



Original Article

Clinical Evaluation of Cervical Lymphadenopathy in a Tertiary Care Setting: A Study from Dhaka, Bangladesh

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Abstract

Background: Cervical lymphadenopathy, characterized by the enlargement of lymph nodes in the neck, is a common clinical finding that often indicates underlying systemic or localized diseases. It can result from a wide range of conditions, including infections, malignancies, and inflammatory disorders. This study aimed to observe the clinical profile of cervical lymphadenopathy in adults in Bangladesh.

Methods: This hospital-based cross-sectional observational study was conducted in the Department of Medicine, Dhaka Medical College and Hospital (DMCH) from November 2011 to November 2012. It included 115 patients from both inpatient and outpatient cases of cervical lymphadenopathy. Statistical analyses were performed using SPSS version 20.0. Different methods were adopted with a significant level of $p < 0.05$.

Results: The study involved 115 patients with cervical lymphadenopathy, with a mean age of 42.1 ± 15.6 years and a male predominance (65%). The majority of participants came from low (49.6%) and middle (48.7%) socioeconomic backgrounds. Common clinical features included generalized weakness (91.3%), weight loss (88.7%), and loss of appetite (85.2%), while headache (33.3%), cough (32.2%), and sputum production (22.6%) were less frequent. Chest X-ray findings were mostly normal (76.5%), with consolidation (7%) and other abnormalities noted in smaller proportions. Hemoglobin levels were primarily between 7-11 g/dL and elevated ESR and leukocyte count indicated an ongoing inflammatory process.

Conclusion: In this study highlights the significant clinical burden of cervical lymphadenopathy in a tertiary care setting in Dhaka, Bangladesh. The findings emphasize the predominance of nonspecific symptoms such as generalized weakness, weight loss, and fever, with a variety of underlying causes, including infections and malignancies. The importance of comprehensive clinical evaluation, including chest X-rays and laboratory investigations, is underscored for accurate diagnosis and effective management of cervical lymphadenopathy in this region.

Keywords: Cervical Lymphadenopathy, Clinical Evaluation, Chest X-ray, ESR

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Introduction

Cervical lymph node enlargement is a common clinical finding in medical practice.¹ Enlargement of lymph nodes may result from a proliferation of lymphocytes intrinsic to the lymph node either due to infection or due to lymphoproliferative disorder or from the migration & infiltration of nodal tissue by either extrinsic inflammatory cells or metastatic malignant cells.² Cervical lymphadenopathy may be due to Infections, Malignancy, Autoimmune diseases, Miscellaneous/unusual conditions, and iatrogenic causes.³ Any failure to decrease the size of the lymph node within 10-14 days of treatment, a need for further evaluation is indicated.⁴ The most common cause of cervical lymphadenopathy is reactive hyperplasia resulting from an infectious process, most commonly a viral upper respiratory tract infection.⁵ Upper respiratory tract infection might be caused by rhinovirus, Parainfluenza virus, influenza virus, respiratory syncytial virus, coronavirus, adenovirus, or reovirus. Bacterial cervical lymphadenitis is usually caused by group A β -hemolytic streptococci or *Staphylococcus aureus*. Anaerobic bacteria can cause cervical lymphadenitis, usually in association with dental caries and periodontal disease. Group B streptococci and *Haemophilus influenzae* type b are less frequent causal organisms. Diphtheria is a rare cause. *Bartonella henselae* (cat scratch disease), atypical mycobacteria, and mycobacteria are important causes of subacute or chronic cervical lymphadenopathy.⁶ Chronic posterior cervical lymphadenitis is the most common form of acquired toxoplasmosis and is the sole presenting symptom in 50% of cases.⁷ During the first 6 years of life, neuroblastoma and leukemia are the most common tumors associated with cervical lymphadenopathy, followed by rhabdomyosarcoma and non-Hodgkin's lymphoma. After 6 years, Hodgkin's lymphoma is the most common tumor associated with cervical lymphadenopathy, followed by non-Hodgkin's lymphoma and rhabdomyosarcoma. A study took place to determine demographic profile of cervical lymphadenopathy among Indian population and found that 83/219 (38%) cases were of tubercular lymphadenitis, 52/219 (24%) cases show metastatic tumours, 49/219 (22%) hyperplastic lymph nodes, 24/219 (11%) acute lymphadenitis, 8/219 (3.7%) lymphoma and 3/219 (1.4%) were leukemic lymphadenopathy.⁸ Tubercular lymphadenopathy was found with increasing frequency through adolescence (43.30%) to young adulthood (54.75%) & (48.18%) in adulthood. 67/219 (30.59%) cases of tuberculosis were in the age group of 11-40 years. 39/219 (17.8%) cases of metastatic tumors were in the age group of 31- 60 years. The highest incidence of metastatic malignancy was seen in the fifth decade (35%). In 2006 Yaris *et al.* performed a retrospective review of 126 patients in USA. Of the 126 patients 22.2% were found to have diseases other than lymphadenopathy. Of those with lymphadenopathy, 76.6% had benign disease mostly belonging to acute

lymphadenitis and 23.4% had malignancies.⁹ In a study performed by Ellison *et al.* in 1999 of 309 clavicular fine needle aspirations, they found that 55% of nodes sampled were malignant.¹⁰ Zeharia *et al.* performed retrospectively on 92 children diagnosed with atypical mycobacterial lymphadenopathy.¹¹ The parents of all 92 children in the study opted for non-surgical and non-medical conservative management, and patients were followed for a minimum of 2 years. Clinical profile includes 80% of patients were less than 4 years old, 80% of patients had lymphadenopathy greater than 3cm in size, 90% of patients had unifocal lymphadenopathy, Lymphadenopathy was most commonly found in Submandibular (50%), Cervical (25%), Pre-auricular (10%) regions, 85% of patients had a positive PPD (>10mm), 90% of cases were due to *M. avium-intracellulare* and *M. haemophilum*, 97.4% of patients had a dominant node with purulent drainage for 3-8 weeks. In Bangladesh, like all developing countries infectious diseases still prevail at a high rate. Among all other diseases tuberculosis with all its variation in presentation and sensitivity to drugs is a major threat to our healthcare system. This study aimed to observe the clinical profile of cervical lymphadenopathy in adults in Bangladesh.

Methods

This hospital-based cross-sectional observational study was conducted in the Department of Medicine, Dhaka Medical College and Hospital (DMCH) from November 2011 to November 2012. It included both inpatient and outpatient cases of cervical lymphadenopathy, who were screened by duty physicians and referred to the study physician for enrollment based on inclusion and exclusion criteria. After obtaining informed written consent, a detailed history, physical examination, and relevant investigations—including complete blood count, hemoglobin, ESR, peripheral blood film, chest X-ray (PA view), urine routine examination, and random blood sugar—were performed. Most investigations were conducted in the Pathology, Haematology, and Radiology departments of DMCH. Data were collected using a structured proforma, and statistical analyses were performed using SPSS version 20.0. Continuous variables were expressed as mean \pm standard deviation, while categorical variables were presented as frequencies and percentages with 95% CI. The Chi-Square test was used for categorical variables, and ANOVA for continuous variables, with a significant level of $p < 0.05$. Ethical approval was obtained from the Dhaka Medical College Ethical Review Committee, and confidentiality was assured.

Inclusion criteria

Patients aged ≥ 18 years
Cervical lymphadenopathy > 1.0 cm in diameter
Duration of lymphadenopathy ≥ 14 days
Patients presenting to the inpatient and outpatient departments of Medicine, DMCH

Exclusion criteria

Patients with insignificant lymph node enlargement (<1.0 cm)

Patients unwilling to provide consent

Results**Table 1: Distribution of study population by demographic findings (n=115)**

Characteristics	Number	Percentage
Age (Years)		
≤20	7	6.1
21-30	34	29.6
31-40	14	12.2
41-50	24	20.9
51-60	23	20.0
61-70	11	9.6
>70	2	1.7
Mean ±SD	42.1±15.6	
Range	19-80	
Sex		
Male	83	65
Female	32	24
Total	115	89
Occupation		
Laborer	31	27.0
Business	27	23.5
Housewife	20	17.4
Student	17	14.8
Service	11	9.6
Unemployed	9	7.8
Socio-economic Class		
Low Socioeconomic status	57	49.6
Middle Class	56	48.7
Higher Class	2	1.7

The study population (n=115) had a mean age of 42.1±15.6 years (range: 19-80), with the majority aged 21-30 years (29.6%). Males (65%) outnumbered females (24%). Regarding occupation, laborers (27%) and businesspersons (23.5%) were the most common, followed by housewives (17.4%), students (14.8%), service holders (9.6%), and the unemployed (7.8%). Socioeconomic distribution showed nearly equal representation of low (49.6%) and middle-class individuals (48.7%), with only 1.7% belonging to the higher class. [Table 1]

Table 2: Distribution of study population by clinical presentation (n=115)

Clinical feature	Number	Percent age	95% CI Lower	Upper
Generalized weakness	105	91.3	86.1	96.5
Weight loss	102	88.7	82.9	94.5
Loss of Appetite	98	85.2	78.7	91.6

Fever	90	78.3	70.7	85.8
Headache	38	33.3	24.6	41.9
Cough	37	32.2	23.6	40.7
Sputum production	26	22.60	14.9	30.2
Alteration of bowel habit	11	9.6	4.22	15.0
Haemoptysis	5	4.3	0.59	8.0
Joint pain	4	3.5	0.14	6.9
Jaundice	2	1.8	-	4.2

The most common clinical presentations among the study population (n=115) were generalized weakness (91.3%), weight loss (88.7%), and loss of appetite (85.2%), followed by fever (78.3%). Symptoms like headache (33.3%), cough (32.2%), and sputum production (22.6%) were observed in a smaller proportion. Less frequently reported symptoms included alteration of bowel habits (9.6%), hemoptysis (4.3%), joint pain (3.5%), and jaundice (1.8%). [Table 2]

Table 3: Distribution of study population by investigations (n=115)

CXR P/A view	Number	Percentage
Normal Study	88	76.5
Features of Consolidation	8	7.0
Features of effusion	4	3.5
Collapse of lung	4	3.5
Bilateral hilar shadow	4	3.5
Features of Fibrosis	4	3.5
Features of Cardiomegaly	2	1.7
Patchy opacity	1	0.9
Hb% (gm/dl)		
<7	3	2.6
7-11	100	87.0
12-16 (normal)	12	10.4
Mean±SD	9.8	±1.6
Range (Min, max)	4.7	,15
ESR (mm in 1 st hour)		
<15	1	0.9
15-100	98	85.2
>100	16	13.9
Mean±SD	73.5	±27.4
Range (Min, max)	10	,150
Total count (/mm³) of WBC		
<4000	1	0.9
4000-11000 (Normal)	89	77.4
>11000	25	21.7
Mean±SD	9126.4	±3761.9
Range (Min, max)	4000	,20000

The majority of chest X-rays (CXR) in the study population (n=115) were normal (76.5%), while 7% showed consolidation and smaller proportions exhibited effusion (3.5%), lung collapse (3.5%), bilateral hilar shadowing (3.5%), fibrosis (3.5%), cardiomegaly (1.7%), or patchy opacity (0.9%). Hemoglobin levels were mostly in the 7-11 g/dL range (87%), with a mean of 9.8 ± 1.6 g/dL. Erythrocyte sedimentation rate (ESR) was elevated in most cases, with 85.2% between 15-100 mm/hr and 13.9% exceeding 100 mm/hr (mean: 73.5 ± 27.4 mm/hr). The total leukocyte count was normal in 77.4%, while 21.7% had leukocytosis ($>11,000/\text{mm}^3$), with a mean of $9126.4 \pm 3761.9/\text{mm}^3$. [Table 3]

Discussion

The mean age was 42.1 ± 15.6 years varied from 19 to 80 years. Similarly, in our country, Rahman *et al.* obtained in their study that the age of the patients varied from 2 to 85 years and most of the patients were in the 3rd decade (17.8%) followed by 4th decade (19.6%) and 2nd decade (17.8%) of life. The majority of the patients (61.7%) were between 11-40 years of age.¹² In other studies; Pandav *et al.* mentioned that the maximum numbers (21.0%) of cases were in the age grouping of 21-30 years; Naeimi *et al.* found that the mean age was 47.07 years with a range of 8–81 years.⁸⁻¹³ In this study of 115 patients with cervical lymphadenopathy, we observed a predominance of generalized symptoms such as generalized weakness (91.3%), weight loss (88.7%), and loss of appetite (85.2%), followed by fever (78.3%). These findings align with the commonly recognized systemic signs associated with various etiologies of lymphadenopathy, including infections, malignancies, and autoimmune conditions.¹⁴ The high prevalence of these nonspecific symptoms in the study population highlights the need for a comprehensive clinical approach to the diagnosis and management of patients presenting with cervical lymphadenopathy. Symptoms such as headache (33.3%), cough (32.2%), and sputum production (22.6%) were also observed, though less frequently, suggesting that these may be more indicative of specific underlying causes, such as tuberculosis or malignancy. When examining the chest X-ray findings, a significant majority of patients (76.5%) had normal radiographs. However, a notable proportion of patients exhibited abnormal findings such as consolidation (7.0%), effusion (3.5%), bilateral hilar shadowing (3.5%), and fibrosis (3.5%). These findings emphasize the importance of chest X-rays in identifying potential underlying conditions like tuberculosis, pneumonia, or malignancy. Given the broad range of abnormal radiographic features, clinicians should carefully interpret these results in conjunction with clinical symptoms to aid in differential diagnosis, as highlighted by other studies.¹⁵ The laboratory findings provided further insight into the study population's clinical presentation. Hemoglobin levels indicated a majority of patients were anemic, with 87% of patients having Hb

levels in the 7-11 g/dL range, which is consistent with chronic illnesses such as tuberculosis and malignancies that often cause anemia of chronic disease.¹⁶ The presence of severe anemia (<7 g/dL) in 2.6% of cases, particularly among patients with metastatic carcinoma and tuberculosis, suggests a potential association between anemia and advanced stages of these conditions. Erythrocyte sedimentation rate (ESR) levels were elevated in 85.2% of the study population, with 13.9% showing significantly high ESR (>100 mm/hr), a nonspecific but useful indicator of inflammation. This is commonly seen in infections and malignancies, where inflammatory responses are prominent.¹⁷ Moreover, the total white blood cell (WBC) count was normal in 77.4% of patients, while 21.7% showed leukocytosis, which is consistent with inflammatory and malignant conditions.¹⁸ These findings are consistent with the study which also identified lymphadenopathy as a significant clinical feature in both infectious and malignant conditions.⁸ Furthermore, studies have shown that abnormal chest X-ray findings, such as consolidation and effusion, can be important markers in identifying tuberculosis or metastatic cancer, reinforcing the need for imaging as part of the diagnostic workup for lymphadenopathy.¹⁹

Limitations of The Study

The study was conducted in a single hospital with a small sample size. So, the results may not represent the whole community.

Conclusion

In this study highlights the significant clinical burden of cervical lymphadenopathy in a tertiary care setting in Dhaka, Bangladesh. The findings emphasize the predominance of nonspecific symptoms such as generalized weakness, weight loss, and fever, with a variety of underlying causes, including infections and malignancies. The importance of comprehensive clinical evaluation, including chest X-rays and laboratory investigations, is underscored for accurate diagnosis and effective management of cervical lymphadenopathy in this region.

Recommendation

It is recommended that healthcare providers in tertiary care settings prioritize early and thorough clinical evaluation of cervical lymphadenopathy, incorporating a combination of detailed history, physical examination, imaging, and laboratory investigations. Further, awareness of common etiologies, such as tuberculosis and lymphoma, as well as rare conditions, should guide the diagnostic approach. Additionally, further studies are needed to explore the evolving epidemiology of cervical lymphadenopathy, assess the impact of newer diagnostic technologies, and refine treatment protocols to better address the specific needs of the patient population in Bangladesh.

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