

DISTRIBUTION AND VARIOUS CAUSES RESPONSIBLE FOR THE ENLARGEMENT OF CERVICAL LYMPH NODES

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ABSTRACT

Lymphadenopathy is a clinical manifestation of regional or systemic disease. The site of localized or regional adenopathy may provide a useful clue about the cause. Cervical lymphadenopathy (CL) is a fairly common clinical presentation. A retrospective study was undertaken to know the distribution of CL in different age groups, sex as well as the various causes for its presence. Total 89 patients (51 males and 38 females) of mean age 45.3 ± 17.14 (19-83 years), who underwent fine needle aspiration cytology or biopsy of cervical lymph nodes were included. The prevalence of tuberculosis lymphadenitis (TL) was 43.8 % and found most common among 30-40 age group. The non-tuberculosis lymphadenitis due to lymphoma and metastasis were commonest among 50-60 age groups, whereas nonspecific lymphadenitis was most common in 20-30 age groups. Females were more commonly affected with TL and non-specific lymphadenitis, where as males were significantly affected with lymphoma and metastasis. The results of the study concluded that a strong statistical significance found in the prevalence of CL between the genders ($P = 0.015$). The knowledge about the distribution of CL with respect to the gender and age will help the clinicians to decide an early diagnosis and appropriate treatment.

INTRODUCTION

Lymphadenopathy, an abnormal increase in size and/or altered consistency of lymph nodes, is a clinical manifestation of regional or systemic disease and serves as an excellent clue to the underlying disease. An annual incidence of 0.6-0.7% has been estimated for the general population. It may be an incidental finding in patients being examined for various reasons, or it may be a presenting sign or symptom of the patient's illness. It can present either as isolated or as a part of generalized lymphadenopathy (GL). Seventy-five percent are localized and often caused by a specific pathology in the area of drainage [1]. Cervical lymphadenopathy (CL), lymph node enlargement that is restricted to the cervical area, is a fairly common clinical presentation and often a diagnostic challenge to medical professionals. Superficial CL is a common clinical finding, may be a sign of inflammation, metastatic malignancy or malignant lymphoma [1, 2]. GL has been defined as

involvement of three or more noncontiguous lymph node areas [3, 4]. About 25% of lymphadenopathies are generalized and are often a sign of a significant underlying disease. GL is frequently associated with nonmalignant disorders such as infectious mononucleosis, toxoplasmosis, AIDS, other viral infections, systemic lupus erythematosus, and mixed connective tissue disease [1]. Acute and chronic lymphocytic leukemias and malignant lymphomas also produce generalized adenopathy in adults [1, 4, 5].

The information about the age, sex, site of lymph node involvement and other clinical features with time interval between the initiation of symptoms are most important determinants of early clinical diagnosis. Furthermore, knowledge about the distribution of CL with respect to the gender and age will help the clinicians to decide for an early investigation, appropriate treatment and also help to avoid the diagnostic delay in case like



tuberculosis (TB). Several studies in developing countries concluded the prevalence of TB and found to be the most common reason for CL. However, results are highly inconsistent with the population studied. Therefore, this study is aimed to find out the distribution of CL in different age groups, sex and various causes responsible for the enlargement of cervical lymph nodes in patients who underwent Fine Needle Aspiration Cytology (FNAC) or Fine Needle Aspiration Biopsy (FNAB) and the results reported in this communication.

MATERIAL AND METHODS

All patients 18 years or more with significant cervical lymph node enlargement (lymph node \geq 1cm in diameter) who attend various outpatient / Inpatient surgical departments our hospital during the period January 2012 – June 2013 were included in this study. The study protocol was approved by Institutional Ethical Committee.

Lymph node enlargements were subjected to a detailed clinical history pertaining to specific diseases. The involved lymph node and the drainage area were examined. All these patients are subjected to an ear, nose, and throat evaluation when indicated, thyroid, breast, scalp and salivary glands will be examined for evidence of any lesions. Systemic examination was conducted in all patients. If the duration of lymph node enlargement was less than 3 weeks and did not subside with 2 weeks of antibiotics treatment or increases in size, an FNAC was done. In case of inconclusive results, an excision biopsy (if diameter less than 2 cm) or an Incision biopsy (if diameter more than 2 cm) was done. The results of the investigations such as haemoglobin, complete blood count with erythrocyte sedimentation rate (ESR), platelet count, coagulation profile, serology for HIV and hepatitis B, serum uric acid, lactate dehydrogenase and if required chest X ray, ultrasound of neck and abdomen were also done to confirm the diagnosis. Imaging techniques including a contrast-enhanced computed tomography scan, magnetic resonance imaging, ultrasound and color doppler ultrasonography were employed to differentiate benign from malignant lymph nodes. The clinical diagnosis was made after assessing a combination of various signs, symptoms, history, and laboratory findings. Clinical diagnosis is mainly classified into TB, lymphoma, metastasis and non specific lymph node enlargement.

Exclusion criteria

The patients with cervical lymph node enlargement of less than 3 weeks duration, bleeding disorders, proven primary malignancy with hard fixed lymph node and patients with level VII lymph nodes were excluded from the study.

Statistical analysis

The statistical analysis was performed using SPSS (version 16.0). Chi-square test was done to find the significant difference between gender. P less than 0.05 was considered as significant.

RESULTS

Total 89 patients were included in the study, 51 were males and 38 were females. The mean age of the study population was 45.3 ± 17.14 (19-83 years) (Table 1). The prevalence of TB lymphadenitis was 43.8% and most commonly found in the age group of 30-40. TB was the most common cause of CL in 30- 40 age group and least in 70-80 age group and <30 years age group. Lymphoma was found most commonly in 60-70 age group and least in <20 and age groups of 70-90. Metastasis was most frequently found in 50-60 age group, whereas none below 30 years of age. The Nonspecific lymphadenitis was commonest in 30-40 age groups and found least in 80-90 age groups (Table 2).

Gender wise distribution CL, based on the pathological diagnosis, is depicted in table 3. The findings revealed that females are more affected in case of TB and nonspecific lymphadenitis. Males are significantly affected in case of lymphoma and metastasis. There is strong statistical significance found between the gender ($P = 0.015$). Various causes for the CL among patients with malignancy are depicted in Figure 1. There were 28 cases of malignancy out of which 11 were Non Hodgkin's lymphoma, 4 were Hogkin's lymphoma, 13 were metastasis which include 2 cases of poorly differentiated squamous cell carcinoma, 5 cases of poorly differentiated adenocarcinoma, 1 moderately differentiated adenocarcinoma, 3 undifferentiated adenocarcinoma and 2 cases were invasive ductal carcinoma.

Table 1. Distribution of age

Age (in years)	Frequency	Percent
<20	6	6.7
20-30	13	14.6
30-40	24	27.0
40-50	10	11.2
50-60	17	19.1
60-70	13	14.6
70-80	4	4.5
80-90	2	2.2
Total	89	100.0



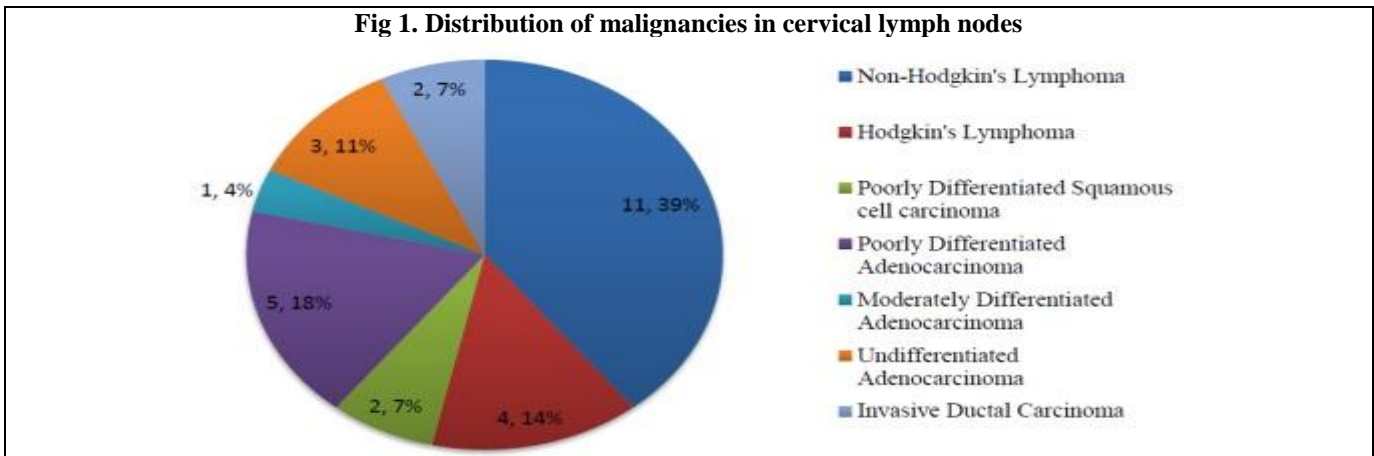
Table 2. Age wise distribution of pathological diagnosis

Age (in years)	Tuberculosis		Metastasis		Lymphoma		Non specific Lymphadenitis	
	No.	%	No.	%	No.	%	No.	%
<20	1	3.1%	0	0%	0	0%	5	17.2%
20-30	6	18.8%	0	.0%	1	6.7%	6	20.7%
30-40	14	43.8%	1	7.7%	3	20.0%	6	20.7%
40-50	3	9.4%	0	.0%	2	13.3%	5	17.2%
50-60	2	6.2%	5	38.5%	5	33.3%	5	17.2%
60-70	4	12.5%	3	23.1%	4	26.7%	2	6.9%
70-80	2	6.2%	2	15.4%	0	.0%	0	0%
80-90	0	0%	2	15.4%	0	.0%	0	0%
<i>Total</i>	<i>32</i>		<i>13</i>		<i>15</i>		<i>29</i>	

Table 3. Gender wise distribution of pathological diagnosis

	Pathological diagnosis				P value
	Males		Females		
	No.	%	No.	%	
Tuberculosis	14	43.8	18	56.2	0.015 (Chi square value- 10.49)
Metastasis	11	84.6	2	15.4	
Lymphoma	12	80	3	20	
Non Specific Lymphadenitis	14	48.3	15	51.7	

Fig 1. Distribution of malignancies in cervical lymph nodes



DISCUSSION

The result of this study revealed that TB is the most common cause of CL in 30- 40 age group. The prevalence was found to be 43.8%. Previous studies have reported TB as the major cause for CL in developing countries and the peak TB lymphadenitis occurred in 2nd-3rd decades of life with female affected more than male [6,

7]. A recent report by Biswas et al. showed that the TB lymphadenitis ranked on the top (45.4%) followed by secondary metastasis from different other Primary malignancies [8]. They found distribution of CL in different age groups as non-specific/reactive lymphadenitis was significantly more common in <14 years, TB lymph node in 15-59 years and malignancy among the ≥60 years age



group. Similarly, Khan et al. in a cross sectional study in eight hundred and ninety-three patients of Indian population found the cause of CL was tubercular origin (48.87 %) [9]. The most common observation was unilateral, matted adenopathy in female patients aged between 11 and 20 years and without constitutional symptoms of tuberculosis. TB lymphadenitis occurred most commonly in young female [10]. However, study from other population belonging to developing countries found no such significant difference in prevalence between male and female for TB lymphadenitis [11].

Lymphadenopathy is common, affecting patients of all ages and cervical lymphadenopathy is a common problem in children [12]. The physician must eventually decide whether the lymphadenopathy is a normal finding or one that requires further study, up to and including biopsy. Soft, flat, submandibular nodes (<1 cm) are often palpable in healthy children and young adults; healthy adults may have palpable inguinal nodes of up to 2 cm, which are considered normal. Further evaluation of these normal nodes is not warranted. In contrast, if the physician believes the node(s) to be abnormal, then pursuit of a more precise diagnosis is needed.

In CL, only the cervical lymph nodes are affected which can be defined as local. Cervical lymph nodes can be broadly divided into superficial such as consists of occipital, retroauricular or mastoid, preauricular or superficial parotid, deep parotid, submental, superficial nodes along the accessory nerve and along the external jugular and anterior jugular veins and deep groups consists of upper deep cervical group containing jugulodigastric nodes, the lower deep cervical group containing jugulo-omohyoid nodes, supraclavicular nodes, the anterior cervical nodes and the retropharyngeal nodes [13,14,15].

In this study, tuberculosis was diagnosed by taking into consideration of history of fever, weight loss, cough > 2 weeks, past history of tuberculosis, family history of tuberculosis, lymph node size >1cm, firm consistency of lymph node, matting of lymph nodes, chest x-ray signs of tuberculosis such as fibrosis and cavitation, total count > 1100011 cells/mm³, lymphocytes > 40%, monocytes > 8%, ESR > 15 mm/1st hour, HIV positivity. Presence of any 6 out of this 14 has been taken to be clinically tuberculous lymphadenitis [16, 17]. Mainly extrapulmonary TB cases are attributable to tuberculous lymphadenitis, commonly in the cervical lymph nodes, followed by the mediastinal and axillary nodes [18, 19]. The typical presenting symptom is found to be long-term, unilateral, nontender lymphadenopathy. The systemic symptoms are often absent [20].

FNAC was found to be simple, safe, convenient test without any single record of complication and it is effective in the diagnosis of tubercular lymphadenitis with high accuracy [21]. Tripathy et al reported a diagnostic accuracy as high as 100% in tuberculous lymphadenopathy cases has been reported by [22]. But it is not recommended

for other sites, where a histopathological examination required to make the diagnosis [23, 22]. Excision biopsy and histopathological examination were required to make a diagnosis in tuberculosis of the oral and nasal cavities, salivary glands, ear, temporo-mandibular joint, and mandible. Furthermore, lymph node biopsy is recommended, if the lymph node enlargement persists beyond 4 to 6 weeks or it continues to enlarge. The cause of symptoms, such as an ongoing fever, night sweats, or weight loss should verify. Test based on pus culture and sensitivity was found positive only in cases of the spine and mandibular tuberculosis. Furthermore, the purified protein derivative test was positive in only 20 per cent of cases.

The incidence of cancer in Indian population found to be increased with age. More than 12-23% of all cancers occur after the age of 65 years [23]. Lymphoma and myeloma were marginally higher in elderly group (4%) than younger cancer patients [24]. The prevalence of malignancy in advanced age may probably due to the acquired immunosuppression and the variation of incidence in different population may be associated with socio-economic changes. Results of our study found that CL associated with lymphoma was the most common in 60-70 age groups and males are dominating. The differential diagnosis of malignancy was done by histopathology. Among the 28 cases of malignancy, we found 11 cases of Non Hodgkin's lymphoma. The previous studies report are in agreement with the findings of our study [25-27]. The extract reason for the differential distribution of CL with age and gender remains elusive. Short period and less number of sampling were the main limitations of this study. Hence, further prospective multi-centric studies are warranted to elucidate mechanism of differential distribution.

CONCLUSION

Knowledge about distribution of cervical lymphadenopathy with respect to the gender and age will help the practitioners to take decide for an early investigations and appropriate treatment. Moreover, it may help to avoid the diagnostic delay in cases like tuberculosis. Since the prevalence of cervical lymphadenopathy was found in the age group of 30-40 years with more occurrences in females, otolaryngologists should aware of tuberculosis in the head and neck region.

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DECLARATION OF INTEREST STATEMENT

The authors declare that they have no significant competing financial, professional or personal interests that might have influenced the performance or presentation of the work described in this manuscript.



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