Section: General Surgery

Original Research Article

STUDY OF ASSESSMENT OF CLINICAL PRESENTATION OF CERVICAL LYMPHADENOPATHY

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Received *: 08/05/2025*
Received in revised form *: 24/07/2025*
Accepted *: 14/07/2025*

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DOI: 10.70034/ijmedph.2025.3.132

Source of Support: Nil,
Conflict of Interest: None declared

Int J Med Pub Health
2025; 15 (3); 714-717

ABSTRACT

Background: Cervical lymphadenopathy is a common clinical presentation with a wide range of etiologies, including infectious, inflammatory, and malignant causes. This study aimed to evaluate the clinical and diagnostic profiles of patients presenting with cervical lymphadenopathy at a tertiary care hospital.

Materials and Methods: A prospective observational study was conducted in the Department of Surgery at the Himalayan Institute of Medical Sciences, Dehradun, over 12 months. A total of 57 patients with cervical lymphadenopathy were enrolled. Detailed clinico-demographic data, along with lymph node characteristics, were recorded. Fine needle aspiration cytology (FNAC) or biopsy was performed for diagnostic confirmation. Statistical analysis was conducted using SPSS software (version 23), with a p-value of <0.05 considered statistically significant.

Results: The average age of patients was 46.16±18.95 years. Tuberculosis (TB) was the most common diagnosis (52.63%), followed by carcinoma (21.05%) and reactive lymphoid hyperplasia (RLH) or lymphoproliferative disorders (22.81%). Carcinoma patients had the highest mean age (60.25 years, p<0.0001). TB patients showed matted nodes (100%), while carcinoma nodes were hard (100%). Oral infections were significantly associated with RLH/PD (p<0.0001).

Conclusion: TB remains the most frequent cause of cervical lymphadenopathy, while carcinoma is more prevalent in older patients. Lymph node characteristics and associated conditions can aid in diagnosis and management.

Keywords: Cervical lymphadenopathy, tuberculosis, carcinoma.

INTRODUCTION

Cervical lymphadenopathy refers to the enlargement of lymph nodes in the neck, which can arise from various causes, ranging from benign infections to malignant conditions.[1] Lymph nodes play a crucial role in the body's immune system by filtering harmful substances, and any abnormality in their size or texture may indicate underlying pathological conditions.[2,3] Cervical lymphadenopathy is commonly encountered in clinical practice, presenting a diagnostic challenge due to its diverse etiology, which includes infectious causes like tuberculosis, viral infections, bacterial infections, and non-infectious causes such as autoimmune disorders, malignancies like lymphoma, and metastatic cancers.[4]

The clinical presentation of cervical lymphadenopathy varies significantly based on the underlying cause, with symptoms ranging from painless swelling to tender, inflamed nodules associated with systemic symptoms such as fever, weight loss, or night sweats. A detailed clinical assessment, including a thorough history, physical examination, and appropriate investigations, is essential for identifying the cause and guiding management.[5-7] This study aims to assess the clinical presentation of patients with cervical lymphadenopathy, evaluate the common aetiologies, and analyse the factors influencing diagnosis and

treatment outcomes. Understanding these factors is crucial for early diagnosis and appropriate management, which can significantly affect patient prognosis, especially in cases of malignancy.

MATERIALS AND METHODS

This prospective study was conducted in the Department of Surgery at Himalayan Institute of Medical Sciences, Swami Ram Nagar, Dehradun, with the aim of evaluating various aetiologies of cervical lymphadenopathy in patients attending this tertiary care hospital. The study was observational in design, utilizing a cohort approach. Over a period of 12 months, 57 patients who presented with cervical lymphadenopathy were enrolled in the study using a non-randomized convenient sampling method. All patients who provided informed consent and met the inclusion criteria were included. Patients with uncorrected bleeding disorders or neck swellings that were not confirmed to be cervical lymph nodes by FNAC or biopsy were excluded from the study.

Detailed data was collected for each patient, including demographics, history of neck swelling or cause of referral, associated symptoms, prior and recent investigations, clinical findings, and FNAC/biopsy reports. These details were documented in a predesigned proforma, and the study focused on identifying the underlying aetiologies of cervical lymphadenopathy. FNAC and biopsy results were thoroughly analysed to determine the nature of the lymph node enlargement, and any additional diagnostic information was noted as part of the clinical assessment.

The collected data was entered into Microsoft Excel, and statistical analysis was performed using SPSS software version 23. Descriptive statistics such as means, standard deviations, frequencies, and percentages were calculated to summarize patient demographics and clinical findings. Inferential statistics, including the chi-square test, were applied to assess the association between clinical variables. A p-value of less than 0.05 was considered statistically significant for determining the relevance of the findings.

RESULTS

The study was performed at the Department of Surgery at the Himalayan Institute of Medical Sciences, Dehradun. Data of 57 patients with cervical lymphadenopathy was included for the study. An exhaustive evaluation of the clinico-demographic and investigational profile was done. A comparative assessment based on the final diagnosis was done. The major findings of the study have been provided below. The average age of patients included in the study was 46.16±18.95 years with a median age of 47 years. Most of the patients were in the age group of 41-60 yrs (33.33%). There was a slight male preponderance in the study with 30 males (52.63%).

30 patients or 52.63% of the study population was diagnosed with tuberculosis (TB). 12 patients were seen to have carcinoma (21.05%) and remaining patients had Reactive lymphoid hyperplasia (RLH) (15.79%), Lymphoproliferative disorders (PD) (7.02%) and other disorders like salivary gland tumors or swelling (3.51%).

It was seen that the patients with carcinoma had the highest age compared to the patients with TB or RLH/PD (60.25 years vs 42.40 years in the other two groups). The difference was statistically significant with a P value of <0.0001.

Table 1: Final diagnosis and pattern of lymph nodal group involvement

GPE findings	Carcinoma	RLH/PD/Others	TB
Number of patients	12	15	30
Level 1	2 (16.67%)	1 (6.67%)	1 (3.33%)
Level 2	3 (25%)	3 (20%)	11 (36.67%)
Level 3	1 (8.33%)	5 (33.33%)	11 (36.67%)
Level 4	4 (33.33%)	4 (26.67%)	8 (26.67%)
Level 5	2 (16.67%)	2 (13.33%)	0
Level 6	1 (8.33%)	0	1 (3.33%)
Level 7	0	1 (6.67%)	0

*-Chi square test

Table 2: Final diagnosis and other associated conditions

GPE findings	Carcinoma	RLH/PD/Others	TB	P Value
Number of patients	12	15	30	
Ulcer/Sinus/Fistula	0	0	0	-
Oral/Tooth Infections	0	6 (40%)	0	<0.0001

*-Chi square test

Table 3: Final diagnosis and lymph node characteristics

Lymph node features	Carcinoma	RLH/PD/Others	TB	P Value
Number of patients	12	15	30	
Consistency				
Firm	0	9 (60%)	5 (16.67%)	0.0001
Hard	12 (100%)	4 (26.67%)	25 (83.33%)	
Soft	0	2 (13.33%)	0	

Tenderness				
Yes	1 (8.33%)	10 (66.67%)	7 (23.33%)	0.0019
Mobility				
Yes	0	14 (93.33%)	2 (6.67%)	<0.0001
Matted				
Yes	0	0	18 (100%)	<0.0001

*-Chi square test

DISCUSSION

The present study aimed to assess the clinical presentation and diagnostic outcomes of cervical lymphadenopathy in a cohort of patients attending a tertiary care hospital. A total of 57 patients were included in the study, and an exhaustive evaluation of their clinico-demographic and investigational profiles was undertaken. The patients were categorized based on their final diagnoses, which predominantly included tuberculosis (TB), carcinoma, reactive lymphoid hyperplasia (RLH), and lymphoproliferative disorders (PD). The study also explored lymph node characteristics, their patterns of involvement, and other associated conditions across the different diagnostic groups. The findings provide a comprehensive overview of the etiological spectrum of cervical lymphadenopathy and highlight significant correlations between the clinical presentation and the underlying diagnosis.[8]

Demographic Profile: The mean age of the study population was 46.16 ± 18.95 years, with a median age of 47 years. The age group with the highest representation was 41-60 years, constituting 33.33% of the cohort. A slight male preponderance was observed, with 30 males (52.63%) and 27 females (47.37%). These findings are consistent with previous studies, which have also shown a higher incidence of cervical lymphadenopathy in middle-aged adults and a slight male dominance. The higher prevalence in males could be attributed to lifestyle factors, occupational exposures, and health-seeking behaviour differences between genders.

Etiological Distribution: The most common cause of cervical lymphadenopathy in this study was tuberculosis, which was diagnosed in 52.63% (30 patients). Carcinoma was the second most common aetiology, accounting for 21.05% (12 patients), while RLH and PD were observed in 15.79% (9 patients) and 7.02% (4 patients), respectively. A small percentage (3.51%) of patients had other conditions such as salivary gland tumours or swelling.

These results underscore the importance of tuberculosis as a leading cause of cervical lymphadenopathy in developing regions like India, where TB remains endemic. The high incidence of TB-related lymphadenopathy is concerning, as it suggests that public health efforts to control TB transmission may not be reaching all segments of the population effectively. On the other hand, carcinoma-related lymphadenopathy, though less common than TB, represents a significant proportion of cases, especially in older adults. This highlights the need for thorough investigations in patients presenting with lymph node enlargement, particularly those in higher age groups, to rule out malignancy.

Age Distribution and Diagnostic Correlations: The study revealed that patients diagnosed with carcinoma had a significantly higher mean age compared to those with TB or RLH/PD. The mean age of patients with carcinoma was 60.25 years, whereas the mean age of patients with TB and RLH/PD was 42.40 years. The difference was statistically significant with a p-value of <0.0001. This finding is consistent with the known epidemiology of cervical lymphadenopathy, where malignancies tend to occur more frequently in older individuals, while infectious causes like TB are more prevalent in younger populations.[9]

Lymph Node Group Involvement: The pattern of lymph nodal group involvement showed marked differences across the diagnostic categories. In carcinoma cases, the most frequently involved lymph node levels were Levels 2 and 4, each accounting for 25% and 33.33% of cases, respectively. This is in line with the typical presentation of head and neck carcinomas, where deep cervical nodes (particularly Levels 2, 3, and 4) are often the first sites of metastasis. In contrast, TB patients showed a more diffuse involvement, with 36.67% of cases affecting both Levels 2 and 3, and 26.67% involving Level 4. RLH/PD patients exhibited a relatively even distribution, with significant involvement of Level 3 (33.33%) and Level 4 (26.67%).

This variability in nodal group involvement underscores the importance of anatomical localization in the diagnostic evaluation of cervical lymphadenopathy. The differential involvement of nodal groups can provide valuable clues for clinicians in determining the underlying cause of the lymphadenopathy. For instance, the involvement of lower cervical nodes (Levels 4 and 5) in elderly patients should raise suspicion of malignancy, whereas more diffuse involvement across multiple levels in younger patients may indicate an infectious or inflammatory cause.[10]

An interesting finding in the study was the significant association between RLH/PD and oral/tooth infections. Among the 15 patients diagnosed with RLH/PD, 40% had concurrent oral or dental infections. This association was statistically significant with a p-value of <0.0001. The presence of oral infections as a contributing factor to reactive lymphadenopathy is well-documented in the literature, as localized infections in the head and neck region can lead to a reactive immune response, causing lymph node enlargement. Therefore, in patients presenting with RLH, it is important to

conduct a thorough examination of the oral cavity and dental health to identify potential sources of infection.

The study also examined the characteristics of the lymph nodes across the different diagnostic groups, including their consistency, tenderness, and mobility. Notably, all patients with carcinoma had hard lymph nodes (100%), while the majority of TB patients had hard nodes (83.33%). In contrast, RLH/PD cases predominantly presented with firm lymph nodes (60%), and a small proportion (13.33%) had soft lymph nodes. These differences in consistency were statistically significant, with a p-value of 0.0001.

Tenderness was another distinguishing feature, with 66.67% of RLH/PD patients reporting tender lymph nodes, compared to only 8.33% of carcinoma patients and 23.33% of TB patients. This observation supports the clinical understanding that malignant lymph nodes are typically non-tender, while inflammatory or reactive nodes are often tender due to the associated inflammatory response.

Mobility and matting of lymph nodes were also key differentiating factors. RLH/PD patients had the highest proportion of mobile nodes (93.33%), whereas all TB patients with matted nodes (100%) were indicative of advanced or chronic TB infection. The absence of mobility and the presence of matting in TB patients were statistically significant ($p < 0.0001$), reflecting the characteristic presentation of TB-related lymphadenopathy, where nodes often become matted due to chronic inflammation and fibrosis.

CONCLUSION

The findings of this study provide important insights into the clinical and diagnostic spectrum of cervical lymphadenopathy. Tuberculosis remains the most common cause of lymphadenopathy in this population, particularly among younger patients, while malignancy is more prevalent in older individuals. The significant associations between lymph node characteristics, their anatomical distribution, and the underlying diagnosis highlight the importance of a structured clinical approach in evaluating cervical lymphadenopathy. Early diagnosis, particularly of malignancies, is crucial for improving patient outcomes, emphasizing the need for thorough investigation and timely intervention.

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