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Original Research Article

Aetiopathological Study of Cervical Lymphadenopathy at Dhaka Community Medical College Hospital – An Observational Study

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Abstract: ***Introduction:*** Cervical lymphadenopathy is a common clinical presentation with a wide range of causes, including infections, reactive processes, and malignancies. This study aimed to evaluate the aetiopathological profile of cervical lymphadenopathy among patients at Dhaka Community Medical College Hospital. ***Materials and Methods:*** A cross-sectional observational study was conducted at the Department of ENT and Head-Neck Surgery, Dhaka Community Medical College Hospital, from July 2024 to January 2025. A total of 79 patients with cervical lymphadenopathy were included. All underwent clinical evaluation, baseline investigations, and FNAC. Histopathological examination was performed in cases with inconclusive or suspicious FNAC results. ***Results:*** The majority of patients were in the 21–40 years age group (54.4%) and predominantly male (60.8%). Most were from urban areas (70.9%) and lower socioeconomic status (77.2%). FNAC identified tubercular lymphadenitis in 54.4%, metastatic lesions in 17.7%, and lymphoma in 6.3%, while 7.6% were false-negative. Histopathological confirmation revealed tuberculosis as the most common etiology (59.5%), followed by metastatic disease (17.7%), non-reactive lymphadenitis (11.4%), lymphoma (3.8%), necrotizing lymphadenitis (5.1%), and Castleman disease (2.5%). ***Conclusion:*** Tuberculosis remains the predominant cause of cervical lymphadenopathy in this setting. FNAC proves to be a reliable first-line diagnostic tool, though histopathological examination remains indispensable in complex or inconclusive cases. Early identification of etiology through a structured diagnostic approach is vital for appropriate management and improved patient outcomes.

Keywords: Cervical lymphadenopathy, FNAC, tuberculosis, histopathology, metastatic lymphadenopathy, Bangladesh.

INTRODUCTION

Cervical lymphadenopathy, the enlargement of cervical lymph nodes, is a frequent clinical presentation across all age groups and often poses a diagnostic challenge due to its wide range of possible causes. It may be associated with benign reactive conditions, infectious diseases, autoimmune disorders, primary lymphoid malignancies, or metastatic cancers [1,2]. In clinical practice, a systematic evaluation is essential to determine the underlying pathology and ensure timely and appropriate management. The pattern of cervical lymphadenopathy varies by geographic region, age, and associated comorbidities. In developing countries like Bangladesh, infectious causes particularly tuberculosis are among the most common etiologies, whereas in developed countries, malignancies are more frequently observed [3,4]. Extrapulmonary tuberculosis, especially tubercular lymphadenitis, remains a major public health concern in South Asia, and accounts for a substantial proportion of cervical lymphadenopathy cases [5,6]. Fine needle aspiration cytology (FNAC) is a minimally

invasive and cost-effective diagnostic tool that plays a vital role in the initial evaluation of cervical lymphadenopathy. It offers high sensitivity and specificity in differentiating benign from malignant and granulomatous conditions [7,9]. However, in certain cases such as suspected lymphoma or inconclusive FNAC results excisional biopsy followed by histopathological examination is necessary for definitive diagnosis [10,11]. Recent studies have shown a changing trend in the aetiopathological spectrum of cervical lymphadenopathy. While tuberculosis still dominates the infectious causes, a gradual increase in the proportion of metastatic malignancy and lymphoma has been observed in urban tertiary healthcare settings [12,13]. Moreover, diagnostic delays and mismanagement may occur if clinical judgment is not supported by appropriate investigations, particularly in low-resource environments [14]. In the Bangladeshi context, comprehensive institutional studies on the aetiopathological patterns of cervical lymphadenopathy are limited. Understanding the local disease spectrum is essential to guide clinicians in choosing the appropriate diagnostic pathways and improving patient outcomes. Therefore, the present study was undertaken to evaluate the clinical profile and aetiopathological spectrum of cervical lymphadenopathy among patients attending Dhaka Community Medical College Hospital. The findings are expected to provide valuable insights for evidence-based diagnostic and management strategies.

Subjects and Methods

This cross-sectional observational study was conducted in the Department of ENT and Head-Neck Surgery at Dhaka Community Medical College Hospital over a period of six months, from July 2024 to January 2025, to evaluate the aetiopathological spectrum of cervical lymphadenopathy. A total of 79 patients of all age groups and both sexes presenting with palpable cervical lymph nodes ≥1 cm in diameter and persisting for more than two weeks were purposively selected for inclusion, provided they gave informed written consent. Patients with previously diagnosed malignancies, systemic illnesses (such as HIV or autoimmune disorders), or undergoing chemotherapy, radiotherapy, or immunosuppressive treatment were excluded. Sociodemographic data (age, sex, residence, socioeconomic status, occupation) and clinical findings of Cervical Lymphadenopathy were collected. Fine Needle Aspiration Cytology (FNAC) was performed in all cases as the initial diagnostic modality. Cases with inconclusive or suspicious FNAC findings, including false-negative results or clinical suspicion of malignancy, underwent excisional biopsy followed by histopathological examination. Data were analyzed using SPSS version 26. Ethical approval was obtained from the Institutional Review Board of Dhaka Community Medical College, and the study was conducted in accordance with the Declaration of Helsinki.

Results

This study evaluated the demographic, clinical, and aetiopathological characteristics of patients presenting with cervical lymphadenopathy at Dhaka Community Medical College Hospital. A total of 79 patients were included, and data were analyzed to identify common patterns in age, gender, residence, socio economic status, occupation, clinical findings, and final diagnosis based on FNAC and histopathology

Table 1: Socio-demographic Characteristics of Study Participants (n = 79)

Variable	Category	Frequency (n)	Percentage (%)
Age Group (years)	0–20	6	7.6%
	21–40	43	54.4%
	41–60	19	24.1%
	61–80	11	13.9%
Sex	Male	48	60.8%
	Female	31	39.2%
Residence	Urban	56	70.9%
	Rural	23	29.1%
Socioeconomic Status	Upper Class	5	6.3%
	Middle Class	13	16.5%
	Lower Class	61	77.2%
Occupation	Student	17	21.5%
	Garment Worker	23	29.1%
	Housewife	7	8.9%
	Businessman	11	13.9%
	Hawker	9	11.4%
	Maid Servant	5	6.3%
	Others	7	8.9%

Among the 79 participants in the study, the majority (54.4%) were in the 21–40 years age group, indicating that cervical lymphadenopathy was most prevalent in young to middle-aged adults. Children and adolescents (0–20 years) made up only 7.6% of the cases, while older adults (41–60 years and 61–80 years) accounted for 24.1% and 13.9%, respectively.

Males (60.8%) were more commonly affected than females (39.2%), suggesting a possible gender-related risk or healthcare-seeking pattern. The majority of patients (70.9%) came from urban areas, while 29.1% were from rural settings, indicating higher hospital access or referral from urban locations. By socioeconomic status, the lower class dominated the cohort (77.2%), highlighting a potentially higher disease burden or healthcare utilization among underprivileged populations. The middle class (16.5%) and upper class (6.3%) were comparatively fewer. Regarding occupation, garment workers (29.1%) and students (21.5%) were the two most represented groups. Other notable occupations included businessmen (13.9%), hawkers (11.4%), housewives (8.9%), maid servants (6.3%), and a small portion categorized as "others" (8.9%) (Table-1).

Table 2: Clinical Findings of Cervical Lymphadenopathy Among Study Participants (n = 79)

Clinical Finding	Frequency (n)	Percentage (%)
Non-reactive	10	12.7%
Tubercular	48	60.8%
Metastatic	12	15.2%
Lymphoma	9	11.3%

Among the 79 patients presenting with cervical lymphadenopathy, the majority (60.8%) were diagnosed with tubercular lymphadenitis, highlighting tuberculosis as the leading cause in this population. Metastatic lymphadenopathy was observed in 15.2% of cases and Lymphoma was identified in 11.3%. Only 12.7% of cases were non-reactive, indicating a relatively small percentage without specific pathological findings

Table 3: FNAC Findings of Cervical Lymphadenopathy Among Study Participants (n = 79)

FNAC Diagnosis	Frequency (n)	Percentage (%)
Tubercular	43	54.4%
Metastatic	14	17.7%
Non-reactive	13	16.5%
Lymphoma	5	6.3%
Necrotizing Lymphadenitis	4	5.1%
False Negative	6	7.6%

Fine Needle Aspiration Cytology (FNAC) revealed tubercular lymphadenitis as the most common diagnosis (54.4%), consistent with the endemic nature of tuberculosis in the region. Metastatic lesions (17.7%) and non-reactive nodes (16.5%) were also frequently reported. Lymphoma was identified in 6.3%, while necrotizing lymphadenitis accounted for 5.1%. Importantly, false-negative results were observed in 7.6% of cases, highlighting the limitations of FNAC and the potential need for histopathological confirmation in selected cases. (Table-3

Table 4: Histopathological Findings of Cervical Lymphadenopathy Among Study Participants (n = 79)

Histopathological Diagnosis	Frequency (n)	Percentage (%)
Tubercular	47	59.5%
Metastatic	14	17.7%
Non-reactive	9	11.4%
Lymphoma	3	3.8%
Necrotizing Lymphadenitis	4	5.1%
Castleman Disease	2	2.5%
Total	79	100.0%

Histopathological findings revealed that tubercular lymphadenitis was the most common diagnosis (59.5%), reflecting the high burden of tuberculosis in the population. Metastatic lesions (17.7%) and non-reactive lymph nodes (11.4%) were also significant findings. Less frequent diagnoses included lymphoma (3.8%), necrotizing lymphadenitis (5.1%), and Castleman disease (2.5%), indicating a range of both benign and malignant etiologies in cervical lymphadenopathy.

DISCUSSION

This study aimed to assess the demographic distribution, clinical presentation, and aetiopathological spectrum of cervical lymphadenopathy among patients attending Dhaka Community Medical College Hospital. The findings reaffirm that tubercular lymphadenitis remains the leading cause of cervical lymphadenopathy in this region, followed by metastatic disease and lymphoma.

The predominance of tubercular lymphadenitis (59.5% by histopathology and 54.4% by FNAC) is consistent with other studies conducted in tuberculosis-endemic regions. For instance, a study in Nepal reported tuberculosis in 54.5% of cervical lymphadenopathy cases, closely matching our findings [15]. Similarly, Uddin et al. found tuberculous lymphadenitis in 56% of cases in a tertiary hospital setting in Bangladesh [16]. These results highlight the continued public health burden of extrapulmonary tuberculosis in South Asia.

Occupational and socioeconomic patterns particularly the predominance of garment workers and low income urban residents suggest links between living conditions, infectious risk, and healthcare usage. Similar associations have been reported in South Asian studies, linking tuberculosis prevalence to socioeconomic status [16]. The demographic trend higher prevalence in older and male patients mirrors these patterns and underscores the need for malignancy workup in persistent lymphadenopathy.

Our histopathological finding of metastatic lymphadenopathy in 17.7% of cases is also in line with prior South Asian data, such as Mandal et al., who reported a similar metastatic rate (~19%) in adult cervical nodes [17]. The FP rate of 7.6% for FNAC, with an overall false-negative rate, is supported by other findings. Alamgir et al. documented a similar rate (9%) in cervical swellings [18], while a larger Saudi study of 102 patients showed FNAC sensitivity of 93.3% and specificity of 100% for malignant lesions [21]. This affirms FNAC's robust performance as an initial diagnostic tool, though histopathology remains critical in equivocal or suspicious cases. Lymphoma accounted for a modest 3.8% on histopathology (6.3% by FNAC). A Nepalese cohort found ~5% lymphoma prevalence in similar clinical settings [19]. This emphasizes that lymphoma, despite lower frequency, requires excisional biopsy for definitive diagnosis, since small-sample techniques may be insufficient.

Our study also captured rare findings, such as necrotizing lymphadenitis (5.1%) and Castleman disease (2.5%), emphasizing diagnostic breadth. An international systematic review in 2024 underscored that while Castleman disease is rare, it often presents with systemic symptoms and requires distinct diagnostic pathways [20]. Recent criteria updates have improved unexpected case recognition in cervical lymphadenopathy cohorts [22]. Overall, this study validates a tiered diagnostic approach: using FNAC as a primary, practical tool, followed by histopathology when FNAC is inconclusive or suspicious. This aligns with global best practices [21,23].

CONCLUSION

This study highlights that tubercular lymphadenitis remains the most common cause of cervical lymphadenopathy in our clinical setting, followed by metastatic malignancy and lymphoma. The findings underscore the diagnostic value of fine needle aspiration cytology (FNAC) as an initial, minimally invasive tool with good diagnostic yield, particularly in tuberculosis-endemic regions like Bangladesh. However, histopathological examination is essential in cases with inconclusive or suspicious FNAC results, especially to confirm malignancies or rare pathologies such as Castleman disease. The significant prevalence among young adults, males, and individuals from lower socioeconomic backgrounds points toward potential occupational and environmental risk factors. A systematic, tiered diagnostic approach combining clinical assessment, FNAC, and histopathology can enhance early and accurate diagnosis, thereby improving patient management and outcomes.

REFERENCES

1. Ferrer R. Lymphadenopathy: differential diagnosis and evaluation. Am Fam Physician. 1998;58(6):1313–20.
2. Bazemore AW, Smucker DR. Lymphadenopathy and malignancy. Am Fam Physician. 2002;66(11):2103–10.
3. Adhikari RC, Tuladhar A, Shrestha S. FNAC of cervical lymph nodes. J Pathol Nepal. 2011;1:8–12.
4. Haque MA, Mamun AA, Kabir S, et al. A clinicopathological study of cervical lymphadenopathy. J Dhaka Med Coll. 2012;21(1):37–41.
5. Sharma SK, Mohan A. Extrapulmonary tuberculosis. Indian J Med Res. 2004;120(4):316–53.
6. World Health Organization. Global Tuberculosis Report 2023. Geneva: WHO; 2023.
7. Tilak V, Dhaded AV, Jain R. Fine needle aspiration cytology of lymph nodes. J Cytol. 2002;19(1):27–30.
8. Bhaskaran CS, Muthukrishnan R, Ravichandran K. FNAC as a diagnostic tool in cervical lymphadenopathy. Cureus. 2022;14(2):e22106.
9. Sharma P, Kumar N, Misra V, et al. Diagnostic utility of FNAC in cervical lymphadenopathy: a hospital-based analysis. J Cytol. 2014;31(4):198–202.
10. Jha BC, Dass A, Nagarkar NM, et al. Cervical lymphadenopathy: clinical profile and importance of fine needle aspiration cytology. Indian J Otolaryngol Head Neck Surg. 2002;54(1):30–3.
11. Radhika M, Nambiar KM. Aetiology of cervical lymphadenopathy in adults: a histopathological perspective. Int J Med Res Rev. 2019;7(4):313–7.

12. Hossain MZ, Alam R, Khan MH, et al. Patterns of cervical lymphadenopathy: an analysis of 158 cases. Bangladesh J Otorhinolaryngol. 2020;26(1):53–9.
13. Rathod GB, Parmar P. Fine needle aspiration cytology of swellings of head and neck region. Indian J Med Sci. 2012;66(2–3):49–54.
14. Dandapat MC, Mishra BM, Dash SP, et al. Peripheral lymph node tuberculosis: a review of 80 cases. Br J Surg. 1990;77(8):911–2.
15. Thapa B, Shrestha B, Pradhan B, Aryal G. Role of fine needle aspiration cytology in the diagnosis of lymph node pathologies: a hospital-based study. Int Arch Biomed Clin Res. 2016;2(4):19–23.
16. Uddin MM, Akter S, Rahman MS, Jahan M. Evaluation of fine needle aspiration cytology in the diagnosis of tubercular lymphadenitis: a hospital-based study in Bangladesh. J Adv Med Med Res. 2021;33(14):108–14.
17. Mandal S, Basu K, Bhattacharyya N, Ray S. Histopathologic spectrum of cervical lymphadenopathy in adults with correlation to demographic and clinical data. Indian J Otolaryngol Head Neck Surg. 2013;65(1):64–70.
18. Alamgir M, Haque MA, Akhter S, Sultana A. Diagnostic utility of FNAC in the evaluation of head and neck masses with histopathological correlation: an institutional experience. Bangladesh Med J. 2019;48(2):31–5.
19. Koirala S, Thapa B, Shah S, Shrestha B. Aetiological spectrum of cervical lymphadenopathy: findings from a tertiary care center in Nepal. Nepal Med Coll J. 2020;22(1):12–6.
20. Hoffmann C, Oksenhendler E, Littler S, Fajgenbaum DC. The clinical picture of Castleman disease: a systematic review and meta analysis. Blood Adv. 2024;8(18):4924–35.
21. Alqarni AM, Alqahtani A, Alzahrani AM, et al. Diagnostic value of fine-needle aspiration cytology in cervical lymphadenopathy in correlation to postoperative histopathological results in a tertiary care center in Saudi Arabia. Cureus. 2024;16(4):eXXXX.
22. Krockenberger M, Geissinger E, Gschwendtner A, et al. Prevalence of Castleman's disease in patients suffering from cervical lymphadenopathy. Laryngoscope Investig Otolaryngol. 2022;7(1):123–30.
23. Sarmiento-Bustamante M, Lavery CLM, Bagg A, et al. The development of diagnostic criteria and utilization of excisional lymph node biopsies shorten time to diagnosis for idiopathic multicentric Castleman disease. ASH Abstract. 2024.