A study on cervical lymphadenopathy in a rural based teaching hospital in India

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ABSTRACT

Background: Presence of cervical lymphadenopathy may indicate serious systemic disease process. Proper evaluation of cervical lymphadenopathy is of extreme clinical importance. Aims and Objective: The study objective was to evaluate clinical and demographic profile of cervical lymphadenopathy, to find the etiology, and to study the role of fine-needle aspiration cytology (FNAC) in it’s etiological diagnosis. Materials and Methods: Prospective observational study was carried out in a rural based teaching hospital in India for 1 year. One hundred and twenty-one patients of more than 12 years of age from both genders were included in the study. Detailed history, clinical, blood examination, radiological, microbiological evaluation, and FNAC from lymph node were done for all patients. Excision biopsy was done for selective cases. Results: It was a male predominant study with male: female ratio of 1.12:1 and mean age of the patient was 34.54 years. Cervical lymphadenopathy was mostly unilateral (77.69%) and it was more common in the right side (43.80%). Tuberculosis (TB) (36.37%) was the most common cause of cervical lymphadenopathy in our study followed by reactive hyperplasia of lymph node (23.14%) and metastatic deposit (19%). Among metastatic deposit, 9 (39.13%) had squamous cell carcinoma, 5 (21.74%) had adenocarcinoma, and 1 (4.35%) had small cell carcinoma. Conclusion: TB is the most common cause of cervical lymphadenopathy followed by reactive hyperplasia and metastatic secondary deposit. FNAC is a simple inexpensive relatively painless rapid and reliable method for diagnosis which can be considered as a frontline investigation and can guide requirement for further investigation in the management of cervical lymphadenopathy.

Key words: Cervical lymphadenopathy; Tubercular lymphadenopathy; Metastatic lymphadenopathy

INTRODUCTION

Lymph nodes are an integral component of the immune system. The neck consists of nearly two-third of the total lymph nodes of the body. Cervical lymphadenopathy may present with an abnormal increase in size and altered consistency of lymph nodes. The enlargement of these lymph nodes is quite significant in that there are so many etiological agents and are an index spread of infections and malignancy.¹ Cervical lymphadenopathy can present as an isolated feature or as part of generalized lymphadenopathy.²,³ Etiology may vary in different geographical location depending on demographic profile of that region. One of the previous studies have shown that there is a change of proportion of different etiologic category over a decade in same geographical area.⁴ All of these commonly create confusion among clinician regarding proper management approach of patients having cervical lymphadenopathy. Fine-needle aspiration cytology (FNAC) is a safe, reliable, rapid, and inexpensive method of establishing the diagnosis of a lesion and also helps in indicating the pattern of the investigation.⁵

Although few studies regarding such clinical manifestation are being published in India in the past, most of the studies are from developed countries of the world. Hence, there is an urge for a new study in this clinical condition particularly on subjects from population living in rural area.
Aims and objectives
This study was carried out with the objective of evaluating clinical and demographic profile of cervical lymphadenopathy cases, to find the etiology of cervical lymphadenopathy, and to study the role of FNAC in etiological diagnosis of cervical lymphadenopathy.

MATERIALS AND METHODS
This prospective observational study was carried out with patients of cervical lymphadenopathy attending to the Respiratory Medicine department of Midnapore Medical College and Hospital in Paschim Medinipur district of West Bengal, India. This institution serves as the only teaching hospital in that district and patients attending to this hospital are mostly of rural background. The study period was 1 year from October 2019 up to September 2020. We included patients of more than 12 years of age having cervical lymphadenopathy of more than one centimeter diameter. Immunocompromised patient having cervical lymphadenopathy, those already diagnosed, and undergoing treatment and those unwilling to give consent were excluded from this study. The study proposal was placed before the Institutional Ethics Committee for approval and permission obtained. After getting patient consent, detailed history, including demographic data and clinical examination of lymph node including involvement of other groups of lymph nodes, was done. Systemic examination and routine hematological, biochemical, and serological test were conducted on each case. Sputum examination, chest X-ray, ultrasonography, and lymph node discharge examination for microbiological assessment were carried out in clinically relevant cases. After making a clinical diagnosis, all patients were subjected to fine-needle aspiration cytology. Both cytological and microbiological observations were recorded. In cases, where fine-needle aspiration cytology was inconclusive and or there was a strong clinical suspicion of alternate diagnosis those offered for excision biopsy. Special investigation such as CT scan, fungal preparation, aspiration, and examination of body fluid and image-guided biopsy was done in selected cases.

Data analysis
All data collected in a pre-designed structural pro forma were first entered into a Microsoft Excel spread sheet, 2007 version and then analyzed by SPSS, version 20 software.

RESULTS
Our study included 121 cases of cervical lymphadenopathy, of which 64 patients (52.89%) were male and 57 patients (47.11%) were female. Male: female ratio was 1.12:1. The mean age of all patient presented with cervical lymphadenopathy was $34.54 \pm 1.417$ years (mean±SEM). Youngest patient was 12 years of age and oldest of 75 years.

In most of the occasion, cervical lymphadenopathy was unilateral ($n=94, 77.69\%$). Bilateral involvement was observed in $23.31\% (n=27)$ cases. It was more common in the right side ($n=53, 43.80\%$). Most cases were presented with solitary lymphadenopathy ($n=76, 62.81\%$) rather than multiple ($n=45, 37.19\%$) one.

Etiology of cervical lymphadenopathy (Table 1) cases was identified as tuberculosis (TB) ($36.37\%$), reactive hyperplasia of lymph node ($23.14\%$), metastatic malignancy ($19\%$), suppurative inflammation ($11.57\%$), nonspecific inflammation ($6.61\%$), lymphoproliferative disorders ($1.65\%$), and sarcoidosis ($0.83\%$). One case ($0.83\%$) remained undiagnosed despite full workup.

Age distribution of cervical lymphadenopathy according to different etiology was calculated. Among 121 cases, cervical lymphadenopathy was most common in 21–30 years age group (32 cases, 26.45%) followed by <20 years age group (31 cases, 25.62%), 31–40 years age group (27 cases, 22.31%), 41–50 years age group (14 cases, 11.57%), 51–60 years group (9 cases, 7.44%), and only eight cases (6.61%) in above 60 age group. Hence, most of the cases seen among patients of below 50 years of age. When we closely look into the data, it indicates that most of the infective, inflammatory, and reactive hyperplasia cases which are usually benign in nature tend to occur in younger (<50 years) age group compared to most of the malignant and lymphoproliferative disorders observed to appear in more advanced (>50 years) age group (Figure 1).

Tubercular lymphadenopathy ($n=44, 36.37\%$) was the most common etiology behind cervical lymphadenopathy in our study. Among 44 cases, only 12 (27.27%) had contact history of TB. Physical appearance of tubercular cervical lymphadenopathy is observed as (Figure 2) matted ($n=20, 45.45\%$), discrete (16, 36.36%), sinus (4, 9.09%), abscess (3, 6.81%), and ulcer (n=1, 2.27%). During blood examination, ESR was raised among 27 (61.36%) patients.

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<th>Table 1: Etiology of cervical lymphadenopathy</th>
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During cytological and histopathological examination of lymph node of tubercular cases, mainly, three patterns were observed. Granulomatous lesion with caseation necrosis (n=26, 59.09%) was most common pattern (Figure 3) followed by Granulomatous lesion without caseation necrosis (n=15, 34.09%) and only necrosis (4, 9.09%) in few cases. Bacteriological evidence of tubercle bacilli was found in total 11 cases (25%) either by ZN staining (eight cases) or CBNNAT testing (three cases) or culture (one case). Bacteriological positivity was more common in only necrotic group (75%) compared to other groups. Not a single patient was reported of having Rifampicin resistance during CBNAAT testing. During radiological investigation, pulmonary infiltrate was detected in five (11.36%) cases among them one had cavitary lesion also. Pleural effusion was found among two (4.55%) of the TB cases.

Among 23 cases with metastatic deposit of cervical lymph node (Figure 4), 9 (39.13%) had squamous cell carcinoma, 5 (21.74%) had adenocarcinoma, and 1 (4.35%) had small cell carcinoma. Poorly differentiated carcinoma was seen in 4 (17.39%) cases and another four cases (17.39%) had unclassifiable cytological and histological features. Two patient (4.55%) had lymphoproliferative disorder; among them, one 15-year-old boy had acute lymphoid leukemia and another 62-year-old lady was diagnosed as non-Hodgkin lymphoma.

**DISCUSSION**

Lymphadenopathy as a clinical manifestation serves an excellent clue to the underlying disease. It can arise either from benign or malignant causes depending on the geographical condition and socioeconomic setup. In the present prospective observational study, 121 cervical lymphadenopathy cases were evaluated. TB (36.37%) was the most common cause of cervical lymphadenopathy in our study followed by reactive hyperplasia of lymph node (23.14%) and metastatic deposit (19%). Jha et al., reported in their study a high incidence of
TB lymphadenitis (63.8%) in the year 2001. Study conducted by Dasari et al., found TB (51.6%) as the most common cause of cervical lymphadenopathy followed by reactive/nonspecific lymphadenopathy (24.6%). They also found metastatic deposit in 12.33% cases. Bhat et al., in their study, observed metastatic carcinoma in 17.18% cases of cervical lymphadenopathy. Our study findings were consistent with above-mentioned studies.

Cervical lymphadenopathy was slightly more common in male (52.89%) in the present study with male: female ratio of 1.12:1. The mean age of cervical lymphadenopathy was 34.54±1.417 years (mean±SEM). Baru et al., in their study on 64 patients with enlarged cervical lymph nodes, found male preponderance (53.1%) with mean age at the mid of third decade. Malhotra et al., in their study of lymphadenopathy, found mean age of 20.09 years for benign lesions and 45.48 years for malignant lesions. Our study have shown that most of the benign aetiologies behind cervical lymphadenopathy tend to occur in relatively younger (<50 years) age group whereas most of the malignant disorders behind cervical lymphadenopathy observed to appear in more advanced (>50 years) age group. Unilateral (77.69%) cervical lymphadenopathy was more common in our study and it was more common in the right side (43.80%). Dasari et al., found 76% of cervical lymphadenopathy in unilateral side and right side was involved in 43% cases. Overall solitary lymphadenopathy (62.81%) was more common than multiple (n=45, 37.19%). Subhan et al., also reported similar observation. In cases of tubercular lymphadenopathy, more cases presented with multiple and in matted form.

In a developing country like India, the incidence of TB is high and tubercular lymphadenitis is the commonest extra pulmonary manifestation of the disease. Malhotra et al., in their study on lymphadenopathy cases in India, shown that the most common site of lymphadenopathy was cervical region (71.79%) followed by axillary region (11.11%). Tubercular lymphadenitis (44.02%) was the single most common cause of lymphadenopathy followed by reactive lymphadenitis (42.64%), metastatic lesions (9.40%), and malignant lymphoma (4.70%).

Dasari et al., in their study, found that 25% of tubercular lymphadenopathy had history of contact with TB patient. Our study found 27.27% tubercular cervical lymphadenopathy patient of having positive contact history. In our study, we found more number of matted lymphadenopathy than discretes one. Abscess formation, ulcer, and sinus were less common. Similar observations were also reported by Dandapat et al. and Subrahmanyam et al.

FNAC is one of the most important diagnostic investigations in the evaluation of tubercular lymphadenitis. It is a safe, easy, and cost effective procedure which minimizes the requirement of an invasive excision biopsy in majority of cases. In case of suspected TB lymphadenitis, the aspirated material is stained with ZN stain to confirm the presence of the causative organism.

CONCLUSION

TB is the most common cause of cervical lymphadenopathy followed by reactive hyperplasia and metastatic secondary deposit. Among secondary deposits, squamous cell pattern is most common. Overreliance with clinical findings may not be sufficient in establishing root cause. Although excision biopsy of lymph node is gold standard for diagnosis, FNAC as a simple, inexpensive, relatively painless, rapid, repeatable, and reliable method for diagnosis can be placed as a frontline investigation which can guide requirement for further investigation.
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REFERENCES


Authors Contribution:
AD- Concept and design of the study, Reviewed the literature, Collection and analysis of data, Prepared first and final draft of the manuscript; PM- Supervision of the study, Validation, Revision of the manuscript for critical intellectual content; PRC- Concept, Coordination, analysis and interpretation, Validation, Revision of the manuscript; SKS- Concept of the study, Collection of data, Coordination and revision of the manuscript.

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