

Original Research Article

Clinical spectrum and histopathological analysis of cervical lymphadenopathy: a rural hospital study

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Received: 14 April 2020

Revised: 07 June 2020

Accepted: 09 June 2020

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ABSTRACT

Background: The analysis of lymph node enlargement in the neck is not an easy task. These diseases which can be neoplastic also demands correct diagnosis for further management. The study intended to find out systematically the various pathological conditions presenting with enlarged lymph nodes in the neck, also the various modes of clinical presentation and behaviour of these conditions.

Methods: The study population consisted of patients above 12 years presenting with cervical lymph node enlargement. The proforma which was drafted is used. 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 followed up the patients.

Results: Majority of the cases in this study had non-neoplastic causes for cervical lymphadenopathy in which tuberculosis is most common. Posterior triangle group of lymph nodes was most commonly affected in tuberculosis. Variable 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.

Conclusions: As cervical lymphadenopathy is an important disease, it always calls for meticulous attention, analysis and treatment. FNAC is found to be a frontline investigation of choice with biopsy and histopathological examination done for confirmation. Most of the non-neoplastic lesions are medically curable with limited role for surgery.

Keywords: Cervical lymphadenopathy, FNAC, Histopathological examination

INTRODUCTION

One of the most common surgical problems faced in OPD is cervical neck swelling and of which a lymph node swelling presents as a clinical challenge because the cause can be due a simple inflammation (non-specific lymphadenitis), infections, tubercular or even malignancy, so such varied clinical spectrum presents as a diagnostic challenge. The prime function of lymph node is to deal with antigen, whether this be in the form of organisms or other particulate material, or even soluble

antigen. Lymph nodes are strategically placed along the drainage of tissue and body fluids, they are most numerous in those areas which are in direct contact with the exterior of the individual.

Bailey and Love's Short Practice of Surgery reported a total of 800 lymph nodes, 300 of which are in the neck.¹ Nearly 1/3rd of total lymph nodes of the body. The enlargement of these nodes is significant because of many etiologic factors. Lymph nodes are responsible for filtering lymph and producing antibodies by responding

to antigens. Nodes vary greatly in size, ranging from 1-2 mm to 3-4 cm in diameter.²

Anatomical classification of Cervical lymph nodes is as follows:³⁻⁵

- 1) Level I sub mental and submandibular including Sublevel IA sub-mental nodes and Sublevel IB sub- mandibular nodes;
- 2) Level II upper jugular group including Sublevel IIA upper jugular and jugulo digastric nodes anterior to spinal accessory nerve and Sublevel IIB upper jugular and jugulo digastric nodes posterior to spinal accessory nerve;
- 3) Level III middle jugular group;
- 4) Level IV lower jugular group;
- 5) Level V posterior triangle group including Sublevel VA spinal accessory nodes and Sublevel VB transverse cervical and supraclavicular nodes;
- 6) Level VI anterior compartment group.

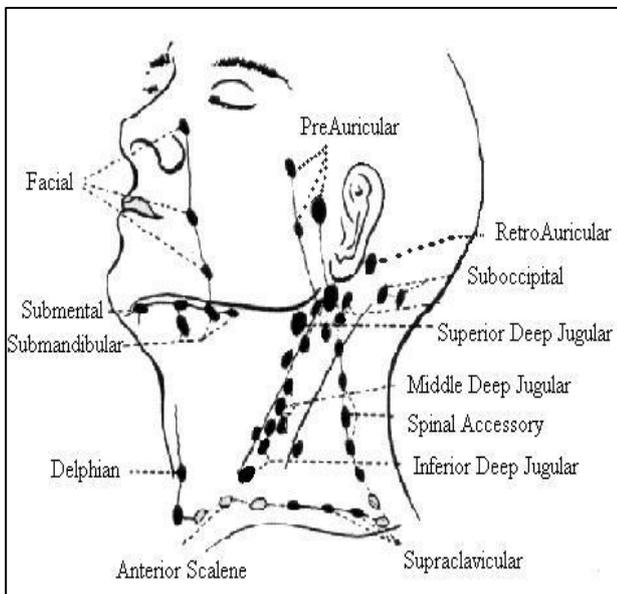


Figure 1: Anatomical representation of neck region.

Objectives of study

To study about the various clinical presentations of cervical lymphadenopathy; to correlate histo-pathological findings with the clinical diagnosis; to study the role of FNAC by correlating with confirmed biopsy report; to study the management, outcome and clinical behaviour of cervical lymph nodes on follow up

METHODS

The clinical material consists of all inpatients and outpatients of Sri Adichunchanagiri Hospital and Research Centre, B.G. Nagara, Mandya District. The material consists of patients during the period of January 2013 to July 2014. This study consists of 50 consecutive cases. Diagnosis is made on the basis of histopathological findings.

This study was part of thesis study and started only after the clearance from the hospital research committee of Sri Adichunchanagiri Hospital and Research Centre, B.G. Nagara, Mandya District and the ethics committee. Written informed consent was taken from all the participants before recruiting into the study.

Inclusion criteria

Patients more than 12 years of age and patients presenting with cervical lymph node enlargement.

Exclusion criteria

Patients less than 12 years of age and patients where FNAC and/or biopsy of node could not be carried out were excluded.

Study design and statistical analysis

In this study the data was taken from Sri Adichunchanagiri Hospital and Research Centre. The clinical material consists of all inpatients and outpatients presenting to department of General Surgery. According to proforma detailed history was taken, thorough examination was carried, and basic relevant investigations was done in all patients to arrive at a provisional diagnosis. Patients of age above 12 years presenting with cervical lymph node enlargement were included in the study. Patients, in whom FNAC and/or biopsy of enlarged node could not be carried out, were excluded.

Investigations like fine needle aspiration cytology and blood examination were done as a routine. Biopsy was done for all patients. Radiological examination of the chest was done to find primary lesion of lung. Lymph node biopsy specimen was sent to pathologist for expert opinion. Also, ENT opinion, contrast radiological investigation, x-ray, endoscopy was carried out in relevant cases.

The data collected was entered in MS Excel sheet 2010. The data was analyzed by SPSS version 2015.

RESULTS

In the present study 50 cases were selected in the surgery outpatient department and inpatient in surgical wards of Sri Adichunchanagiri Hospital and Research Centre, B.G. Nagara from the period of January 2013 and 2014.

Table 1: The number and percentage of non-neoplastic and neoplastic lesions.

	Number of cases
Non-neoplastic	38
Neoplastic	12
Total	50

Table 2: Histopathological diagnosis in 50 cases.

Histopathological diagnosis	Number of cases	%
Tuberculosis	22	44
Reactive lymphadenopathy	15	30
Secondaries	08	16
Hodgkin's lymphoma	1	2
Non-Hodgkin's lymphoma	3	6
Toxoplasmosis	1	2
Total	50	100

Most of the lesion was of non-neoplastic of origin 38 cases (76%) covering two thirds of the population understudy.

The maximum incidence was found to be of tuberculosis which were 22 (44%) cases. Next was reactive lymphadenitis (30%) followed by secondaries (16%) and lymphomas (8%) as shown in Table 2.

In this study, out of 50 cases studied 29 were males and 21 females. The male to female ratio was 1.38:1.

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

Site	Tubercular cervical lymphadenitis	Reactive lymphadenitis	Lymphomas	Secondaries	Toxoplasmosis	Total
Level I (submental and submandibular group)	2	5	0	0	0	07
Level II (upper jugular group)	6	3	1	3	0	13
Level III (middle jugular group)	3	1	0	2	0	06
Level IV (lower jugular group)	2	2	1	1	1	07
Level V (posterior triangle group)	9	4	2	2	0	17
Level VI (anterior compartment group)	0	0	0	0	0	0
Total	22	15	4	8	1	50

Table 4: Age distribution in both sexes.

Age group (years)	Male	Female	Total
	%	%	%
12 to 20	6	8	14
21 to 30	20	12	32
31 to 40	14	8	22
41 to 50	6	6	12
51 to 60	8	4	12
>60	4	4	8
Total	58	42	100

In the present study, which studies 50 cases of cervical lymphadenopathy, 38 (76%) were non-neoplastic lesions and 12 (24%) were neoplastic lesions.

In the study made by Shafullah et al the incidence of non-neoplastic and neoplastic lesions was 90.6% and 9.4% respectively.⁶

In the present study, non-neoplastic accounted for 76% of cases, 44% turned out to be tuberculosis and 30% reactive lymphadenitis. Among the neoplastic lesions, malignant secondaries accounted for 16% while non-Hodgkin's lymphoma and Hodgkin's lymphoma accounted for 6% and 2% respectively. The observation made by Jha et al who studied 94 cases, of which tuberculosis was confirmed in 63.8% cases.⁷

Sex distribution in cervical lymphadenopathy

Of the 50 cases, 29 cases were males and 21 females. The sex ratio in the present study was 1.38:1 (M: F).

Most of these studies show female predilection. Few studies like Purohit et al and Tripathy et al isolated cystic

DISCUSSION

The discussion is mainly based on analysis and observations made regarding presenting symptoms, clinical behavior, signs, investigations, management and postoperative events in 50 cases were selected in the surgery outpatient Department and inpatient in surgical wards of Sri Adichunchanagiri Hospital and Research Centre, B.G. Nagara from the period of January 2013 and July 2014.

tuberculosis of scapula is comparable with the present study.¹¹

History of constitutional symptoms

In the present study, 18% of patients presented with pain, 18% with fever, 12% with cough, 12% with loss of appetite, 16% 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 (33.9%) followed by Level II (26.4%). In contrast, in secondaries Level II group was most commonly involved (50%) and similarly in lymphomas Level II group was involved.

In the Jha et al series, Level II group was most involved in tuberculosis.⁷ The result of this study is comparable to the study made by Baskota et al study, wherein tuberculosis Level V lymph nodes is most commonly involved.¹³ Chest X-ray positivity was seen in 9.09% of cases of present study. The studies made by Aggarwal et al series showed 28.3% positivity and Jha et al series showed 16% positivity.^{7,14} In the present study, non-Hodgkin’s lesion: Hodgkin’s lesion ratio is 3:1. While findings by Peh and Shamie et al spectrum of malignant

lymphoma in Queen Elizabeth Hospital, Sabah had a ratio of 9:1.

The commonest site of primary in a case of malignant secondary was lungs and pancreas in the studies by Linderman et al.¹⁵ In the present study it was esophagus followed by larynx. In the study by Gaber et al, it was possible to establish primary in 86.7% whereas in the present study it was only 71.5%.¹⁶ In rest 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.

The study by Jha et al reported a sensitivity of 92.8% in diagnosing tubercular lymphadenitis.⁷ Dandapat et al reported a sensitivity of 83% for tuberculosis.¹⁷ The study by Chao et al showed sensitivity of 88% and specificity of 96% for the same.¹⁸ Similarly, Dasgupta et al reported a sensitivity of 84.4% for tuberculosis and 89% for malignant secondary deposits.¹⁹ Prasad et al 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 and 81% and 96% for non- Hodgkin’s lymphoma.²⁰

Table 5: Comparison of distribution of different lesions.

	Tuberculosis (%)	Reactive lymphadenitis (%)	Secondaries (%)	Non- Hodgkin’s lymphoma (%)	Hodgkin’s lymphoma (%)
Shafullah et al⁶	69	17.8	2.9	3.4	3.1
Jha et al⁷	63.8	9.6	20.7		
Present study	44	30	16	6	2

Table 6: Comparative analysis of sex distribution.

	Bedi et al ¹²	Ammari et al ⁸	Dworski ⁹	Dandapat et al ¹⁰	Purohit et al ¹¹	Present study
M:F ratio	1:1.7	1:2	1:1.38	1:1.2	1.4:1	1.38:1

Table 7: The sensitivity and specificity of FNAC.

Histopathological diagnosis	Sensitivity (%)	Specificity (%)
Tubercular lymphadenitis	75.8	100
Reactive lymphadenitis	100	93.1
Malignant secondaries	92.8	100
Lymphomas	83.3	100

CONCLUSION

The clinical material consists of patient consecutively selected with history of cervical lymphadenopathy, who came in surgical wards of Sri Adichunchanagiri Hospital and Research Centre, B.G. Nagara from the period of

January 2013 and 2014. 50 consecutive cases were selected, and they were personally studied in the present study. Of the 50 cases, tuberculous lymphadenopathy had the maximum incidence of 44% followed in reactive lymphadenitis (30%), secondaries (16%) and lymphomas (8%). Overall age at presentation was maximum between

12 years and 30 years followed by 31-40 years. In investigations, fine needle aspiration cytology was found to be accurate with 75.5% 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 one patient was treated with surgery. Rest 7 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. One case of 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, all cases were treated with chemotherapy and they were followed up regularly all the study concluded. 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. In the study we have found that even though majority of cases were reactive lymphadenitis, a cervical lymph node enlargement evaluation needs to be carried out systematically to rule lymphoma and tuberculosis which diagnosed early can be cured.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: This study was approved by the hospital research committee of Sri Adichunchanagiri Hospital and Research Centre, B.G. Nagara, Mandya District and the ethics committee

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Cite this article as: Veetil SK, Sharma B. Clinical spectrum and histopathological analysis of cervical lymphadenopathy- a rural hospital study. Int Surg J 2020;7:2573-7.