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To study the clinico-pathological picture among children aged 1-18 years in relation to paediatric cervical lymphadenopathy in a tertiary care hospital, Telangana, South India

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Abstract

Background: Lymph node enlargement is an age related physiological change which is normal in every individual. Lymph node enlargement is a common problem in children and evaluation of a child with lymphadenopathy is utmost important. It may also occur due to chronic infections and other conditions like autoimmune disorders. Etiology varies from region to region. Aim and objective is to study the clinico-pathological picture of significant cervical lymphadenopathy in pediatric age group and to arrive at an etiological diagnosis.

Methodology: Hospital based prospective observational study. Fifty children with cervical lymph node enlargement attending the Pediatric unit of RVM Institute of medical sciences, Siddipet (D), Telangana State from June 2019 – December 2019 were taken as study participants. Manteaux test, hematological investigations, FNAC was performed in all the cases. Additional investigations were done wherever required.

Results: Among 50 cases the common age group was 11 – 15 years (38%) children. The etiology was confirmed in 82% cases and could not be confirmed in 16% cases even after other investigations. Cytological examination revealed lymphoid nodular hyperplasia 48% cases, tubercular lymphadenitis in 24% cases and Suppurative lymphadenitis 12% cases. Commonest etiological diagnosis after detailed investigation was found to be due to infections due to bacteria, fungi, viruses in 60% cases followed by tuberculosis in 16% cases and there were 8% cases caused due to measles.

Conclusion: Reactive nodular lymphadenitis was the commonest problem which is treatable. Further follow-up involving detection of antigen and antibodies against viruses, parasites and rare causes of lymphadenopathy may decrease the incidence of new significant cervical lymphadenopathy among children of pediatric age group.

Keywords: Cervical lymphadenopathy, cytology, lymphadenitis

Introduction

Lymph node enlargement is a common problem in children and evaluation of a child for lymphadenopathy is the job of pediatricians. Cervical region lymph nodes are most commonly affected in about 80-90% of children. Lymph nodes in children can be palpated in early neonatal period^[1]. In India, acute respiratory tract infections, tuberculosis are the major causes for lymphadenopathy^[2]. The prevalence is as high as 250 per 1,00,000 population^[3], tuberculosis is still a infectious disease which is widely prevalent in the world, involvement of lymph node is the most common form of extra-pulmonary tuberculosis, responsible for 30-40% of cases^[4]. A child with lymphadenopathy, and its evaluation and management with many differential diagnoses made us anxious to take up this study^[5]. Aims and objectives of current study is to see the clinical and pathological correlation in lymphadenopathy and to assess the etiological factors responsible for causation.

Methodology

This study was conducted in RVM Institute of Medical Sciences, Siddipet and Telangana. Children with significant cervical lymphadenopathy attending Pediatric OPD and admitted in Pediatric Department during 1st June 2019 to 31st December 2019 were included in the study.

Inclusion criteria

1. Children between the age group of 1 to 18 years
2. Children with cervical lymphadenopathy

3. Lymph nodes which were soft, firm, hard, rubbery

Exclusion criteria

1. Children less than 1 year
2. Children with cervical lymphadenopathy with lymph node size < 1cm size.
3. Parents who did not give consent for examination those children are excluded from study.

Informed consent was taken from the accompanying parent or guardian for inclusion into the study. A detailed history was taken using preformed semi-structured questionnaire, which included the duration and course of swelling, and associated general symptoms like fever, cough, loss of appetite, history of respiratory tract infection, ear discharge, Immunization status, socioeconomic history, any treatment history was also recorded.

For all children in the study group blood examination for hemoglobin level, total and differential count and Erythrocyte sedimentation rate were done by standard hematological techniques. As the prevalence of tuberculosis was high in Telangana state, Mantoux test was done in the children as a part of routine workup. Fine Needle aspiration cytology (FNAC) was done for all the study participants from most prominent node. In children with infections, swab was taken for culture and sensitivity. In children with suspected systemic infection, Chest X-ray was taken. Ethical clearance was obtained from the RVM institute ethical committee before starting this study. Statistical analysis was done by entering the data in excel and results expressed as percentages.

Results

A total of fifty children with significant cervical lymphadenopathy were examined

Table 1: Age distribution among study participants

Age in years	No. of cases	Percentage
1-5	6	12
6-10	14	28
11-15	19	38
16-18	11	22
Total	50	100

Majority of the children with cervical lymphadenopathy were in the age group of 11-15 years (38%) and least in 1-5 years age group (12%). Youngest patient in present study was of 3 years.

Occurrence of cervical lymphadenopathy was observed commonly in male children (64%) than in female children (36%). The male to female ratio was 1.8 :1.

Table 2: Presenting symptoms of study participants

Symptom	Number of case	Percentage
Neck Swelling	38	76
Painful swelling	8	16
Fever	42	84
Cough	18	36
Sore throat	16	32
Ear discharge	8	16
More than one symptom	24	48

Swelling was painless in majority of cases and pain in swelling was seen in 16%. In 48% of children more than one presenting symptoms was there.

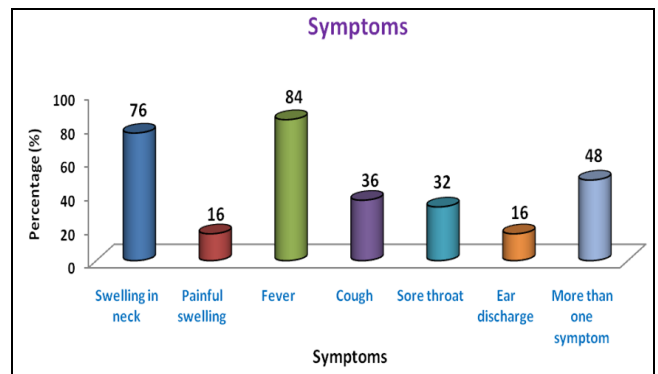


Fig 1: showing Duration of symptoms among study participants

Duration of swelling was less than one month in 45% cases and 1 month to 3 months in 39% of cases. 6 cases (16%) had neck swelling for more than 3 – 6 months.

Chronic cough was present in 17% cases

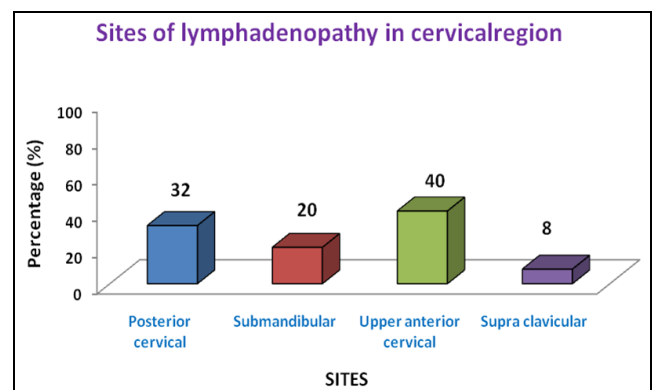


Fig 2: Sites of lymphadenopathy in cervical region (n = 50)

Out of 50 cases, upper anterior cervical nodes were commonly involved (40%) least involved are supraclavicular nodes i.e., 8%. Majority of the lymph nodes 76% were firm in consistency. Lymph nodes were painless and non-tender in 72% of the cases, tenderness is observed in only 28%. On clinical examination, Tonsillitis/pharyngitis were observed in 44% of cases and Ear infections in 36% cases. 8% cases with rashes due to measles.

Table 3: Showing hematological values of study participants

Findings	No. of cases	Percentage
Anemia	24	48
Neutrophilia	10	20
Lymphocytosis	6	12
Eosinophilia	4	8
Leukocytosis	18	36

Blood counts revealed 48% of children suffering with varied degrees of anemia's and ESR were elevated in 64% cases. Out of 50 cases 3 had features of infection in at the site of enlarged lymph nodes, culture swab revealed 2 cases are positive for staphylococci and 1 case was sterile.

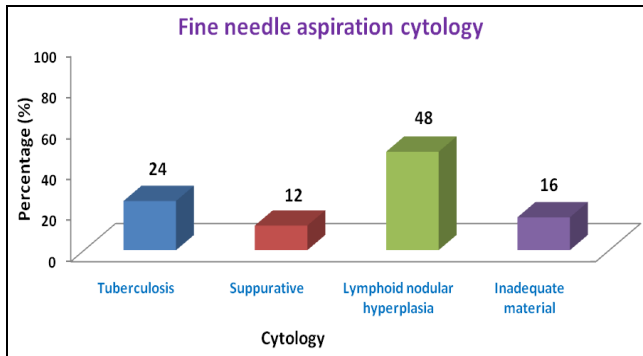


Fig 3: Fine needle aspiration cytology

FNAC was done in all 50 cases. In majority of the cases 48% cytology showed reactive nodular hyperplasia. Cytological features of tuberculosis were observed in 24% and suppurative type observed in 12% cases

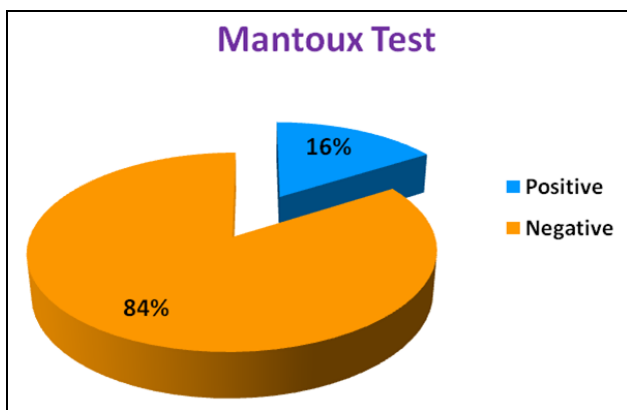


Fig 4: Mantoux test: (n=50)

Mantoux test was done in 50 cases. Positive reaction was seen in 16% cases. All of these were diagnosed as Tuberculosis after considering other clinical findings and investigations.

Table 4: Chest X-ray (n=18)

Findings	No of cases	%
Normal	10	56
Abnormal	8	44
Total	18	100

Chest X-rays were done among 18 study participants which showed abnormal findings in 44%.

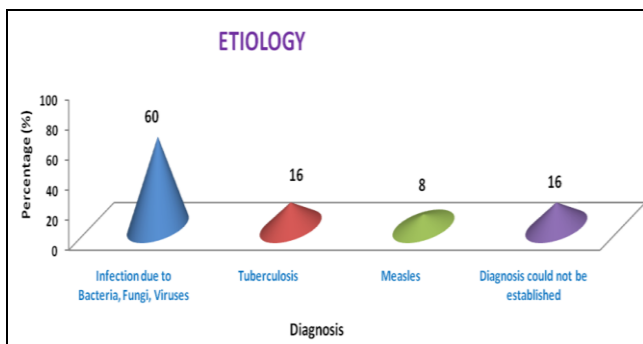


Fig 5: Showing Etiology of cervical lymphadenopathy

Etiological diagnosis could not be established in 8 cases. Local infections of ear, pharyngitis/tonsillitis and other

infections were 30 (60%), 8 cases were due to tuberculosis, 4 cases were due to measles.

Discussion

In present study, 50 cases were studied with ages ranging from one to eighteen years, 38% belong to 11-15 years. The data suggests that significant cervical lymphadenopathy is common in age group from 11-15 years when compared with study conducted by Reddy. MP *et al.* [6] noted majority in 4-8 years group. But Knight *et al.* [7] emphasized age is not important in predicting the incidence of significant lymphadenopathy. In a study conducted Radha. M *et al.* [8], age of the children was in a range from 4 months- 18 years with mean age being 11 years (132 months) which is comparable with current study. Occurrence of cervical lymphadenopathy was observed commonly in male children (64%) than in female children (36%). In the Kumar BD *et al.* [9] study, there was male preponderance, In the Ingale AV *et al.* [10] study, incidence in males (68.57%) was more than that in females (31.42%). The male preponderance in the present study was similar to these studies.

In the present study, neck swelling was the presenting symptom in 38 children (76%) associated with Fever and cough in 84% and 36% respectively. In Kumar BD study [9], predominant symptom was swelling in neck followed by fever and cough similar to the present study.

In the present study, duration of swelling was less than one month in 45% cases and 1 month to 3 months in 39% of cases. 6 cases (16%) had neck swelling for more than 3-6months. Duration of the lymph node swelling in Ingale AV study [10] was more than 1 month and less than 6 months in 34.28% of the cases, less than one month in 57.14% and more than 6 months in 8.57% of the cases. Sheikh MM *et al.* [11] observed the duration of enlarged lymph nodes to be 1 month to 6 months in 51%, more than 6 months in 25% cases and less than 1 month in 8% of the cases the findings are nearly similar to the present study.

Out of 50 cases in the present study, upper anterior cervical nodes were commonly involved 40% followed by posterior cervical lymph nodes 32%. Submandibular lymph nodes were palpable in 20% of cases, Supraclavicular lymph node enlargement was 8%. In many patients more than one site of involvement was seen. Reddy *et al.* [6] observed in their study of pediatric cervical lymphadenopathy, the predominant site being upper anterior cervical lymph nodes. In the Ingale AV *et al.* [10] study, upper anterior cervical nodes were commonly involved (44.28%) cases. Knight PJ *et al.* [7] observed in their study of 239 children with lymphadenopathy 47% of children having upper anterior cervical lymph node enlargement which formed predominant site of cervical lymphadenopathy. In study conducted by Kumar BD *et al.* [9] the predominant sites included both anterior and posterior lymph nodes. All the above studies findings are similar with present study.

On clinical examination of the study participants in present study tonsillitis/ pharyngitis were seen in 44% of cases, Ear infection in 36% cases. 8% cases with measles had rash. In the study conducted by Somaiah G *et al.* [12], on clinical examination 21.5% cases had Tonsillitis and / or Pharyngitis; ear infection like Otitis media was found in 6.9% of cases; 11.5% had skin lesions over scalp like impetigo and 8.4% had evidence of orodental infection. Systemic examination revealed organomegaly (Hepatomegaly and/or splenomegaly) in 26.9% of the cases

and rash in 2.3% of cases, the above findings are similar to the present study.

12% of study participants had leukocytosis, Neutrophilia in 20% and lymphocytosis in 12%. 48% of children in the present study had anemia. Anemia was present in 53.8% of children in the Somaiah G *et al.* [12]. It is near similar with the present study observations.

FNAC was done in all 50 cases in the present study. In studies done by Dhingra V *et al.* [13] and Annam V *et al.* [14] inadequacy rate was 6.25% and 3.57% respectively which was more observed in the present study 16%. Majority of the cases (74.3%) cytology showed reactive nodular hyperplasia. Cytological features of tuberculosis were seen in 12 cases (24%). In 6 cases purulent material was aspirated and was reported as suppurative lymphadenitis. Tubercular lymphadenitis which was observed in the present study correlated positively with increasing risk factors like unimmunized child, positive Mantoux test, positive history of contact. Other bacterial pathogens like Staphylococci isolated from tonsillo-pharyngitis and otitis media are involved in causing cervical lymphadenopathy. In Kumar BD *et al.* [9], the commonest cyto-pathological finding was reactive lymphadenitis in 74.4% followed by granulomatous and suppurative lymphadenitis in 15% and 6.9% respectively. Lake *et al.* [15] and Reddy. MP *et al.* [6] also noted the commonest cyto-pathological finding as reactive lymphadenitis followed by granulomatous lymphadenitis which are similar to present study.

Mantoux test was done in 50 cases of the present study. Positive reaction was seen in 8 cases (16%). All of these were diagnosed as Tuberculosis after considering other clinical findings and investigations. In Somaiah G *et al.* [12], mantoux test was done in all 130 cases, positive reaction was observed in 31 cases (23.8%). In the present study, Chest X-ray was done in 18 children and showed abnormal findings in 8 cases, thus it was useful in evaluation of lymphadenopathy in 44% of the cases. In somaiah G *et al.* [12] Study, Chest X-ray findings were abnormal in 30.6% of the cases when it was done for indicated cases (38 cases) and was useful in evaluation of 22.8% of the total cases.

In the present study Non diagnostic hyperplasia was seen in 8 cases, which account for 16% of cases. These are cases in which etiology could not be established. In the study conducted by Kumar BD *et al.* [9] etiology could not be established in 15.7% of the cases inspite of various investigations and this finding was well similar with Reddy. MP *et al.* who was unable to diagnose in 44% of the cases. Hence, further studies and longer follow up involving detection of antigen and antibody against various viruses, parasites and investigations for rare causes of lymphadenopathy may decrease the number of undiagnosed cases.

In the present study local infections of ear, pharyngitis/tonsillitis and other infections account for a total of 30 cases which form the majority of cases (60%). All the lesions were benign (non-neoplastic) in the present study which correlated well with the other similar studies [9, 12]. Reactive lymphadenitis (48%) constituted the majority of the non-neoplastic lesions in the present study, which was similar to the study conducted by Reddy MP *et al.* [6] (54%). The present study showed tuberculosis as the etiology in 12 cases which accounted for 24%, Radha M *et al.* [8] observed similar findings of tubercular adenitis to be a significant and prevalent cause of lymphadenopathy (19%). Out of 19

cases, 10 were found to be AFB positive. These findings are in common with studies conducted by Annam V *et al.* [14], who diagnosed tubercular lymphadenitis in 28.1% cases, of which 7% were AFB positive.

Conclusion

Reactive lymphadenitis is the commonest cause of lymphadenopathy in children followed by Tuberculosis. In this study male predominance was noted. FNAC safe and reliable less time consumable outpatient procedure used as an initial diagnostic tool. Cervical lymphadenopathy can be associated with local causes to serious systemic diseases like tuberculosis, staphylococcus. Presence of enlarged lymph nodes associated with symptoms or signs of serious systemic diseases should be looked for in every child where obvious source of infection is not apparent. Such children need detailed evaluation with investigations like Chest X-ray, Mantoux test, FNAC and biopsy.

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