 DOI: 10.18231/2394-6792.2017.0100

Prevalence of various causes of lymphadenopathy in a rural setting in India

Sharadamani GS

Associate Professor, Dept. of Pathology, Vinayaka Mission's Medical College & Hospital, Karaikal, Puducherry

Email: drsharadamanigs@gmail.com

Abstract

Introduction: To study the pattern of various etiologies of lymphadenopathy in a rural setting, and to examine the distribution of lesions among diverse age and sex groups.

Materials and Methods: The study was conducted on 99 subjects diagnosed with lymphadenopathy at Department of pathology, Vinayaka Missions Medical College and Hospital, Karaikal, Puducherry, India. Detailed clinical and laboratory examinations were performed, and lesion were diagnosed by fine needle aspiration cytology (FNAC). The prevalence of various etiologies was evaluated, and further correlated with age and sex of the participants.

Results: Out of the 99 selected patients, 45% of subjects were diagnosed with tuberculous lymphadenitis, followed by 27% with reactive lymphadenitis, 16% with non-specific lymphadenitis, 9% with metastatic deposits, and 2% with supportive lymphadenitis.

Conclusion: Tuberculous lymphadenitis was noted as the most prevalent etiology for lymphadenopathy with marked increase in female subjects and cervical region as the major site involved

Keywords: Lymphadenopathy, Tuberculous lymphadenitis, Cervical lymph nodes

Manuscript Received: 17th February, 2017 **Manuscript Accept:** 7th April, 2017

Introduction

Persistent generalized lymphadenopathy (LA), a common presentation, in various clinical practice settings, is an indication of underlying systemic diseases. In a primary care setting, around one-fourth patient presentation will be of generalized lymphadenopathy and three-fourths will be of localized lymphadenopathy.[1] The most common causes of lymphadenopathy are inflammation and immune reactions.[2] It is also one of the profound and persistent signs of chronic infections like tuberculosis and HIV.[3-5] Tuberculous lymphadenitis is one of the most common causes of lymphadenopathy in adults, particularly in developing countries.[3] However, its prevalence is only less than 5% among Indian children aged between 0-14 years.[6] However, the prevalence of malignancies has been reported to be comparatively lesser among lymphadenopathy patients.[4] Studies have reported cervical lympnodes as the major site of lymphadenopathy in ~90% of the cases.[3] Since the most important cause for chronic cervical lymphadenopathy is malignant tumors in head and neck regions, patients with high index of suspicion should be closely monitored and further investigated.[7]

There is very limited literature evidence from India with reference to the prevalence and underlying etiology of lymphadenopathy, especially from the rural settings. The present study aims to retrace the current patterns in the etiology of lymph node enlargement among rural Indian population, and to examine the distribution of lesions among various age and sex groups.

Materials and Method

The prospective study was conducted at the Department of pathology, Vinayaka Missions Medical College and Hospital, Karaikal, Puducherry, India, between 2013 and 2016. Subjects presented with lymphadenopathy, belonging to all age and sex groups, were included in the study. The study was approved by institutional ethics committee and informed consents were obtained from all the participants. Brief history including age and sex of the subjects were collected, and detailed clinical examination was performed. The shape, size, consistency, matting, and the region of the lymph node involved were recorded.

Fine needle aspiration cytology (FNAC) was used for the diagnosis of palpable mass lesions in all the selected subjects. FNAC was performed by experienced and trained professionals, using disposable 22 or 24 gauge needles with 1.5cm length and 10-20ml capacity. Palpating hand wearing gloves were used to fix the mass. Suitable fixatives were used to fix the smear for staining. Leishman and May Grunwald Giemsa (MGG) stains were used to stain air dried smear, and Hematoxylin and Eosin (HE), MGG, and Papanicolaou stains for wet smear. The subjects were classified for the analysis based on the age and sex. The classification of the subjects based on the age was as follows: 2-10yrs, 11-25yrs, 26-45yrs, and >46yrs.The prevalence of various lymphadenopathies based on the etiologies and location were analyzed, and were correlated with age and sex of the subjects to explore the association.

Results

The study enrolled 99 cases of significant lymphadenopathy with age ranging from two to >46 years. The female to male ratio was 1:0.59. Out of the 99 lymph nodes studied, 88 (89%) were noted in cervical region, six (6%) on axillary, two (2%) on supraclavicular, and one (1%) each on submental,

occipital, and inguinal regions. Tuberculous (granulomatous) lymphadenitis (45%) was identified as the most common cause for lymphadenopathy and suppurative lymphadenitis (2%) as the least common cause (Table 1). Majority of the lymph nodes were found to be firm and matted (1.2 cms), however, metastatic lymph nodes were hard, firm and fixed (4*4 cms).

Reactive lymphadenitis and tuberculous were noted more frequently in infants and young children of 2-10 of age. Non-specific lymphadenitis, tuberculous lymphadenitis, and metastatic lymph nodes were noted as the commonest cause of lymph node enlargement in subjects belonging to 11-25, 26-45, and >46 age groups respectively. Neoplastic lesions, including metastatic lesions, were seen in age between 26-45 and >46 years. The lymphadenopathy was more prevalent in female subjects belonging to 11-25, and 26-45 age groups.

Table 1: Distribution of various benign and malignant lesions among the study population

Diagnosis	Prevalence (%)
Tuberculous lymphadenitis	45
Reactive lymphadenitis	27
Non-specific lymphadenitis	16
Metastatic deposits	9
Suppurative lymphadenitis	2

Table 2: Age and gender-wise distribution of various lymphadenopathy cases

Age (years)	Gender	Suppurative lymphadenitis	Reactive lymphadenitis	Non-specific	Tuberculous lymphadenitis	Metastatic deposits	Total
2-10	Male	1	5	1	5	-	12
	Female	1	4	2	2	-	9
11-25	Male	-	3	2	4	-	9
	Female	-	5	5	11	-	21
26-45	Male	-	-	1	2	2	5
	Female	-	5	-	15	1	21
> 46	Male	-	3	1	4	3	11
	Female	-	2	4	2	3	11

Whereas in males it was more common in infants and young children of 2-10 years than adults. However, the prevalence was comparable in female and male subjects belonging to >46 of age (Table 2).

Discussion

The present study has noted tuberculous lymphadenitis as the most common benign lesion, with a percentage of 45%. This is in agreement with previous literature evidence.[8-10] This pattern can be attributed to low socioeconomic status, illiteracy, incomplete treatment, resistance, and increased incidence of HIV infection.[11] However, the present study population has not included HIV infected patients. The study by Biswas et al. among urban population in India has reported a prevalence of 45% for tuberculous lymphadenitis.[9] The present study has also reported same prevalence rate in rural Indian population, with increased female subjects. A study by Abba on Saudi Arabian population reported that tuberculous lymphadenitis was reported in 51% of the females compared to males.[12] The observation was proportional to the present study which reported 67% cases of tuberculous lymphadenitis.

Cervical region was noted as the most frequent site of lymphadenopathy (89%), followed by axillary, occipital, supraclavicular, submental, and inguinal regions. A recent study from India, by Malukani K et al., has reported a comparable frequency of 79% cases presenting with lymphadenopathy in the cervical region. Even though the study has identified inguinal region as the second frequent site of lymphadenopathy, (7%), the present study has reported inguinal lymphadenopathy in 1% of the subjects.

Similar to the previous literature review, the present study has reported lymphadenopathy cases in all the age groups, even in infants and young children.[8,13,14] The present study has used FNAC for diagnosing lymphadenopathy. A higher prevalence of tuberculous lymphadenitis in subjects belonging to 11-45 age group has been noted in the present study. The observation is substantiated by the observations of Anna et al., who reported that majority of the cases of tuberculous lymphadenopathy occurred in subjects of <40 years of age.[12]

In concurrence with the literature findings, reactive lymphadenitis has been identified as the commonest cause of lymph node enlargement in the pediatric age group of the current study population.[15-17] This could be attributed to the presence of immature immune system and increased susceptibility of this age group to contract upper respiratory tract infections. In addition, metastatic lesions were noted commonly in 26-45 years and >46 years of age comparable to previous observations.[17]

FNAC technique has been widely employed for the primary screening of lesions, following its first use for diagnostic purpose by Griey and Gray in 1904. FNAC has been suggested as a convenient alternative over open biopsy with greater than 90% diagnostic accuracy in assessing patients with cervical lymph nodes.[18] The current study has used FNAC for the diagnosis of palpable mass lesions, as it is simple, easy, accurate, rapid, safe, and helps in guiding for further management of the disease.[8,11,18,19-22]

One of the major limitations of the study is that it is unable to generalize the observation as only single center is involved. Moderate sample size and the use of only FNAC for clinical diagnosis of lymphadenopathy are the other limitations. However, it should be noted that the study reports significant findings on prevalence of lymphadenopathy from a rural setting in India and there are very few studies on these lines, especially from South India.

Conclusion

Tuberculous lymphadenitis has been identified as the common cause for lymphadenopathy, and cervical region as the major site involved in ~90% of the lymphadenopathy cases. Understanding the pattern of lymphadenopathy in a population assists in pathological reporting and helps the clinician in conducting a more focused investigation and in customizing the treatment course.

References

1. Henry P, Longo D. Enlargement of lymph nodes and spleen. In: Kasper D, Braunwald E, Fauci A, Hauser S, Longo D, Jameson L. Harrison's principles of internal medicine. 16th ed. New York: McGraw Hill, 2005; p. 343-348.
2. Gayathri MN, Sakshi Chaurasia, Bharathi M, Shashidhar HB, "Pattern of lymphadenopathy in fine needle aspiration cytology: a retrospective study" International Journal of Research in Medical Science (2015) 3, 1416-1419.
3. Paliwal Nidhi, Thakur Sapna, Mullick Shalini, Gupta Kumud, "FNAC in Tuberculous Lymphadenitis: Experience from A Tertiary Level Referral Centre" Indian Journal of Tuberculosis (2011) 58, 102-107.
4. Andrew W. Bazemore, Douglas R. Smucker, "Lymphadenopathy and malignancy" American Family Physician (2002) 66, 2103-2110.
5. Lymphadenopathy | AIDS Education and Training Centers National Coordinating Resource Center (AETC NCRC); April, 2014. Available from: https://aidsetc.org/guide/lymphadenopathy.
6. P. Narang, R. Narang, R. Narang, D. K. Mendiratta, S. M. Sharma, N. K. Tyagi, "Prevalence of tuberculous lymphadenitis in children in Wardha district, Maharashtra State, India" International Journal of Tuberculosis and Lung Disease" (2005) 9, 188-194.
7. Mahmoud M. Mahran, "The Role of Fine Needle Aspiration Cytology and Imprint Cytology in Cervical Lymphadenopathy" Al-Azhar Assiut Medical Journal (2007) 5, 324-330.
8. Kamal Malukani, Anjali Saxena, Prashant S. Yeshwante, Amit V. Varma, Shirish S. Nandedkar, Sandeep S. Matreja, "Cytologic evaluation of lymphadenopathy in a tertiary care hospital of central India" Indian Journal of Basic and Applied Medical Research (2015) 5, 671-681.
9. Gautam Biswas, Anjan Das, Dibakar Haldar, Ankur Mukherjee, Sirshak Dutta, Ramanuj Sinha, "Clinico-pathological correlates of cervical lymphadenopathy: a hospital based study" Indian Journal of Otolaryngology and Head & Neck Surgery (2013) 65, 42-47.
10. Bhatt JV, Shah JM, Shah F, "Clinico-pathological profile of cervical lymphadenopathy: a prospective study" J Appl Basic Med Sci (2002) 2, 35-39.
11. Gunjan P. Upadhyay, Rameshchandra M. Thakker, "Evaluation of fine needle aspiration cytology as the initial diagnostic test in cases of cervical lymphadenopathy" International Journal of Research in Medical Sciences (2016) 12, 5103-5107.
12. Abdullah A. Abba, Afolabi E. Bamgboye, Mohammed Afzal, Rehan A. Rahmatullah, "Lymphadenopathy in adults" Saudi Medical Journal (2002) 23, 282-286.
13. S Shamshad Ahmad, Shakeel Akhtar, Kafil Akhtar, Shano Naseem, Tariq Mansoor, "Study of Fine Needle Aspiration Cytology in lymphadenopathy with special reference to acid-fast staining in cases of tuberculosis" JK Science (2005) 7, 1-4.
14. Sarda AK, Bal S, Singh MK, Kapur MM, "Fine needle aspiration cytology as a preliminary diagnostic procedure for asymptomatic cervical lymphadenopathy" The Journal of the Association of Physicians of India (1990) 38, 203–205.
15. Arun Roy, Rakhee Kar, Debdatta Basu, Bhawana Ashok Badhe, "Spectrum of histopathologic diagnosis of lymph node biopsies: A descriptive study from a tertiary care centre in south India over 5 ½ years" Indian Journal of Pathology & Microbiology (2013) 56, 103-108.
16. Abdullah A Abba, Mohamed Z Khalil, "Clinical approach to lymphadenopathy" Annals of Nigerian medicine (2012) 6, 11-17.
17. C Nirmala, Dayananda S. Biligi, Radha, "Causes of Cervical Lymphadenopathy - A Cytologic Study" Journal of Evolution of Medical and Dental Sciences (2014) 3, 379-385.
18. H K Velankar, Y Dabholkar, S Bhalekar, A Shetty, A A Saberwal, R Bidaye, "FNAC: A Suitable Tool for Assessment of Cervical Lymphadenopathy" The Internet Journal of Otorhinolaryngology (2014) 17, 1-5.
19. Anne R Wilkinson, Sadhana D Mahore, Sabiha A Maimoon, "FNAC in the diagnosis of lymph node malignancies: A simple and sensitive tool" Indian Journal of Medical and Paediatric Oncology (2012) 33, 21–24.
20. D Muyanja, R Kalyesubula, E Namukwaya, E Othieno, H Mayanja-Kizza, "Diagnostic accuracy of fine needle aspiration cytology in providing a diagnosis of cervical lymphadenopathy among HIV-infected patients" African Health Sciences (2015) 15, 107–116.
21. Saleh AF, Nahar Rahman AJE, Salam MA, Islam F, "Role of fine needle aspiration cytology (FNAC) in the diagnosis of prostatic lesions with histologic correlation" Bangladesh Medical Research Council Bulletin (2005) 31, 95–103.
22. Mandakini M Patel, Sonal L Italiya, Rajnikant D Patel, Reena B Dudhat, Kumarbhargav R Kaptan, Varsha M Baldwa, "Role of Fine Needle Aspiration Cytology to Analyze Various Causes of Lymphadenopathy" National Journal of Community Medicine (2013) 3, 489-492.