in which Tuberculosis is the most common cause which accounts for 61 % (61 cases) of total cases followed by reactive lymphadenopathy (23%). Out of 61 cases of tubercular lymphadenopathy only 10 cases (16.39%) had a positive history of contact with tuberculosis.

Table 1: Histopathological diagnosis in 100 cases

Histopathological diagnosis	Number of cases	Percentage
Tuberculosis	61	61
Reactive lymphadenopathy	23	23
Secondaries	12	12
Hodgkin's lymphoma	1	1
Non-Hodgkin's lymphoma	3	3
Total	100	100

Table 2: Age distribution in both sexes

Age distribution	Male	Female	Total
15-20	6	7	13
21-30	22	14	36
31-40	21	9	30
41-45	10	11	21
Total	59	41	100

Males are most commonly affected (59%) with Maximum number of cases in age group (21-30yrs).

It was observed that posterior triangle group was the commonest to get involved in tuberculosis (40.9%) followed by upper deep jugular group (24.5%), submental and submandibular (14.75%), middle jugular (11.47%) and lower jugular (8.1%). Reactive lymphadenitis, submental group and submandibular of lymph nodes is most commonly affected. In Secondaries and lymphomas upper jugular group of lymph nodes is most commonly affected.

Table 3: Site distribution of tubercular cervical lymphadenitis, reactive lymphadenitis, lymphomas, secondaries

Site	Tubercular cervical lymphadenitis	Reactive lymphadenitis	Lymphomas	Secondaries	Total
Level I (submental and submandibular group	9	9	0	0	18
Level II (upper jugular group)	15	5	2	6	28
Level III (middle jugular group)	7	1	0	3	11
Level IV (lower jugular group)	5	3	1	1	10
Level V (posterior triangle group)	25	5	1	2	33
Level VI (anterior compartment group)	0	0	0	0	0
Total	61	23	4	12	100

In this study, there were 4 cases of lymphomas which was confirmed histopathologically. Of the 4 cases, 3 (75%) were non-Hodgkin's lymphoma and 1 (25%) was diagnosed to be Hodgkin's lymphoma.

Totally there were 12 cases, who had malignant secondaries in neck. Of these 12 cases, 3 were from esophagus, 2 each from larynx, stomach and thyroid. The remaining 3 cases had unknown primary.

Table 4: Distribution of primary in malignant secondaries in neck

Primary site of malignancy	Number of cases	Percentage
Esophagus	SCC 3	3
Larynx	SCC 2	2
Stomach	Adenocarcinoma.2	2
Thyroid	Papillary carcinoma 2	2
Unknown	SCC 2	2
	Adenocarcinoma 1	1

Sensitivity and specificity of FNAC in diagnosing tuberculous cervical lymphadenitis is 78.3% and 100% respectively while Sensitivity and specificity of FNAC in diagnosing reactive lymphadenitis 100% and 92.3%. Sensitivity and specificity of FNAC in diagnosing secondaries in cervical lymph nodes is 100% and 94.2 % respectively.

For tubercular lymphadenitis and reactive lymphadenitis medical treatment was instituted. For secondaries and lymphoma, which needs radiotherapy, chemotherapy and expert oncologic surgeries, patients were referred to MNJ Cancer Hospital and Regional Cancer Centre, Lakdikapool.

For all patients, necessary advice given and were asked to attend the surgical outpatient department for follow-up.

DISCUSSION

In the present study, with 100 cases of cervical lymphadenopathy, 84 were non-neoplastic lesions and 16 were neoplastic lesions. In the study made by Shafullah and Syed Humayun Shah *et al*. [6] the incidence of non-neoplastic and neoplastic lesions were 90.6% and 9.4% respectively.

Sex distribution in cervical lymphadenopathy of the 100 cases, 59 cases were males and 41 females. The sex ratio in the present study was 1.44 : 1 (M:F).

Table 6: Comparative analysis of sex distribution

	Bedi RS *et al*	Ammari *FF et al* [7]	Dworski [8]	Dandapat MC *et al* [9]	Purohit SD *et al*	Present study
M:F ratio	1:1.7	1:2	1:1:38	1:1.2	1.4:1	1:44:1

Most of these studies show female predilection. Few studies like Purohit SD et al. and Tripathy SN et al. are comparable with the present study

In the present study, tuberculosis accounted for 61% of cases, 23% turned out to be reactive lymphadenitis. Among the neoplastic lesions, malignant secondaries accounted for 12% while non-Hodgkin's lymphoma and Hodgkin's lymphoma accounted for 3% and 1% respectively. The observation made by Jha BC *et al*. [10] who studied 94 cases, of which tuberculosis was confirmed in 63.8% cases

Table 5: Comparison of distribution of different lesions

	Tuberculosis	Reactive lymphadenitis	Secondaries	Non- Hodgkin's lymphoma	Hodgkin's lymphoma
Shafullah *et al* [7]	69%	17.8%	2.9%	3.4%	3.1%
Jha BC *et al* [8]	63.8%	9.6%		20.7%	
Present study	61%	23%	12%	3%	1%

History of constitutional symptoms

In the present study, 15% of patients presented with pain, 19% with fever, 15% with cough, 12% with loss of appetite, 17% with loss of weight, 2 patients presented with dysphagia and 1 with change in voice.

Site distribution in cervical lymphadenopathy

This study utilized the Memorial Kettering Hospital Classification of neck lymph nodes from Level I to Level VII.

It was observed that in tuberculosis, level V was most commonly affected (40.9%) followed by Level II (24.5%). In contrast, in secondaries Level II group was most commonly involved (50%) and similarly in lymphomas Level II group was involved.

In the Jha BC *et al.* [8] series, Level II group was most involved in tuberculosis. The result of this study is comparable to the study made by Baskota DK *et al*. [11] study, wherein tuberculosis Level V lymph nodes is most commonly involved.

In this present study, 23 cases (37.7%) showed multiple matted lymph nodes in tuberculous lymphadenopathy. 38 cases (62.3%) showed single discrete lymph nodes. Jha BC *et al*. [8] study showed matted lymph nodes in 38.3% of cases which is comparable with the present study.

Chest X-ray positivity was seen in 9.43% of cases of present study. The studies made by Aggarwal P *et al*. series showed 28.3% positivity and Jha BC *et al.* [8] series showed 16% positivity.

In the present study, non-Hodgkin's lesion: Hodgkin's lesion ratio is 3:1. While findings by Peh SC and Shamie *et al*. had a ratio of 9:1. Raymond Alexandrian study had a ratio of 5.02:1, which has similar results as this present study.

The commonest site of primary in a case of malignant secondary was lungs and pancreas in the studies by Linderman *et al.* [12] In the present study it was esophagus followed by larynx. In the study by

Osama Gaber *et al*., [14] it was possible to establish primary in 86.7% whereas in the present study it was only 75%. In reset of the cases, primary could not be diagnosed because of limited resources of our hospital.

Role of FNAC in cervical lymphadenopathy

In the present study, the sensitivity and specificity of FNAC in detecting various lesions of cervical lymph node are shown in the following table.

Table 7: The sensitivity and specificity of FNAC

Histopathological diagnosis	Sensitivity	Specificity
Tubercular lymphadenitis	78.3%	100%
Reactive lymphadenitis	100%	92.3%
Malignant secondaries	94.2%	100%
Lymphomas	83.3%	83.3%

The study by Jha BC *et al*. [8] reported a sensitivity of 92.8% in diagnosing tubercular lymphadenitis. Dandapat MC *et al*. [12] reported a sensitivity of 83% for tuberculosis. The study by Chao SS, Loh KS *et al*. showed sensitivity of 88% and specificity of 96% for the same. Similarly Dasgupta A *et al.* [13] reported a sensitivity of 84.4% for tuberculosis and 89% for malignant secondary deposits.

Prasad RR *et al.* [14] studied 2216 cases and noted sensitivity and specificity of 84% and 95% respectively for tubercular lymphadenitis, 97% and 99% for metastatic deposits, 80% and 98% for Hodgkin's disease. 81% and 96% for non- Hodgkin's lymphoma.

In the present study, FNAC sensitivity for tubercular lymphadenitis is low as compared to above studies.

CONCLUSION

Of the 100 cases, tuberculous lymphadenopathy had the maximum incidence of 61% followed in reactive lymphadenitis (23%), secondaries (12%) and lymphomas (4%). Overall age at presentation was maximum between 15 years and 30 years followed by 31-40 years.

In investigations, Fine Needle Aspiration Cytology (FNAC) was found to be accurate with 78.3% accuracy for the diagnosis of tuberculosis. Few patients were diagnosed as non-specific lymphadenopathy which were later confirmed by biopsy to have either tuberculosis or reactive lymphadenitis.

In metastatic lymph node, method of diagnosis was Fine Needle Aspiration Cytology and two patients were treated with surgery. One patient expired before referral. Rest 9 cases were referred to oncologic centre and they did not come for follow-up. Lymphomas were diagnosed by Fine Needle Aspiration Cytology and confirmed with excision biopsy.

Hodgkin's lymphomas was treated with chemotherapy and was followed up regularly till the study concluded. No mortality noted.

Among 3 non-Hodgkin's lymphoma cases, 2 cases were treated with chemotherapy and they were followed up regularly all the study concluded. No mortality noted during the study 1 case got referred to oncology centre.

In this present study, fine needle aspiration cytology was found to be reliable and cheapest method of diagnosis without any significant morbidity and with good patient compliance.

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