Cervical Lymphadenopathy: A Histomorphological study at a Tertiary care hospital

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Abstract
Introduction: Cervical Lymphadenopathy is one of the most common clinical presentation of the patients visiting the tertiary care hospital. This study was taken to analyze the various causes and to learn about histomorphological spectrum of cervical lymph node lesions.
Materials and Methods: A prospective study of all the cervical lymph node excision biopsies received in the department of pathology, Dr B R Ambedkar medical college and hospital for period of 18 months between June 2017 – December 2018. A complete and thorough histomorphological analysis was done. Special stains were carried out wherever necessary.
Results: A total of 61 cervical lymph node biopsies were analysed between the age group of 5yrs to 93years. Majority of the patients were in the age group of 21-30 years (15 cases, 24.59%) and 36 cases (59.01%) were male and 25 cases (40.98%) were female with male to female ratio of 1.44: 1, suggesting slight male preponderance. It was also observed that overall non neoplastic lesions (43 cases, 70%) were more frequently encountered compared to neoplastic lesions (18 cases, 30%). Among the non neoplastic lesions, Tuberculous lymphadenitis was the highest with the maximum number of 23 cases (37.70%) and among the neoplastic lesions, metastasis to lymph node was the highest with the maximum number of cases (9 cases, 14.75%).
Conclusion: Histomorphological analysis of lymph node excision biopsies still remains the gold standard for establishing the diagnosis. The present study focuses on various non neoplastic and neoplastic lesions of cervical lymph node and their histomorphological features.

Keyword: Lymph node, Cervical lymphadenopathy, Histomorphology, Tuberculosis, Metastasis.

Introduction
The lymph nodes, being the integral part of immune system, are the most widely distributed and easily accessible lymphoid organs which are more commonly examined for diagnostic purpose. Lymphadenopathy is defined as an abnormality in the size or character of lymph node caused by a vast array of disease processes, whose broad categories are Malignancies, Infections, Autoimmune disorders, Miscellaneous and unusual conditions, and Iatrogenic causes.[1]

Cervical lymphadenopathy accounting to 55% of all lymphadenopathy, is one of the frequent presentation of underlying pathologies related to head and neck region with vast range of differential diagnosis. The involvement of lymph node by non-neoplastic conditions is much more common than the neoplastic processes.[1] Though cervical lymphadenopathy is ~~a~~ fairly a frequent presentation, still it poses a considerable challenge to the attending clinician in making the diagnosis and in ascertaining the management of the disease.

Most cases of cervical lymphadenopathy are primarily assessed by FNAC procedure and also it is a simple, quick, inexpensive and equally reliable procedure which can be used as a routine OPD procedure but the frequency of indeterminate or incorrect diagnosis is higher in comparison to excisional biopsy.[2]

However, there is a paucity of information on the spectrum of diseases affecting lymph nodes from this region. Hence this study was undertaken with the objective of evaluating the cause and to analyze the histomorphological spectrum of lesions affecting the cervical lymph nodes.

Materials and Methods
This hospital based prospective study was undertaken in Department of Pathology, Dr. B.R Ambedkar Medical college and Hospital, Bangalore over a period of 18 months 'June 2017 to December 2018'. All cervical lymph node excision biopsies received in our department were included in the study. We excluded lymph node dissection done as a part of a staging procedure for various neoplasms. The clinical details of the patients were noted from histopathology requisition forms.

All the received specimen were adequately fixed with 10% Formalin saline, processed and paraffin embedded blocks were made. Sections of 3-4 micron thickness were taken and slides were made with routine H & E stain, which was supplemented by special stain like PAS and AFB stain, wherever necessary. A complete and thorough histomorphological analysis of all the slides were done and reviewed in detail for various neoplastic and non-neoplastic conditions.

Observation and Results
A total of 61 cervical lymph node excision biopsies were analyzed in this study with the age range of 5 to 93 years and mean age of 37. Majority of the patients were in the age group of 21-30 years(15 cases, 24.59%), followed by 11- 20 years (11 cases, 18.03%) and the least was encountered in the age group below 10 years accounting to only 2 cases (8.19%).(Fig. 1)

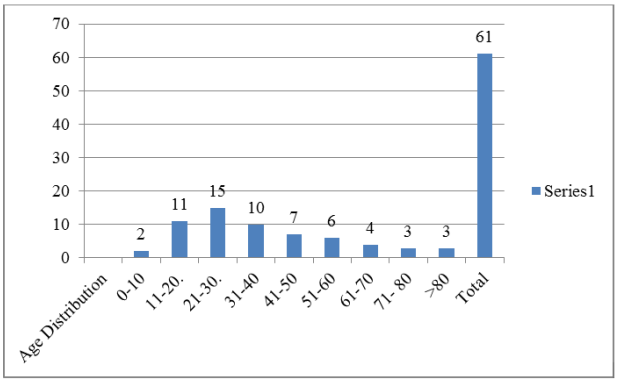

Fig. 1: Age wise distribution of cases of cervical lymphadenopathy.

In the present study 36 cases (59.01%) were male and 25 cases (40.98%) were female with male to female ratio of 1.44: 1, suggesting slight male preponderance. (Fig. 2)

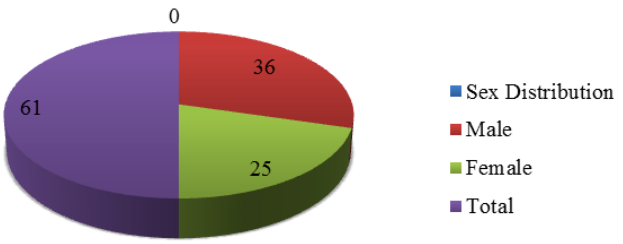

Fig. 2: Gender wise distribution of cases of cervical lymphadenopathy.

It was observed that overall non neoplastic lesions (43 cases, 70%) were more frequently encountered compared to neoplastic lesions (18 cases, 30%).(Table 1)

Table 1: Distribution of non neoplastic and neoplastic lesions of cervical lymphadenopathy

Type of Lesion	Total Cases	Percentage
Non neoplastic	43	70%
Neoplastic	18	30%
Total	61	100

Among the non neoplastic lesions, Tuberculous lymphadenitis was the highest with the maximum number of 23 cases (37.70%) with female preponderance and it was found in all age groups, which was closely followed by Reactive change lymph node with the maximum cases in the age group of 10-19 years with male preponderance.

Out of 23 cases of Tuberculous lymphadenitis, 5 showed positivity for Ziehl Neelsen stain.

Table 2: Distribution of different lesions of cervical lymphadenopathy

Type of Lesions	Number of cases	Percentage
Reactive Change	14	22.95%
TB lymphadenitis	23	37.70%
NHL	04	6.55%
HL	06	9.83%
Metastasis	09	14.75%
Miscellaneous	05	8.19%
Total	61	100

Among the neoplastic lesions encountered, metastasis to lymph node was the highest with the maximum number of cases (9 cases, 14.75%) in the age group of 50-59years with male preponderance. And we also observed that metastasis to lymph node was seen only above the age of 35years. And among the metastatic deposits, Squamous cell carcinoma was seen in 6 cases, papillary carcinoma of thyroid in 2 cases and poorly differentiated carcinoma in 1 case.

Among the lymphoproliferative disorders, Hodgkins lymphoma accounted for 6 cases (9.83%) and Non Hodgkins lymphoma in 4 cases (6.55%). Among HL 4 cases were mixed cellularity and 2 cases was Lymphocyte rich type. And in our study we encountered 2 cases of Follicular lymphoma,1 case of Burkits lymphoma and 1 case of Non Hodgkins Lymphoma.

NHL had a bimodal distribution with one case in the age group of 10-19 years and the remaining 3 cases in the age group of 40-60years with a marked male predilection. And HL was seen in the age group of 20-50 years.

Among the miscellaneous conditions we encountered Acute non specific lymphadenitis in 3 cases, one case of Toxoplasma Lymphadenitis and one case of Cat scratch disease lymphadenitis.

Discussion

Lymphadenopathy is a common medical problem,and cervical lymphadenopathy in particular may present in 56% of patients examined.[3] Palpable lymph nodes offer an important diagnostic clue to the etiology of the underlying condition. Though fine needle aspiration cytology is commonly used to establish the etiological diagnosis, excision biopsy and histopathology of the lymph node remains the "gold standard" for diagnosis.[4]

In our present study, out of 61 cases, 36 cases (59.01%) were males and 25 cases (40.98%) were female. Male to Female ratio 1.44:1 with slight male preponderance which is in concordance with studies done by Rajesh Kumar Padhy et al[5], Paliwal U K et al[6] and Prasadraoet al[7], who found male preponderance with a male to female ratio being 1.17:1,1.04:1, 1.8:1, respectively.

In the present study, majority of the cases were encountered in age group of 21-30years. The similar findings were found in studies done by Rehman A et al[8] and Rajesh Kumar Padhyet al.[5]

In our study, Non neoplastic lesions were more commonly encountered in population below 30yrs compared to neoplastic lesions of cervical lymphnode which were seen more frequently in above 30yrs which was in concordance with the studies done by Yeutsu et al[9] and Anthony et al.[10]

In our present study, Tuberculous lymphadenitis was the predominant lesion, (23 cases, 37.70%) followed by Reactive/ Non specific lymphadenopathy consistent with

findings Rajesh Kumar et al[5] with TB 45% and reactive/non-specific 26%. This observation was comparable with Rehman A et al[8] and Khan et al[11] who reported highest incidence of Tuberculous lymphadenitis in their study as 50.61% and 68% respectively.

Tuberculous cervical lymphadenopathy is a frequent disease in India. Therefore it is important that a high index of suspicion for tubercular lymphadenopathy is required. Early diagnosis & treatment will cure the disease and also it prevents complications like cold abscess & sinus formation.[12]

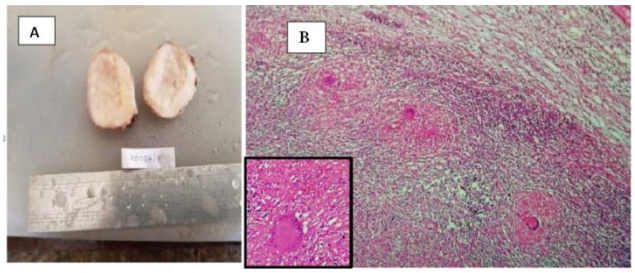

Fig. 3: Tuberculous Lymphadenopathy: Figure A shows gross cut section exhibiting caseous necrosis of the cervical lymphnode and Figure B shows histopathological section exhibiting caseous necrotinzing granulomas with inset showing Langhans giant cell. (H & E at 10X)

Among the neoplastic lesions, metastasis to lymph node was maximum number with most common primary being squamous origin followed by non squamous origin which was comparable with study done by Prasadrao et al[7]and Prasad and Mohan.[13] In our study, we encountered 2 cases of metastatic deposits of papillary carcinoma thyroid.In another study by Afroz et al.[14] in non-squamous metastatic deposits primary is found in thyroid in 15.09% of the cases.

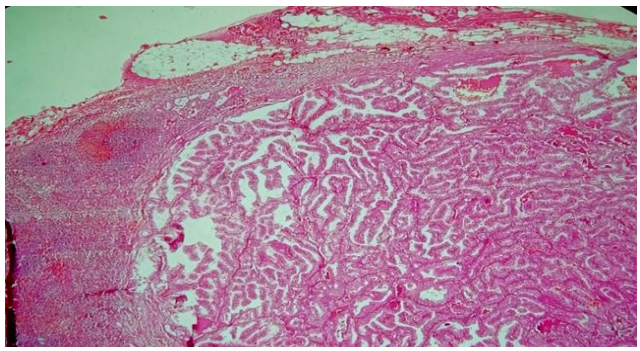

Fig 4: Metastatic Papillary Carcinoma of Thyroid: Micrograph shows complex, branching papillae with fibrovascular core replacing normal lymphnode architecture.(H&E at 10X)

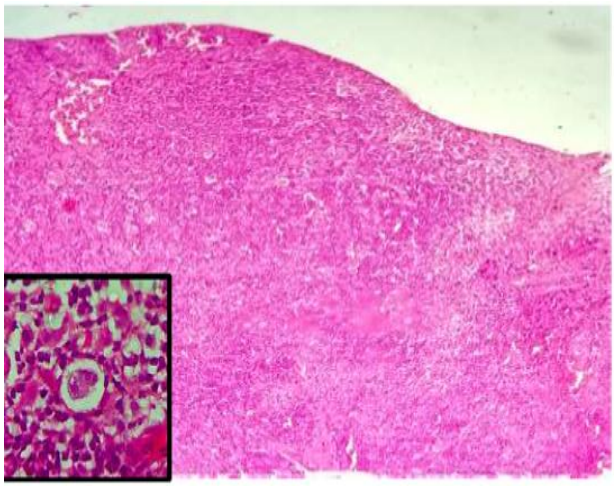

Fig. 5: Hodgkins Lymphoma: Micrograph exhibits Lymphocyte rich variant of Hodgkins lymphoma with inset showing Reed Sternberg cell. (H & E at 10X)

In our present study, among the lymphoproliferative lesion Hodgkins lymphoma accounts to 6 cases and Non Hodgkins lymphoma accounted to 4 cases. The ratio of HL to NHL is 1.5:1. The findings were comparable to other studies done by Vedi et al[15], Prasadrao et al[7]and by Rajesh et al.[5]

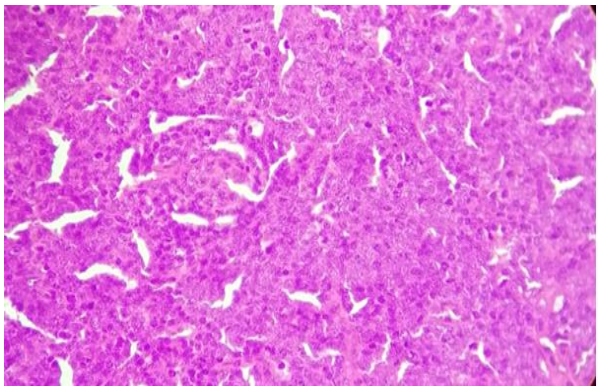

Fig. 6: Non Hodgkins Lymphoma: Micrograph shows loss of architecture of lymphnode with monotonous malignant lymphoid population.(H & E at 40X).

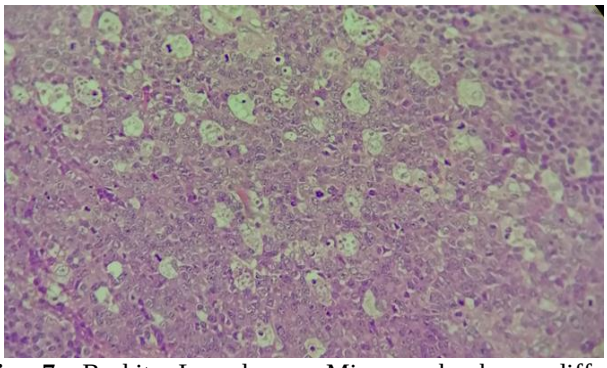

Fig. 7: Burkits Lymphoma: Micrograph shows diffuse infiltration of monomorphic cells with tingible body macrophages exhibiting starry sky pattern. (H & E at 40X).

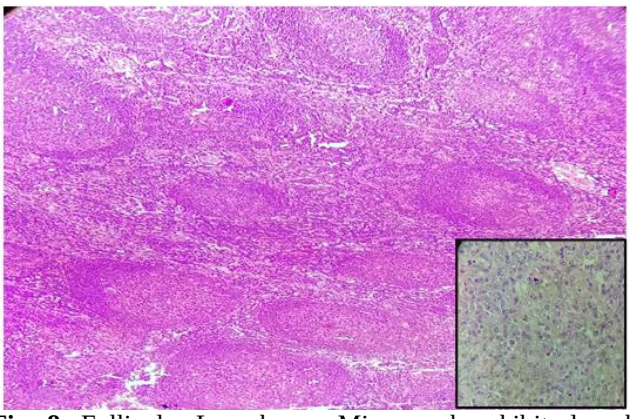

Fig. 8: Follicular Lymphoma: Micrograph exhibits lymph nodal effacement by closely packed follicles with inset exhibiting small cleaved cells and larger non cleaved cells.(H & E at 10X and 40X).

Among the miscellaneous lesions, incidence of toxoplasma lymphadenitis was 1 cases (1.63%), which nearly comparable with study done by Moor J W et al[16] being 1.66%.

Conclusion

Cervical lymphadenopathy is one of the most frequently encountered clinical problem affecting all the age groups and both sexes visiting out patient and inpatient departments and this study highlights the importance of lymph node excision biopsy in establishing the cause of lymphadenopathy. In our study TB lymphadenitis was the common cause followed by the Reactive change lymphnode. Although the advent of newer immunocytochemical studies have improved the diagnostic accuracy of fine needle aspiration cytology to greater extent, still histomorphological analysis of lymph node biopsies remains the gold standard for diagnosis.

Conflict of Interest: None.

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