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Diagnostic Spectrum of Cervical Lymph Node Biopsy: A Retrospective Study from a Tertiary Cancer Centre in South India

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ABSTRACT

Background: Cervical lymphadenopathy is common, and its causes range from benign infection to malignancy. Fine-needle aspiration cytology (FNAC) is usually the first investigation, but when the yield is poor or nodal architecture is required, tissue biopsy becomes necessary.

Objective: To describe the histopathological spectrum of cervical lymph node biopsies at a tertiary cancer centre in South India and to assess the diagnostic yield and safety of the procedure.

Methods: We retrospectively reviewed the records of all patients who underwent cervical lymph node biopsy over a 2-year period. Demographic characteristics, preoperative imaging findings, biopsy technique, nodal level, type of anaesthesia, histopathological diagnosis, and postoperative complications were recorded and analysed descriptively.

Results: Seventy patients were studied (mean age 55.1 ± 18.5 years; 54.3% male). Excision biopsy was used in 91.4% and wedge biopsy in 8.6%, and malignancy was suspected clinically in 90% before biopsy. PET-CT was performed in 77.1%, and level V was the node most often sampled (35.7%). Malignancy was confirmed in 40 patients (57.1%) and benign disease in 30 (42.9%). Benign disease was led by tuberculosis (n = 11) and reactive hyperplasia (n = 9). Among the malignant diagnoses, lymphoma was the commonest (n = 14), followed by metastatic carcinoma from the lung, head and neck, thyroid, breast, cervix and kidney, with a single follicular dendritic cell sarcoma. Complications were minor and occurred in 10%.

Conclusion: Cervical lymph node biopsy is a safe, high-yield procedure when FNAC is inconclusive. Tuberculosis and lymphoma dominated, reflecting the region's twin burden of infection and malignancy, and immunohistochemistry was central to reaching a diagnosis.

Keywords: Cervical lymphadenopathy; Excision biopsy; Lymphoma; Tuberculosis; Metastasis; Immunohistochemistry.

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INTRODUCTION

Cervical lymphadenopathy is one of the commoner reasons for surgical referral, and the list of possible causes is long, stretching from tuberculosis and other infections to lymphoma and metastatic carcinoma.[1] FNAC is generally the first step, since it is quick, inexpensive and safe. It does, however, fall short in a sizeable minority of patients: reported series find it inadequate in up to a quarter and frankly non-diagnostic in about 7%, largely because it cannot demonstrate how the node is organised. When FNAC fails to settle the question, or when lymphoma is suspected, tissue biopsy is the gold standard, as both nodal architecture and immunohistochemistry (IHC) are needed for a firm diagnosis.[2]

We reviewed our experience with cervical lymph node biopsy at a tertiary cancer centre in South India, aiming to describe the range of diagnoses obtained and to judge how useful, and how safe, the procedure is in a population that carries a heavy burden of both infective and malignant disease.

MATERIALS AND METHODS

This was a retrospective study from the Department of Head and Neck Surgical Oncology at a tertiary cancer centre in South India. We identified all patients who underwent cervical lymph node biopsy over a 2-year period and retrospectively reviewed their medical records. For each patient we recorded the demographic details, preoperative imaging (ultrasound, computed tomography and PET-CT), whether malignancy was suspected clinically, the type of anaesthesia (local, general or monitored anaesthesia care), the biopsy technique (excision or wedge), the nodal level and side (levels I–VI), the final histopathology report and any postoperative complications. Data were summarised using means with standard deviation, frequencies and percentages.

RESULTS

Seventy patients were included, with a mean age of 55.1 ± 18.5 years; 38 were men (54.3%) and 32 women (45.7%). Malignancy had been suspected clinically in 90% before biopsy **(Table 1).**

Local anaesthesia sufficed in half the patients, which reflects how minor the procedure usually is. Excision was the technique of choice, PET-CT was the imaging most often obtained, and level V was the node most frequently sampled, followed by level IV **(Table 2).**

On final histopathology, 40 patients (57.1%) had a malignant diagnosis and 30 (42.9%) a benign one. Lymphoma was the commonest single entity, matched in number only by the heterogeneous group of carcinomas of unspecified primary, ahead of metastatic carcinoma from a range of primary sites. A definite lineage or primary site was established in 26 malignant cases; in the remaining 14 the report read adenocarcinoma or poorly differentiated carcinoma with no primary site specified. **(Table 3).**

Table 1. Demographic and clinical characteristics (N = 70)

Characteristic	Value
Mean age (years)	55.1 ± 18.5
Male	38 (54.3%)
Female	32 (45.7%)
Preoperative clinical suspicion of malignancy	63 (90.0%)

Table 2. Procedural and imaging characteristics (N = 70)

Variable	n (%)
Anaesthesia – Local	35 (50.0%)
Anaesthesia – General	34 (48.6%)
Anaesthesia – Monitored anaesthesia care	1 (1.4%)
Biopsy technique – Excision	64 (91.4%)
Biopsy technique – Wedge	6 (8.6%)
Preoperative PET-CT performed	54 (77.1%)
Nodal level – Level V	25 (35.7%)
Nodal level – Level IV	20 (28.6%)
Nodal level – Other levels (I–III, VI)	25 (35.7%)

Table 3. Spectrum of malignant histopathological diagnoses

Diagnosis	n	% of cohort
Lymphoma	14	20.0
Metastatic carcinoma – lung	4	5.7
Metastatic squamous cell carcinoma – head and neck	2	2.9
Metastatic carcinoma – thyroid	1	1.4
Metastatic carcinoma – breast	1	1.4
Metastatic carcinoma – cervix	1	1.4
Metastatic renal cell carcinoma	1	1.4
Leukaemia (nodal involvement)	1	1.4
Follicular dendritic cell sarcoma	1	1.4
Metastatic adenocarcinoma / poorly differentiated carcinoma, primary site not specified	14	20.0
Total	**40**	**57.1**

Percentages are calculated against the full cohort (N = 70).

Table 4. Spectrum of benign histopathological diagnoses

Diagnosis	n	% of cohort
Tuberculosis	11	15.7
Reactive hyperplasia	9	12.9
Toxoplasmosis	4	5.7
Xanthogranulomatous sialadenitis of parotid	1	1.4
Warthin tumour	1	1.4
Kikuchi disease	1	1.4
Sarcoidosis	1	1.4
Sarcoid-like reaction associated with malignancy	1	1.4
Melioidosis	1	1.4
Total	**30**	**42.9**

Percentages are calculated against the full cohort (N = 70). The xanthogranulomatous sialadenitis and Warthin tumour were parotid lesions sampled as suspected level II nodes.

Tuberculosis and reactive hyperplasia together made up most of the benign group. We also encountered a small number of less common entities — Kikuchi disease,

Table 5. Postoperative complications (N = 70)

Complication	n (%)
Local inflammation	3 (4.3%)
Seroma	2 (2.9%)
Stitch granuloma	1 (1.4%)
Chyle leak	1 (1.4%)
Any minor complication	7 (10.0%)
Major complication / mortality	0 (0.0%)

All complications were minor and managed conservatively.

sarcoidosis, a sarcoid-like reaction and melioidosis — none of which would have been identified on cytology alone **(Table 4).**

Complications were uncommon and all minor, affecting 7 patients (10%): local inflammation, seroma, stitch granuloma and chyle leak. There were no major complications and no deaths **(Table 5).**

DISCUSSION

Cervical lymphadenopathy warrants a careful work-up, because a great deal turns on the final diagnosis. FNAC handles much of the initial assessment, but it has a genuine blind spot for lymphoma, and that is where biopsy becomes essential.[3,4]

Lymphoma and tuberculosis were our two commonest diagnoses — a pattern that fits the Indian setting, where infection and malignancy sit side by side. Lymphoma is the clearest illustration of why excision matters: accurate subtyping needs intact architecture together with IHC, and neither FNAC nor a core biopsy reliably provides this.[5] The metastatic deposits we found — from lung, head and neck, thyroid, breast, cervix and kidney — show how often a neck node is the first clue to a primary elsewhere, or the means of staging it. The rarer findings, the follicular dendritic cell sarcoma and the melioidosis, make the same point from the opposite direction: detecting them required the whole node.[6]

Advanced imaging, particularly PET-CT, was used in the majority of our patients, reflecting the referral pattern of a tertiary oncology centre. While PET-CT is highly sensitive for detecting metabolically active lymph nodes, it lacks specificity because inflammatory and infectious conditions may also demonstrate increased FDG uptake. Consequently, imaging should be considered complementary to tissue diagnosis rather than a substitute for biopsy. Ultrasound and contrast-enhanced CT continue to play important roles in anatomical assessment and biopsy planning.[7,8]

Our findings also demonstrate that cervical lymph node biopsy is a safe procedure with minimal morbidity. Approximately half of the biopsies were performed under local anaesthesia, indicating that the procedure can often be undertaken as a minor surgical intervention without the need for general anaesthesia. The low complication rate observed further supports its continued role as a reliable diagnostic procedure when cytological evaluation is inconclusive or lymphoma is suspected.[9-11]

The findings of this study reinforce the continued role of cervical lymph node biopsy in the diagnostic evaluation of cervical lymphadenopathy. Excisional biopsy should be considered when FNAC is inconclusive or when lymphoma is clinically suspected, as preservation of nodal architecture and immunohistochemical analysis are essential for an accurate diagnosis.[3,5] Furthermore, clinicians practising in tuberculosis-endemic regions should maintain a high index of suspicion for tuberculous lymphadenitis, even in patients undergoing evaluation for possible malignancy.

This study has several limitations. Its retrospective design and single-centre setting at a tertiary cancer hospital introduce the possibility of referral bias, which may have resulted in a higher proportion of malignant cases than would be expected in the general population. Additionally, long-term follow-up and treatment outcome data were not available, limiting assessment of the prognostic impact of the histopathological diagnoses and subsequent management.

CONCLUSION

Cervical lymph node biopsy is a safe and dependable way to reach a diagnosis when a neck node is persistent or suspicious, and it is difficult to do without when FNAC has been non-diagnostic or lymphoma is in question. In this South Indian cohort, tuberculosis and lymphoma led the way — a reminder that diagnostic strategy must be tuned to local disease patterns, and that histopathology with immunohistochemistry sits at the centre of it.

END NOTE

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REFERENCES

1. Prasad R, Arthur LG. Cervical Lymphadenopathy. In: Mattei P, editor. Fundamentals of Pediatric Surgery. New York: Springer; 2011. p. 213–9.
2. Ton Eryilmaz O, Ucak R, Ozagari AA, Kabukcuoglu F. Diagnostic value of fine-needle aspiration cytology in head and neck lymph nodes. Cytojournal. 2021 Apr 17;18:8.
3. Bassiouni M, Kang G, Bair H, Kuan EC, St John M. Diagnostic Yield of Excisional Biopsy in Cervical Lymphadenopathy: A Retrospective Analysis. Ear Nose Throat J. 2023 Oct;102(10):645–9.
4. Allin D, David S, Jacob A, Mir N, Giles A, Gibbins N. Use of core biopsy in diagnosing cervical lymphadenopathy: a viable alternative to surgical excisional biopsy of lymph nodes? Ann R Coll Surg Engl. 2017 Mar;99(3):242–4.
5. Mohanty R, Wilkinson A. Utility of fine needle aspiration cytology in lymphadenopathy. IOSR J Dent Med Sci. 2013;8(5):13–8.
6. Naresh KN, Raphael M, Hebeda K, De Jong D, Pronk A, Kim AS, et al. Lymphoma management in low-resource settings: overview and consensus guidelines. Indian J Pathol Microbiol. 2018;61(1):S1–22.
7. Sakr M. Cervical Lymphadenopathy. In: Head and Neck and Endocrine Surgery. Cham: Springer; 2016. p. 163–90.
8. Love C, Tomas MB, Tronco GG, Palestro CJ. FDG PET of infection and inflammation. Radiographics. 2005 Sep–Oct;25(5):1357–68.
9. Gupta RK, Nanda A. Fine-needle aspiration in tuberculous lymphadenitis. Acta Cytol. 2015;59(4):300–6.
10. Shrivastav A, Shah HA, Patel KB. A study of fine needle aspiration cytology in peripheral lymphadenopathy. J Dr NTR Univ Health Sci. 2014;3(2):86–91.
11. Pandey P, Dixit A, Mahajan NC. Fine-needle aspiration cytology of superficial lymph nodes. Al Ameen J Med Sci. 2013;6(4):320–7.