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Original Article

THE IMPORTANCE OF SUPRACLAVICULAR LYMPH NODE FNAC: STRIKING PREVALENCE OF MAJOR PATHOLOGIES IN A TERTIARY CARE PRIVATE PRACTICE

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Abstract

Background: *Supraclavicular lymphadenopathy is often a clinical indicator of serious underlying pathology. Fine Needle Aspiration Cytology (FNAC) is a simple yet highly effective diagnostic tool.*

Objective: *To assess the diagnostic yield and prevalence of major pathologies in supraclavicular lymph node FNAC cases.Methods: A retrospective analysis of 110 supraclavicular lymph node FNACs performed in a private histopathology practice setting was conducted.*

Results: *Among the 110 cases, 55 (50%) were tubercular lymphadenitis, 18 (16.4%) lymphomas, 19 (17.3%) metastatic carcinomas (small cell lung carcinoma, squamous cell carcinoma, adenocarcinoma), 10 (9%) metastatic papillary thyroid carcinomas, and 8 (7.3%) soft tissue tumors misdiagnosed clinically as lymph nodes.*

Conclusion: *FNAC of supraclavicular lymph nodes revealed 100% prevalence of major pathology, reinforcing its critical role in early diagnosis and management, particularly in resource-limited settings.*

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Introduction

Supraclavicular lymphadenopathy is an uncommon but clinically significant finding that often indicates a serious underlying condition such as tuberculosis, lymphoma, or metastatic malignancy.[1-4] The left supraclavicular node, also known as Virchow's node, is particularly notorious for being a sentinel site of advanced intra-abdominal and thoracic malignancies.[2-4] While palpable cervical lymphadenopathy is frequently encountered in clinical practice, the involvement of supraclavicular nodes warrants urgent diagnostic evaluation due to its higher predictive value for systemic diseases.

Fine Needle Aspiration Cytology (FNAC) serves as a valuable frontline diagnostic tool owing to its minimally invasive nature, low cost, rapid turnaround, and good diagnostic yield. Despite its clinical relevance, few studies in Bangladesh and similar resource-constrained countries focus exclusively on supraclavicular lymph node FNAC, especially from the perspective of private tertiary care settings. These centers often cater to a large number of underserved or diagnostically delayed

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patients who may otherwise lack access to comprehensive tertiary hospital services.

This study was conducted to assess the diagnostic utility of FNAC in cases of supraclavicular lymphadenopathy in a private diagnostic center and to analyze the frequency and spectrum of pathologies encountered. By focusing on a purely supraclavicular node cohort, this research also aims to emphasize the need for targeted diagnostic vigilance and broader implementation of cytology-based evaluations in such cases.

Materials and Methods

This retrospective study analyzed 110 consecutive cases of supraclavicular lymph node FNAC performed between January 2019 to December 2024 at Popular Diagnostic Centre, Gazipur.

Inclusion criteria: All patients presenting with clinically palpable supraclavicular lymphadenopathy.

Exclusion criteria: Inadequate or hemorrhagic aspirates without definitive cytological features.

FNAC was performed using a 23G needle and smears were stained with Giemsa, Papanicolaou, and Ziehl-Neelsen stain when clinically suspected for tuberculosis. Histopathological correlation was done where necessary.

Cytological Diagnosis Categories

The aspirates were classified into the following diagnostic categories based on cytomorphological features:

- Tubercular Lymphadenitis
- Lymphoma (suggestive features; subclassification done where possible or on histopathology)
- Metastatic Carcinoma
- Subclassified based on cytological features into:
- Squamous cell carcinoma
- Adenocarcinoma
- Poorly differentiated carcinoma
- Others (e.g., small cell carcinoma, where identifiable)
- Soft Tissue Tumors (cases where soft tissue lesions were initially misdiagnosed as lymph nodes)

Results:

A total of 110 supraclavicular lymph node FNACs were analyzed. The diagnostic breakdown is as follows:

- Tubercular lymphadenitis: 55 cases (50.0%)
- Lymphomas (Hodgkin and non-Hodgkin): 18 cases (16.4%)
- Metastatic carcinomas (Total: 19 cases; 17.3%)
- Small cell carcinoma (lung): 6 cases (5.5%)
- Squamous cell carcinoma (lung/larynx): 4 cases (3.6%)
- Adenocarcinoma (lung/GI/unknown primary): 9 cases (8.2%)
- Metastatic papillary thyroid carcinoma: 10 cases (9.0%)
- Soft tissue tumors (misdiagnosed clinically as lymph nodes): 8 cases (7.3%)
- Reactive hyperplasia: Not identified in any case.

No inadequate or hemorrhagic smears were encountered in this study.

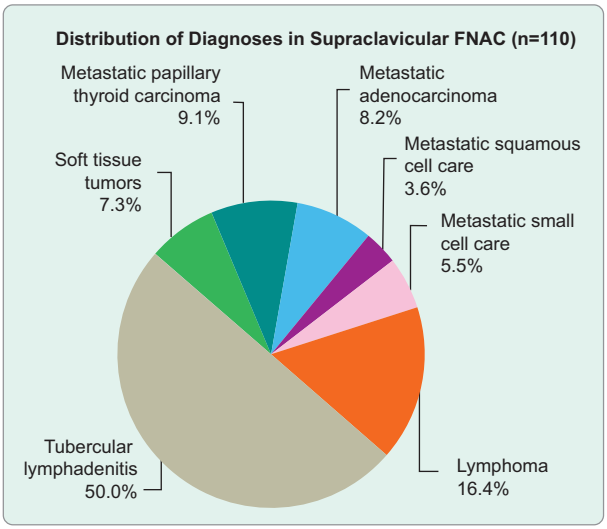

Figure 1: *Pie Chart – Diagnostic Distribution in Supraclavicular FNAC*

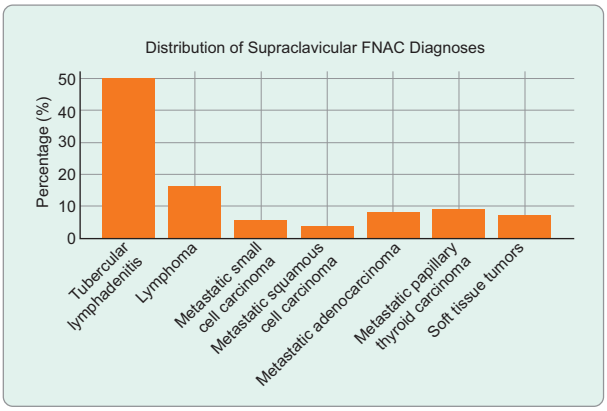

Figure 2: *Bar Chart – Distribution of FNAC Diagnoses by Percentage*

Table 1: *Comparative Frequencies of Major Diagnoses Across Studies*

Study	Tuberculosis (%)	Lymphoma (%)	Metastatic Carcinoma (%)	Soft Tissue Tumors (%)
Present Study (2025)	50.0	16.4	26.3	7.3
Sharma et al. (2013)	52.3	14.0	18.5	2.0
Saikia et al. (2015)	48.0	17.2	20.0	3.5
Ahmad et al. (2011)	55.0	13.2	17.0	1.5
Talukder et al. (2021)	51.5	15.0	20.2	2.0

Discussion

The 100% diagnostic yield in our study starkly highlights the severity of supraclavicular lymphadenopathy, which is not commonly due to benign causes. This reinforces the importance of immediate FNAC in such patients. Tuberculosis was the leading cause (50%), reflecting the high disease burden in Bangladesh. Similar frequencies have been observed in Sharma et al. [1] and Ahmad et al. [2] supporting the need for TB-focused screening in endemic areas.

Lymphomas constituted 16.4%, consistent with findings by Saikia et al.,[3] emphasizing that cytology can raise suspicion, but tissue biopsy and immunohistochemistry (IHC) are crucial for subtyping and management planning as per WHO recommendations.

Metastatic carcinoma cases were prominent (17.3%), particularly adenocarcinoma and small cell variants. Kocjan et al.[4] also noted high rates of adenocarcinoma metastases in supraclavicular nodes in Western populations.

The presence of papillary thyroid carcinoma (9%) was notably higher than Western literature (~5–7%), potentially due to increased local thyroid disease prevalence and widespread goitrogenic diet patterns.

Interestingly, soft tissue tumors accounted for 7.3% of aspirates, initially misdiagnosed clinically as lymph nodes. This shows the invaluable role of FNAC in preventing unnecessary surgical exploration.

No reactive hyperplasia or benign findings were reported, possibly because supraclavicular lymphadenopathy typically prompts referrals only when associated with significant clinical suspicion.

Male predominance (71%) was seen, correlating with regional tobacco usage, environmental exposure, and healthcare-seeking behavior patterns—trends echoed in Das DK [5] and multiple South Asian studies.

FNAC was sufficient to guide clinical management in most cases except lymphomas, where it served as a vital screening tool but required histologic confirmation—reinforcing the layered diagnostic approach.

Overall, this study emphasizes the diagnostic power and efficiency of FNAC. The procedure should be routinely applied for any supraclavicular node, especially in TB-endemic or high cancer risk populations. Delay or reliance solely on clinical examination can result in missed or late-stage diagnosis.

Conclusion

Supraclavicular lymph node FNAC reveals an overwhelmingly high rate of major pathology. This simple outpatient procedure can significantly impact patient management, particularly in tuberculosis-endemic and resource-constrained settings.

Routine FNAC evaluation should be strongly advocated for all cases of supraclavicular lymphadenopathy.

Limitations:

Retrospective Design: As this was a retrospective study, it relied on existing records, which may have incomplete documentation or reporting biases. This could limit the accuracy and completeness of the data collected.

Single-Center Study: The study was conducted in a single private histopathology practice, which may not

reflect the diagnostic patterns or disease prevalence in other settings such as public hospitals or rural clinics.

Lack of Histopathological Correlation: FNAC diagnoses were not routinely confirmed by histopathological examination (biopsy or excision), which limits the ability to assess false positives or false negatives.

Limited Clinical Data: Clinical correlation with imaging findings, systemic symptoms, or follow-up outcomes was not included, reducing the ability to evaluate the long-term diagnostic accuracy and prognostic value of FNAC.

Possible Sampling Error: FNAC is operator-dependent, and the diagnostic yield can vary based on the technique and experience of the clinician performing the aspiration. Misdiagnosis or non-representative sampling can occur, especially in heterogeneous or necrotic nodes.

Misclassified Cases: A small subset (7.3%) of cases initially suspected to be lymphadenopathy were later identified as soft tissue tumors, highlighting the possibility of clinical misclassification and the importance of careful pre-FNAC assessment

Highlights

- FNAC of supraclavicular lymph node achieved 100% diagnostic yield in this study.
- Tuberculosis was the leading cause, followed by metastatic malignancies.
- Supraclavicular FNAC remains an indispensable first-line diagnostic tool.
- Histopathological and immunohistochemical confirmation are essential for lymphoma diagnosis.

Cytopathological Images

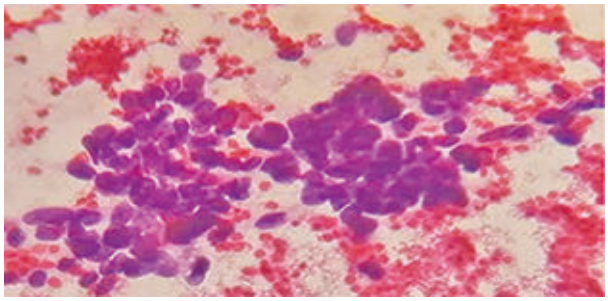

Figure 1: *FNAC smear showing metastatic small cell carcinoma (lung origin).*

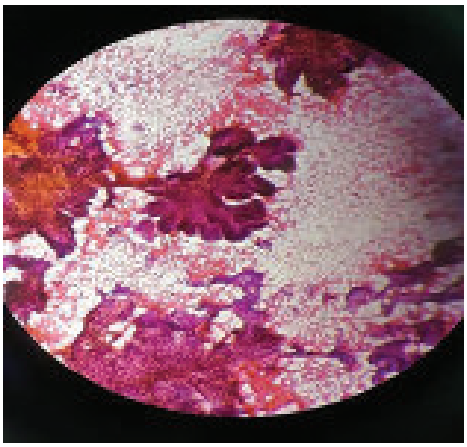

Figure 2: *FNAC smear showing metastatic papillary thyroid carcinoma.*

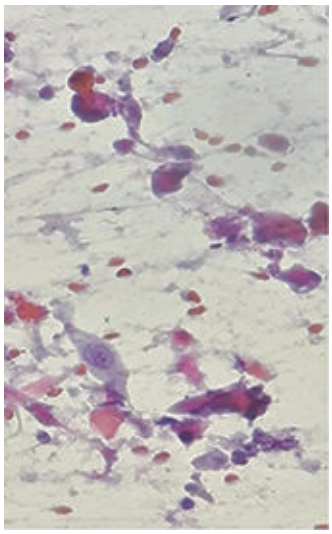

Figure 3: *FNAC smear showing metastatic squamous cell carcinoma (larynx origin).*

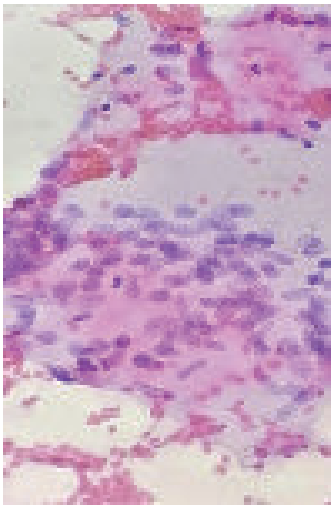

Figure 4: *FNAC smear showing tubercular granuloma.*

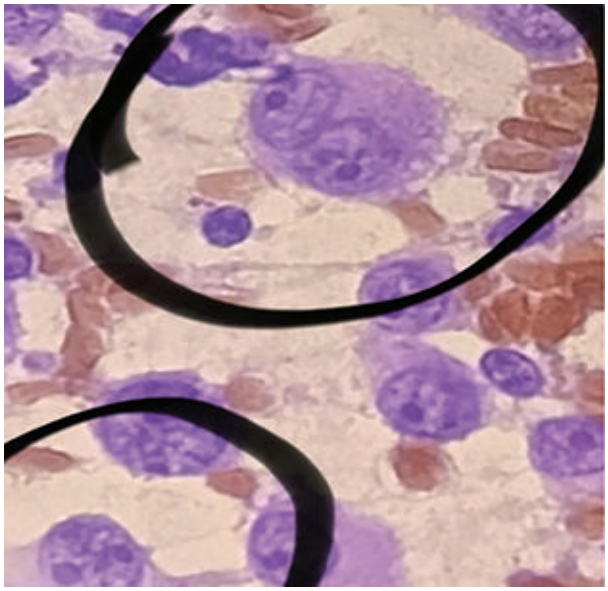

Figure 5: *FNAC smear showing Reed-Sternberg giant cell in Hodgkin lymphoma.*

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