Original Research

A-JMRHS

Pathology

HISTOPATHOLOGICAL SPECTRUM OF LYMPH NODE LESIONS IN A TERTIARY CARE HOSPITAL A CROSS-SECTIONAL STUDY

Deepika[1], Neha Jassi[2], Dayanand[3]

[1]Assistant Professor, Department of Pathology, Karnataka Medical College and Research Institute [KMC&RI], Hubballi, 580021, Karnataka.

[2]Post Graduate, Department of Pathology, Karnataka Medical College and Research Institute [KMC&RI], Hubballi, 580021, Karnataka

[3]Consultant Nephrologist & Transplant Physician, JSS Hospitals, Bidar, 585403, Karnataka

ABSTRACT

Background: Lymph node lesions encompass a wide spectrum of infectious, reactive, and neoplastic conditions. Understanding their histopathological profile in relation to demographic and anatomical factors is crucial for accurate diagnosis and management. **Objectives:** 1] To evaluate the histopathological spectrum of lymph node lesions in a tertiary care centre in the Hubballi–Dharwad region. 2] To analyse the correlation of these lesions with age, gender, and site of involvement. **Materials and Methods:** A prospective study was conducted in the Department of Pathology, KMCRI Hubballi, from January 2024 to June 2025. A total of 62 lymph node lesions were evaluated for demographic details, anatomical distribution, and histopathological diagnosis. **Results:** The study demonstrated a marked male predominance [82.25%], with the highest frequency in the 41–50 years age group [27.43%]. Tubercular lymphadenitis was the most common diagnosis [27.42%], followed by metastatic deposits [24.19%], Non-Hodgkin lymphoma [14.52%], Hodgkin lymphoma [12.90%], and reactive lymphadenitis [12.91%]. Rare entities included Castleman's and Kikuchi's disease [1.61% each]. Age-specific trends were observed: tubercular lesions in young adults, metastatic deposits in older age groups, lymphomas in middle-aged individuals, and reactive lymphadenitis in children. Cervical lymph nodes were most frequently involved [40.3%], followed by supraclavicular [17.7%] and mesenteric nodes [16.1%], with metastatic deposits predominantly affecting supraclavicular and mesenteric regions. **Conclusion:** Lymph node lesions show distinct demographic, histopathological, and anatomical patterns. Middle-aged males constitute the primary affected population, tubercular lymphadenitis is the most common diagnosis, and cervical nodes are the predominant site. Recognition of these patterns can guide targeted diagnostic evaluation and improve patient management.

Keywords: Lymphadenopathy, Tubercular lymphadenitis, Metastatic deposits, Lymphoma, Histopathology

INTRODUCTION

Lymph nodes are vital components of the immune system, and their enlargement can result from infectious, reactive, or neoplastic conditions [1]. Lymphadenopathy is a common clinical finding that often requires histopathological evaluation for accurate diagnosis [2].The pattern of lymph node lesions varies regionally, influenced by demographics and the prevalence of infections and malignancies [3].Tuberculosis is frequently reported as the leading cause of lymphadenopathy in developing countries, while metastatic deposits and lymphomas contribute significantly to malignant lesions [1,4].Age, gender, and anatomical site affect the distribution and type of lymph node lesions, highlighting the need for demographic correlation [5].Excision biopsy remains the gold standard for definitive diagnosis, distinguishing reactive, infectious, and malignant lesions [6].Regional data on lymph node lesions are limited, emphasizing the need for local studies to guide diagnosis and management [2,3,5].

This study was therefore undertaken to evaluate the histopathological spectrum of lymph node lesions in a tertiary care centre in the Hubballi–Dharwad region and to correlate findings with age, gender, and site of involvement.

www.ajmrhs.com
eISSN: 2583-7761
Date of Received: 04-11-2025
Date Acceptance: 22-11-2025
Date of Publication: 19-12-2025

MATERIALS AND METHODS

This prospective study was conducted in the Department of Pathology, KMCRI Hubballi, from January 2024 to June 2025. The study included all lymph node biopsies received to the department. A total of 62 biopsies were included in the study.

Inclusion criteria

1] Excision biopsy of lymph nodes

2] Tru-cut biopsy specimens of lymph nodes

Exclusion criteria

1] Autolysed and poorly preserved specimens were excluded

2] Inadequate biopsy samples.

Lymph node specimens were collected under aseptic conditions, fixed in 10% formalin, and examined grossly for size, shape, consistency, and nodularity. Representative sections were processed using routine paraffin embedding, cut at 4–5 µm, and stained with Hematoxylin and Eosin [H&E]. Special stains such as Ziehl–Neelsen and PAS were used when indicated. Histopathological evaluation focused on lymphoid architecture, granulomas, necrosis, atypical cells, and metastatic deposits.

Correspondence: Dr. Deepika Assistant Professor, Department of Pathology, Karnataka Medical College and Research Institute (KMC&RI], Hubballi, 580021, Karnataka, Email id: deepikakmr60@gmail.com

Demographic data, anatomical site, and histopathological findings were recorded and classified into tubercular lymphadenitis, granulomatous lymphadenitis, reactive lymphadenitis, metastatic deposits, Hodgkin lymphoma, Non-Hodgkin lymphoma, and rare entities. Data were analyzed descriptively using SPSS version 23.0; categorical variables were expressed as frequencies and percentages, and a p-value <0.05 was considered significant.

Ethical clearance was obtained from the Institutional Ethics Committee.

RESULTS

In our study, we found a marked male predominance among the 62 lymph node lesion cases. Males accounted for 51 cases [82.25%], while females constituted 11 cases [17.74%]. This highlights a significantly higher occurrence of lymph node lesions in males compared to females in our study population. [Table 1]

Table 1 - Gender distribution in Lymph node lesions

Gender	No of cases	Percent of cases
Male	51	82.25%
Female	11	17.74%
Total	62	100%

In our study, we found that lymph node lesions occurred most frequently in the 41–50 years age group, which accounted for 17 cases [27.43%]. This was followed by the 21–30 years group with 12 cases [19.36%], and the 51–60 years group with 9 cases [14.52%]. The >61 years age group contributed 8 cases [12.90%], while 7 cases [11.29%] were noted in the 31–40 years group. Fewer cases were observed in younger individuals, with 6 cases [9.67%] in the 11–20 years group and 3 cases [4.83%] in those aged <10 years. Overall, the findings indicate a higher prevalence of lymph node lesions in middle-aged individuals. [Table 2]

Table 2 - Age-wise distribution of Lymph node lesions

Age in years	No.of cases	Percent of cases (%]
<10	03	4.83
11-20	06	9.67
21-30	12	19.36
31-40	07	11.29
41-50	17	27.43
51-60	09	14.52
>61	08	12.90
Total	62	100%

In our study, we found that tubercular lymphadenitis [Figure 2] was the most common histopathological diagnosis, accounting for 17 cases [27.42%]. This was followed by metastatic deposits [Figure 3&4], observed in 15 cases [24.19%]. Non-Hodgkin lymphoma comprised 9 cases [14.52%], while Hodgkin lymphoma and reactive lymphadenitis each accounted for 8 cases [12.90% and 12.91%], respectively. Granulomatous lymphadenitis was seen in 3 cases [4.84%]. Rare entities such as Castleman's disease and Kikuchi's disease were identified in one case each [1.61%]. Overall, infectious and neoplastic etiologies formed the major proportion of lymph node lesions in our study population. [Table 3] [Figure 1]

Table 3 - Histopathological spectrum of Lymph node lesions

Histopathological diagnosis	No. of cases	Percentage (%]
Tubercular lymphadenitis	17	27.42
Granulomatous lymphadenitis	03	4.84
Reactive lymphadenitis	08	12.91
Metastatic deposits	15	24.19
Hodgkins lymphoma	08	12.90
Non- Hodgkins lymphoma	09	14.52
Castleman's disease	01	1.61
Kikuchi's disease	01	1.61
Total	62	100

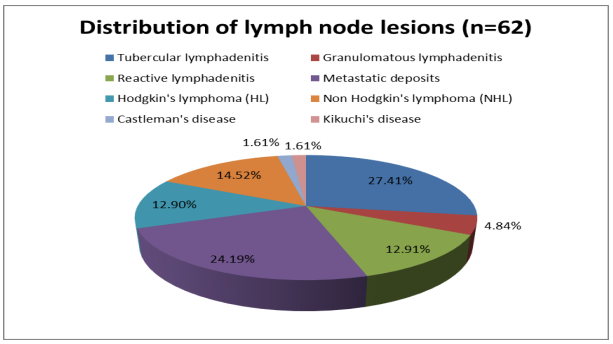
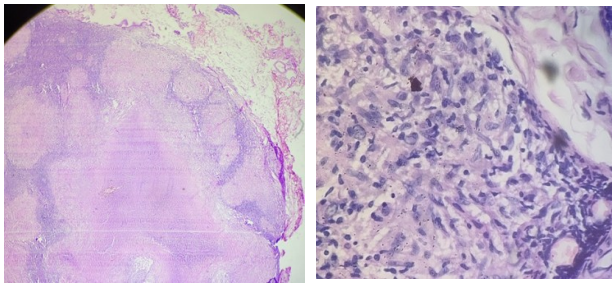
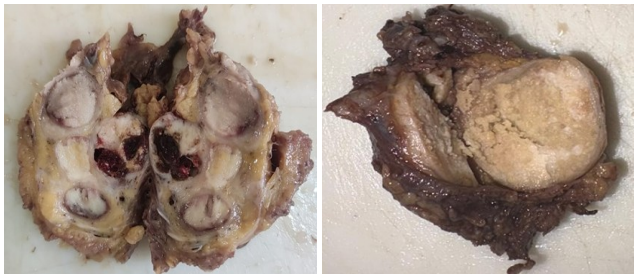


Figure 1: Pie chart showing the histopathological distribution of lymph node lesions among 62 cases.



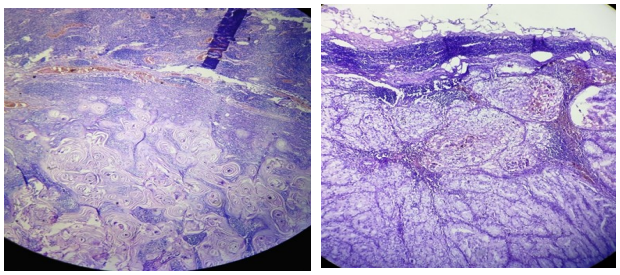
A. B.

Figure 2 : Photomicrograph of Tubercular lymphadenitis A. Low power view showing well-formed caseating granulomas with central necrosis surrounded by epithelioid cells and giant cells at, B. High power view showing characteristic epithelioid histiocytes having elongated vesicular nuclei, fine chromatin and inconspicuous nucleoli [H&E stain].



A. B.

Figure 3: Gross appearance of lymph nodes showing A. Metastatic deposits from Breast carcinoma, demonstrating firm, grey-white, nodular areas within the lymph node b. metastatic deposits from Squamous cell carcinoma, showing single, dirm, pale nodular mass replacing the nodular architecture.



A. B.

Figure 4: Histopathological sections of metastatic deposits in lymph nodes. A. Metastatic Squamous cell carcinoma [SCC] shwoing keratin pearls, intercellular bridges and atypical squamous cells infiltrating the lymph node parenchyma. B. Metastatic Renal cell carcinoma [RCC] showing nests of clear cells with abundant cytoplasm, distinct cell borders and prominent vascular stroma within the lymph node [H&E,X400]

In our study, different lymph node lesions showed distinct age patterns. Tubercular lymphadenitis was most common in young adults, while metastatic deposits were mainly seen in older age groups. Lymphomas, both Hodgkin and Non-Hodgkin's were more frequent in middle-aged individuals. Reactive lymphadenitis was mainly observed in children. Rare entities like Castleman's and Kikuchi's disease occurred sporadically in younger and middle-aged adults. [Table 4]

Table 4 - Age wise distribution of lymph node lesions.

Age in years	Tubercular lymphadenitis	Granulomatous lymphadenitis	Reactive lymphadenitis	Metastatic deposits	Hodgkins lymphoma	Non-Hodgkins lymphoma	Castleman's disease	Kikuchi's disease	Total
<10	1	-	3	-	-	-	-	-	4
11-20	4	1	2	-	1	1	-	-	9
21-30	6	-	1	2	2	-	1	-	12
31-40	1	-	2	2	1	2	-	1	9
41-50	4	2	-	1	3	3	-	-	13
51-60	1	-	-	5	1	1	-	-	8
>61	-	-	-	5	-	2	-	-	7
Total	17	3	8	15	8	9	1	1	62

In our study, the cervical region was the most commonly involved site, accounting for 25 cases, with a predominance of tubercular and granulomatous lesions. Supraclavicular and mesenteric lymph nodes were also frequently affected, contributing 11 and 10 cases, respectively, with a notable number of metastatic deposits in both regions. Axillary nodes showed a mix of metastatic and lymphomatous involvement, while inguinal and preauricular nodes had fewer cases with predominantly reactive or mixed patterns. Overall, cervical lymph nodes formed the major site of involvement across the various lymph node lesions. [Table & Fig 5]

Table 5 - Distribution of lymph node lesions according to site

Age in years	Tubercular lymphadenitis	Granulomatous lymphadenitis	Reactive lymphadenitis	Metastatic deposits	Hodgkins lymphoma	Non-Hodgkins lymphoma	Castleman's disease	Kikuchi's disease	Total
Cervical	11	3	3	3	1	2	1	1	25
Supraclavicular	2	-	1	3	3	2	-	-	11
Axillary	1	-	-	3	2	2	-	-	8
Inguinal	1	-	1	1			-	-	3
Mesenteric	1	-	1	4	2	2	-	-	10
Preauricular	1	-	2	1	-	1	-	-	5
Total	17	3	8	15	8	9	1	1	62

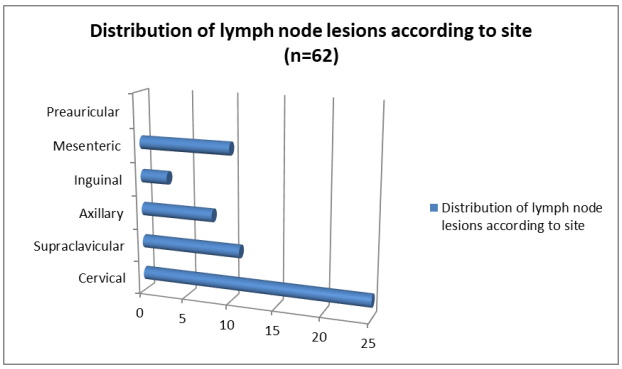


Figure 5: Frequency of lymph node lesions at various anatomical sites in the study population [n = 62].

Overall, the clinicopathological evaluation of lymph node lesions in our study highlights clear demographic, etiological, and anatomical patterns. Middle-aged males formed the predominant affected group, with tubercular lymphadenitis emerging as the single most common diagnosis, followed by metastatic involvement and lymphomas. The cervical lymph nodes were the most frequent site of pathology, reflecting their high diagnostic yield in lymphadenopathy. These findings collectively underscore the diverse yet patterned spectrum of lymph node lesions encountered in our setting.

DISCUSSION

In our study, lymph node lesions demonstrated a clear demographic and histopathological pattern, with a marked male predominance [82.25%] and highest incidence in the 41–50 years age group. This male predominance is consistent with the findings of Krishnatreya et al. in Northeast India, where males also formed the majority of cases [1]. Histopathologically, tubercular lymphadenitis was the most common lesion [27.42%], followed by metastatic deposits [24.19%], reactive lymphadenitis [12.91%], Hodgkin lymphoma [12.90%], and Non-Hodgkin lymphoma [14.52%]. These findings align with previous studies reporting tuberculosis as the leading cause of lymphadenopathy, followed by malignant lesions [1,2,3,4]. Table 1 compares the spectrum of lymph node lesions in our study with other published reports, showing that the predominance of tuberculosis and metastases is a consistent pattern across different regions.

Table 6: Comparison of Histopathological Spectrum of Lymph Node Lesions Across Studies

Histopathological Diagnosis	Present Study (n=62)	Krishnatreya et al., 2017 (n=200) (1)	Gupta et al., 2017 (n=150) (2)	Rani et al., 2016 (n=100) (3)	Ochicha et al., 2007 (n=120) (4)
Tubercular lymphadenitis	27.42 %	31%	35%	30%	28%
Granulomatous lymphadenitis	4.84%	5%	3%	6%	4%
Reactive lymphadenitis	12.91 %	15%	12%	10%	18%
Metastatic deposits	24.19 %	22%	20%	25%	21%
Hodgkin lymphoma	12.90 %	10%	8%	12%	11%
Non-Hodgkin lymphoma	14.52 %	12%	10%	15%	12%
Rare entities* (Castleman/Kikuchi)	3.22%	5%	2%	2%	6%

Rare entities include Castleman's disease and Kikuchi's disease.

Reactive lymphadenitis was more common in children and young adults, reflecting the age-related immunological response, similar to the observations by Balkishan and Jerusha [5]. Metastatic deposits were predominantly seen in older adults, consistent with reports by Rani et al. and Ochicha et al., highlighting the importance of considering malignancy in adult lymphadenopathy [3,4]. Cervical lymph nodes were the most frequently involved site [40.3%], followed by supraclavicular and mesenteric nodes, mirroring previous findings where cervical nodes had the highest diagnostic yield [2,6]. Rare entities such as Castleman's and Kikuchi's disease were observed in 3.22% of cases, comparable to low frequencies reported in earlier studies [2,4].

Overall, our findings emphasize the importance of histopathological evaluation for accurate diagnosis, especially in regions with a high prevalence of tuberculosis and malignancy. The correlation of lesion type with age, gender, and site of involvement provides valuable guidance for targeted diagnostic workup and clinical management in tertiary care settings.

CONCLUSIONS

Middle-aged males were the most commonly affected group in our study of lymph node lesions. Tubercular lymphadenitis was the predominant diagnosis, followed by metastatic deposits and lymphomas, with cervical nodes being the most frequently involved site. Rare entities such as Castleman's and Kikuchi's disease were uncommon. Histopathological evaluation, correlated with age, gender, and site, is essential for accurate diagnosis and appropriate management

REFERENCES

1. Krishnatreya K, Borgohain M, Das JK. Pattern of histopathological diagnosis of lymph node biopsies at a tertiary care hospital in Northeast India. Panacea Journal of Medical Sciences. 2017;7[3]:112-116.
2. 2. Gupta D, Thaker BD, Suri J. Pattern of lymphadenopathies in a tertiary care hospital in Jammu, India. Global Journal for Research Analysis. 2017;6[7]:9-11.
3. 3. Rani VP, Kumar NS, Ravinder T. Evaluation of pathologic lesions in superficial lymph node biopsies. International Journal of Biomedical Research. 2016;7[5]:289-294.
4. 4. Ochicha O, Edino ST, Mohammed AZ, Umar AB, Atanda AT. Pathology of peripheral lymph node biopsies in Kano, Northern Nigeria. Annals of African Medicine. 2007;6[2]:104-108.
5. 5. Balkishan B, Jerusha D. Clinicopathological study of 100 cases of cervical lymphadenopathy. Journal of Dental and Medical Sciences. 2016;15[10]:96-101.
6. 6. Rahman MA, Biswas MMA, Siddika ST, Sikder AM. Histopathological evaluation of lymph node biopsies: a hospital based study of 191 cases. J Enam Med Col. 2012;2[1]:8–14.
7. 7.Yadav V, Roy M, Singh P, Shalley S, Yadav A, Sehrawat R. Histopathological spectrum of non-neoplastic and neoplastic lesions of lymph nodes: retrospective and prospective study of 100 cases. Natl J Integr Res Med. 2018;9 [5]:4–10
8. 8. Pallavi MS, Manjunatha YA. Study of histopathological spectrum of diagnosis in lymph node biopsies in a tertiary care centre. Indian J Pathol Oncol. 2019;6[3]:476–9.

How to cite this article: V. Deepika, Neha Jassi, Dayanand, Histopathological Spectrum of Lymph Node Lesions in A Tertiary care Hospital A Cross-Sectional Study , Asian J. Med. Res. Health Sci., 2025; 3 [3]:120-123.

Source of Support: Nil, **Conflicts of Interest:** None declared.