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Original Research Article

Study of histopathological spectrum of diagnosis in lymph node biopsies in a tertiary care centre

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Article Info

Received: 11th February, 2019

Accepted: 16th March, 2019

Published Online: 9th August, 2019

Keywords: Tuberculous lymphadenitis, Metastasis, Reactive lymphoid hyperplasia, Hodgkin lymphoma, Lymphadenopathy.

Abstract

Objectives: Histopathological examination of lymph node is one of the gold standard test for the diagnosis of neoplastic and non-neoplastic lesions, as lymphadenopathy is a common presentation of large variety of disorders including benign and malignant. This study aims at identifying various histopathological lesions of lymph node, their patterns and frequency of occurrence.

Materials and Methods: This retrospective study includes 70 histopathologically diagnosed cases of lymph node biopsies received by the department of pathology, Dr. B.R. Ambedkar Medical College, Bengaluru from Jan 2017 to Aug 2018. Lymph nodes sent along with known primary malignant resection specimens were excluded from the study.

Results: Out of 70 cases, non-neoplastic lesions were more common comprising of 57 cases (81.5%) and neoplastic lesions were 13 cases (18.5%).Non-neoplastic lesions included tuberculous lymphadenitis 27cases (38.5%), non-specific reactive hyperplasia 25 cases (35.7%), specific reactive lymphadenitis 3 cases (4.2%) and other granulomatous lesions 2 cases(2.8%). Neoplastic lesions included metastasis 7 cases (10%), Hodgkin's lymphoma 5 cases (7.1%) and non-Hodgkin's lymphoma 1 case (1.4%).

Conclusion: Non-neoplastic diseases were more common than neoplastic diseases. Among non-neoplastic, tuberculous lymphadenitis was the most common lesion and among neoplastic lesions, metastasis was more common.

Introduction

Lymph nodes are distinct, ovoid lymphoid structures, approximately 600 such structures are spreadout throughout the body and are mainly concentrated in cervical, axillary and inguinal regions in the periphery and along the mesentry and mediastinum internally. Normal immune response in the body leads to proliferation and expansion of cellular components of Lymphnode causing it's enlargement. The resulting morphological pattern and degree of change in the architecture of lymph node depends on the causative stimulus and intensity of response. This manifests clinically as abnormal increase in number, size and consistency of lymph nodes termed as Lymphadenopathy. These enlarged nodes become clinically significant when they measure >1cm (cervical, axillary) and >1.5cm (inguinal lymph nodes). Peripheral lymph nodes, preferably cervical lymph nodes are more commonly biopsied as they are more likely to yield definitive diagnosis. Lymphadenopathy can be caused by a spectrum of etiology ranging from proliferative benign lesions to malignant neoplasms. Histopathological examination of lymph node biopsies has been the gold standard investigation for lymphadenopathy. It provides an early definitive diagnosis and plays a pivotal role in the clinical management. The aim of the study is to histopathological evaluate the spectrum of lymph node lesions presenting as lymphadenopathy.

Materials and Methods

This retrospective cross-sectional study of lymph node biopsies was conducted at Department of Pathology, Dr. B.R. Ambedkar Medical College, Bengaluru over a period of one and a half years from January 2017 to August 2018. A total of 70 lymph node biopsies were selected for histopathological evaluation. All peripheral and abdominal lymph nodes were included in the study except metastatic lymph nodes associated with known case of primary malignancies and lymph nodes that are a part of radical surgeries. All the histology slides of all the cases were reviewed and necessary data regarding age, sex, site of biopsy and other relevant clinical history was retrospectively collected. All the biopsies were previously fixed in 10% Neutral buffered formalin and processed with paraffin technique and stained with Haematoxylin and Eosin. Special stains like Periodic Acid Schiff and Stain for Acid Fast Bacilli were done whenever necessary. The lesions were broadly classified in to following groups. 1. Tuberculous and non-tuberculous granulomatous lymphadenopathy. 2. Specific and non-specific reactive

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http://doi.org/10.18231/j.ijpo.2019.091

lymphoid hyperplasia. 3. Metastatic neoplasms. 4. Lymphomas. Lymphomas were classified according to WHO classification of Tumours of Haematopoietic and lymphoid tissues (Revised 2017 edition). The results were tabulated, percentage frequencies were calculated and correlated with clinical data like age, sex and site of biopsy using necessary statistical tools.

Results

A total of 70 lymph node biopsies were evaluated in this study. Out of these, 40(57%) were male patients and 30 (43%) were female patients with a M:F ratio of 1.3:1. Female patients were between 8-74 years of age, male patients were between 14 months – 68 years of age. Maximum number of patients (38 cases, 54%) presented in the age group of 21- 40 years.

Most commonly biopsied site was cervical group of lymph nodes (49 cases, 70%) followed by abdominal lymph nodes (12 cases, 17%) and axillary lymph nodes (5 cases, 7%) and least commonly biopsied site was inguinal group of lymph nodes (4 cases, 6%).

Histopathological evaluation revealed that non-neoplastic lesions (57 cases, 81.5%) was the most cause of lymphadenopathy followed by neoplastic lesions (13 cases, 18.5%). Non-neoplastic lesions were broadly grouped into 1. Tuberculous and non-tuberculous granulomatous lymphadenitis. 2. Specific and non-specific reactive lymphoid hyperplasia. Neoplastic lesions were broadly classified into 1. Metastatic neoplasms 2. Hodgkin lymphoma 3. Non-Hodgkin lymphoma. This histopathological distribution of lesions is depicted in Fig. 1. Table 1. Depicts age wise distribution of lesions.

Among non-neoplastic lesions, tuberculous lymphadenitis was the most common lesion accounting to 38.5% (27cases). Females were slightly more affected than males with a ratio of 1.1:1. Most common age group affected was between 11-40years. 88% of the patients were aged less than 40 years and only 12% were aged more than 40yrs. All the 27 cases of tuberculous lymphadenitis showed caseous epithelioid granulomas, while 10 of them were positive for AFB. Non-specific reactive lymphoid hyperplasia was the 2nd most common lesion accounting for 35.7% (25 cases). Out of 25 cases, 40% (10 cases) showed follicular hyperplasia, 24% (6 cases) showed mixed pattern of hyperplasia, 20% (5 cases) showed sinus histiocytosis and 16% (4 cases) showed paracortical hyperplasia.

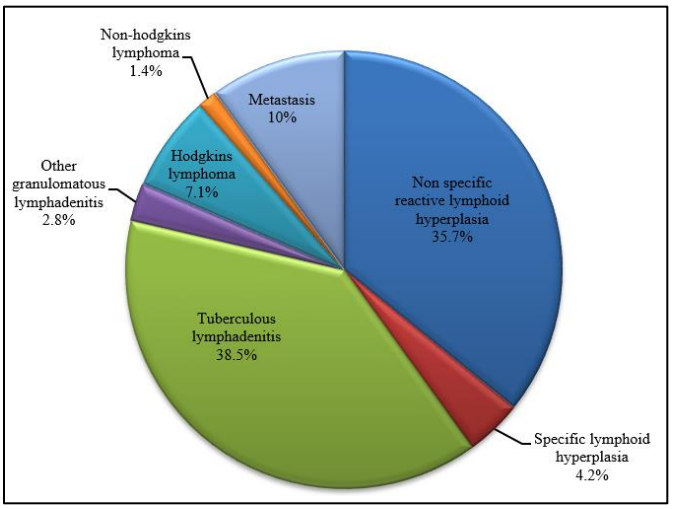

Fig. 1: Histopathological distribution of lesions in the study

Other group of Non-neoplastic lesions includes Specific lymphoid hyperplasia (3 cases 4.2%) comprising of 1 case of Kimura disease, 1 case of castleman disease and 1 case of Rosai Dorfman disease. Causes of non-tuberculous granulomatous lesions (2 cases, 2.8%) included 1 case of sarcoidosis and 1 case of BCG adenitis.

Neoplastic lesions accounted for 18.5% (13 cases). Metastatic neoplasms was the most common neoplastic lesion accounting to 53.8% (7 cases). Majority of the patients (71%) were above 50 years of age. Out of 7 metastatic neoplasms, 3 cases showed metastasis from adenocarcinoma, 2 cases from squamous cell carcinoma and 2 cases from poorly differentiated carcinoma.

Table 1: Age wise distribution of lesions

Lesions	0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	Total %
Tuberculous lymphadenitis	1	4	11	8	1	2	0	0	27 cases (38.5%)
Non-specific lymphoid hyperplasia	2	4	8	5	1	1	4	0	25 cases (35.7%)
Specific lymphoid Hyperplasia	1	0	2	0	0	0	0	0	03 cases (4.2%)
Other granulomatous lesions	1	0	0	0	1	0	0	0	02 cases (2.8%)
Metastasis	0	0	0	1	2	2	1	1	07 cases (10%)
Lymphoma	0	2	1	2	0	0	1	0	06 cases (8.5%)

Lymphomas accounted for 46.2% (6 cases) of malignant lesions. Out of 6 cases, 5 cases turned out to be Hodgkin lymphoma. Majority of the patients (4 out 5) were aged less than 40 years. Out of 5 cases of Hodgkin lymphoma 2 cases were lymphocyte rich type, 2 cases were mixed cellularity type and 1 case was of nodular sclerosis type. Non-Hodgkin lymphoma comprised of 1 case of DLBCL.

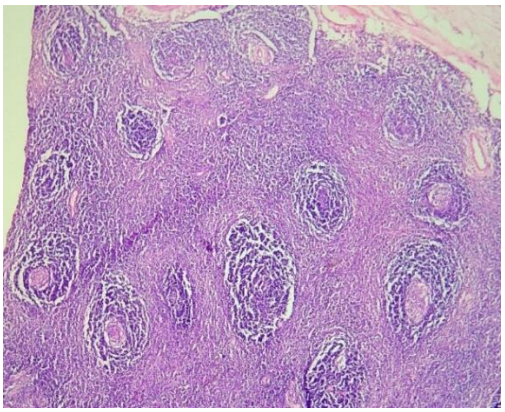

Fig. 2: Hyaline vascular variant of Castleman disease. Microphotograph shows atretic germinal centers traversed by hyalinised blood vessels (lollipop follicle) (H& E x100)

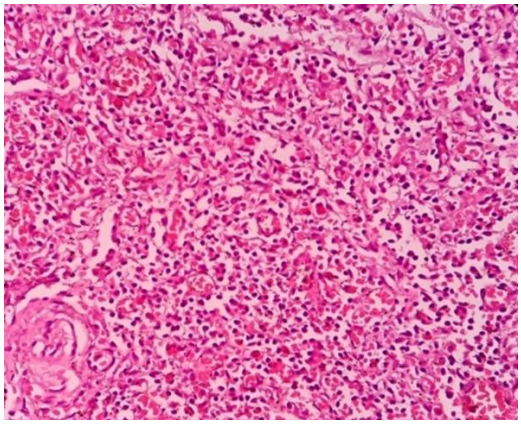

Fig. 3: Kimura disease. Microphotograph shows eosinophillic abscess in the interfollicular area. (H & E x200)

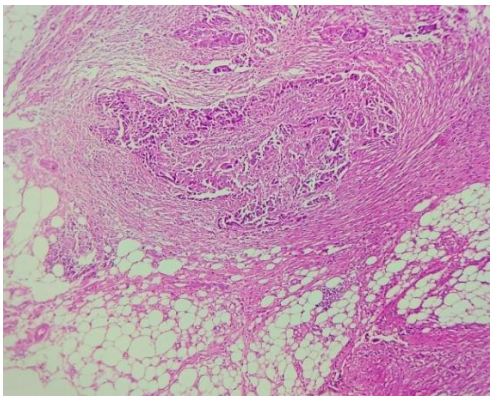

Fig. 4: Metstatic adenocarcinoma (H & E x100)

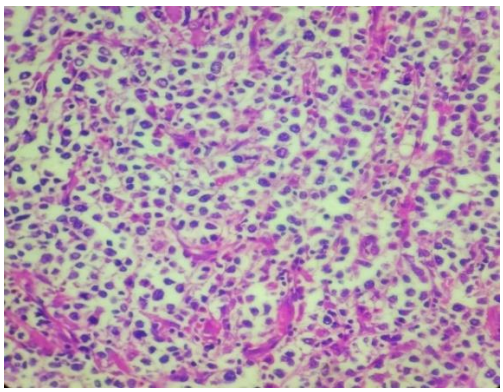

Fig. 5: Non-Hodgkin lymphoma – DLBCL (H & E x400)

Discussion

Lymphadenopathy is a manifestation of several regional and systemic diseases. Biopsy of the involved lymph node yields an important diagnostic clue to the underlying etiology.

In the present study, most commonly biopsied site was cervical group of lymph nodes (70%). This finding is consistent with studies conducted by Vidyadhar R et al and Vacchani et al.[5,4] Cervical lymph nodes are more commonly biopsied as they are more likely to yield definitive diagnosis in contrast to inguinal lymph nodes which usually shows non-specific fibrotic histology.[2]

In accordance to studies conducted by Roy et al, Jaimin et al and Agale et al, we also found that male patients were more affected compared to female patients.[1,3,7] Most common age group of the patients who presented with lymphadenopathy was between 20-40years which is comparable to other studies conducted by Rahman et al and Halder S at al.[2,8]

Present study shows that non-neoplastic lesion accounting to 81.5% was the most common cause of lymphadenopathy which is in accordance with several studies done on lymph node biopsies including Damle et al and Kamat GC.[13,12] In contrast, studies conducted by Ozkan et al (Turkey) and Albasri et al (Saudi Arabia) reported neoplastic lesions to be the most common cause. This discrepancy can be attributed to variations in epidemiological factors including various social and cultural factors.[11,14]

Tuberculous lymphadenitis is shown to be the most common non-neoplastic lesion in this study accounting to 38.5% of all non-neoplastic lesions followed by non-specific reactive lymphoid hyperplasia (35.7%). Many other studies concluded that tuberculosis is the most common cause of superficial lymphadenopathy in developing countries like India.[5,9,12] In contrast, few studies conducted by Pagaro et al[10] and Damle et al[13] reported non-specific reactive hyperplasia as the most common cause. This regional discrepancy could be probably explained by the differences in socio-economic status, standard of living of people from whom the study material is taken.[10,13] Many studies in the west, including study conducted by Freidig et al, showed that prevalence of tuberculosis was low and

malignancies including lymphomas were the major cause of lymphadenopathy in the developed countries.[15] Many studies conducted in the remote African countries showed a rise in HIV related lymph node lesions.[16]

This study also shows that among tuberculous lymphadenitis patients, Females slightly outnumbered males with a ratio of 1.1:1. Younger age group was more commonly affected with TB. These findings are consistent with other studies.[2,4] Out of 27 cases of TB, 10 cases (37%) showed positivity for AFB in the current study. Various studies have shown that frequency of positivity can vary between 2%-61%. Studies conducted by few authors shows that formalin and xylene treatment of the tissues while processing decreases the its sensitivity for AFB stain.[17,18]

Among non-specific reactive hyperplastic lesions, follicular hyperplasia was the most common pattern of hyperplasia accounting to 40% followed by mixed pattern (24%) and sinus histiocytosis (20%). Least common pattern was paracortical hyperplasia. These findings were consistent with the studies conducted by Kamat GC and Rahman et al.[12,2]

Current study showed that metastatic neoplasms were the most common neoplastic cause of lymphadenopathy accounting to 53% of all neoplasms which is followed by lymphomas and majority of the patients who presented with metastasis were above the age of 50years. These findings are comparable with many other studies.[1,4,12] In contrast, some studies have reported lymphomas to be the most common neoplastic lesion.[1-3,14]

According to this study, among lymphomas, Hodgkin lymphoma (83.3%) was the commonest lymphoma and was commonly seen among the younger age group. In contrast to the current study, non-Hodgkin lymphoma was found to be the commonest by many authors.[11,13]

Conclusion

We studied 70 cases of lymph node biopsies. Non-neoplastic lesions were more common than neoplastic lesions. Tuberculous lymphadenitis was the most common cause of lymphadenopathy with a slight female preponderance predominantly affecting the younger age group. Metastatic neoplasm was the most common neoplastic lesion of lymph node mostly affecting elderly age group. Addition of immune markers may aid in the subtyping of lymphomas. Various causes of lymphadenopathy observed and documented by histopathological evaluation in the current study was comparable to other studies conducted in India. This retrospective study showed that lymphadenopathy can be a manifestation of many regional and systemic disorders and histopathological evaluation of such lymph nodes helps to establish an early definitive diagnosis and hence reducing morbidity and positively influencing the overall prognosis of the patient.

Conflict of Interest: None.

Source of Funding: None.

References

1. Roy A, Kar R, Basu D, Badhe BA. Spectrum of histopathologic diagnosis of lymph node biopsies: A descriptive study from a tertiary care center in South India over 5½ years. *Indian J Pathol Microbiol* 2013;56:103–8.
2. Rahman MA, Biswas MM, Siddika ST, Sikder AM. Histopathological evaluation of lymph node biopsies: A Hospital Based Study. *J Enam Med Coll* 2012;2(1):8-14.
3. Panchal J, Pai P. Spectrum of pathologic lesions in superficial lymph node biopsies–a one and half year study. *Int J Biomed Adv Res* 2014;5(9):435-8.
4. Vachhani AB, Jasani JH, Tandon RK. Histopathological study of lymph node biopsy. *Int J Biomed Adv Res* 2013;4(11):790-5.
5. Vidyadhar R, Prakash CSR, Philip KS. Histopathological study of lymph node lesions. *J Int Med Dent* 2015;3:24-33.
6. AL-Ali ZA. Patterns of lymph node pathology using biopsy evaluation tool for lymphadenopathy: a retrospective descriptive study conducted at Al Hussein Medical City 2014–2016. *Iraq Med J* 2017;1(4):102-5.
7. V Agale S, B Tayade M, Binayake R, Sethi C, F D'Costa G, Raut S. A study of evaluation of histopathological spectrum of lymph node lesions in a tertiary care centre. *Int J Med Health Res* 2018;4(8):25-9.
8. Halder S, Saha BK, Sarkar D, Ghosh S. Etiological study of generalized lymphadenopathy in a tertiary care hospital. *Int J Res Med Sc*i 2017;4(8):3542-8.
9. Gupta N, Agarwal P. Spectrum of pathological lesion in superficial lymphnodebiopsy in a tertiary health centre of western Rajasthan. *IOSR J Dent Med Sci* 2016;15(11):62-5.
10. Pagaro PM, Banerjee B, Khandelwal A, Pandey A, Gambhir A. Spectrum of lymph node lesions as determined by histopathology. *Med J DY Patil Univ* 2017;10:343-8.
11. Özkan EA, Göret CC, Özdemir ZT, Yanık S, Göret NE, Doğan M, et al. Evaluation of peripheral lymphadenopathy with excisional biopsy: six-year experience. *Int J Clin Exp Pathol* 2015;8(11):15234.
12. Kamat GC. A ten-year histopathological study of generalized lymphadenopathy in India. *S Afr Fam Pract* 2011;53(3):267-70.
13. Damle RP, Suryawanshi KH, Dravid NV, Newadkar DV, Deore PN. A Descriptive Study of Histopathological Patterns of Lymph Node Biopsies in A Tertiary Care Hospital. *Ann Pathol Lab Med* 2017;4(2):A131-6.
14. Albasri AM, El-Siddig AA, Hussainy AS, Alhujaily AS.Pattern of lymph node pathology in western Saudi Arabia. *Asian Pac J Cancer Prev* 2014;15(11):4677-81.
15. Freidig EE, McClure SP, Wilson WR, Banks PM, Washington JA. Clinical-histologic-microbiologic analysis of 419 lymph node biopsy specimens. *Clin Infect Dis* 1986;8(3):322-8.
16. Bem C, Patil PS, Bharucha H, Namaambo K, Luo N. Importance of human immunodeficiency virusassociated lymphadenopathy and tuberculous lymphadenitis in patients undergoing lymph node biopsy in Zambia. *Br J Surg* 1996;83(1):75-8.
17. Eshete A, Zeyinudin A, Ali S. M. tuberculosis in Lymph node biopsy paraffin embedded sections. *Tuberc Res Treat* 2011:127817.
18. H. Fukunaga, T. Murakami, T. Gondo, K. Sugi, and T. Ishihara. Sensitivity of acid-fast staining for Mycobacterium tuberculosis in formalin-fixed tissue. *Am J Respir Crit Care Med* 2002;166(7):994-7.

How to cite this article: Pallavi SMS, 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.